

# NMSAT Vol. 3+4+5

Networked Music & SoundArt Timeline

## Locus Sonus



PART 2 : 1950 - present (2008)  
Networked Music and Sound Art Works & Tech Developments and Contemporary References

PART 3 : Bibliography

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## **NMSAT**

Networked Music & SoundArt Timeline

### **Vol. 3+4+5**

Networked Music and Sound Art Works & Tech Developments  
and Contemporary References — Bibliography

Edited by Locus Sonus, audio in art

Coordination : Jérôme Joy, Anne Roquigny, Peter Sinclair

April 2011

*A Panoramic View of Practices & Techniques related to Sound Transmission and Distance .  
Bibliographical References for Sound Studies - Archeology, Genealogy, and Anthropology of Distance  
Listening and Internet Auditoriums.*

The Networked Music & SoundArt Timeline (NMSAT) is part of Locus Sonus' research into audio art. It aims to provide an overview of technique and practice in the realm of networked music and networked sonic performance from ancient history to the present. It proposes a collection of references to theoretical and critical texts, a valuable resource available to actors in the artistic and scientific spheres. It is a platform designed to accommodate different analytical approaches.

NMSAT is structured as a database. Each entry or item contains a short description followed by references. The current version of the database consists of these items classified in chronological order.

NMSAT encompasses various domains and types of events including :

- Technologies and software;
- Forward thinking literature;
- Musicology and ethnomusicology;
- Sound anthropology and history of telecommunication & radio;
- Contemporary music and soundart.

Volumes 1 and 2 concern the historical period : ancient and modern history, anticipatory literature and technical developments references (ancient times - 1964). Volume 6 consists of a collection of studies which use the NMSAT database as a source of reference.

The NMSAT is moderated and maintained by the NMSAT scientific development committee consisting of around 60 researchers and artists.

*Locus Sonus is a research group and a post-graduate lab (School of Arts Aix en Provence, National School of Arts Bourges) supported by the French Ministry of Culture (DGCA / Research Department), DDAI / MRT, CNRS, DRAC PACA, FACE & PUF international programs.*

# Networked Music & SoundArt Timeline (NMSAT)

Bibliographical references in Sound Studies

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# Networked Music & SoundArt Timeline (NMSAT)

A Panoramic View of Practices & Techniques Related to Sound Transmission and Distance: Archeology, Genealogy and Sound Anthropology of the Internet Auditoriums and the Distance Listening

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## Historique de l'Art Audio et de la Musique en Réseau (NMSAT)

Panorama des Pratiques et Techniques Liées aux Transports de Sons et aux Actions Sonores à Distance: Archéologie, Généalogie et Anthropologie Sonore des Auditoriums Internet et de l'Écoute à Distance

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### VOLUME 3+4+5

PART 2 : 1950 - present (2008)

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**edited by LOCUS SONUS**

audio in art, Sonic Research Lab

<http://locusonus.org/>

School of Arts Aix en Provence & National School of Arts Bourges, France

[joy@nujus.net](mailto:joy@nujus.net) , [joy@thing.net](mailto:joy@thing.net) , [support@locusonus.org](mailto:support@locusonus.org)

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Editorial concept : Jérôme Joy

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Editor Contact : [support@locusonus.org](mailto:support@locusonus.org) ; [joy@thing.net](mailto:joy@thing.net)

[NMSAT] Development committee mailing-list : <http://nujus.net/cgi-bin/mailman/listinfo/nmsat> (first opened on the 17th of March, 2009)

The NMSAT database has been initiated on May 2008.

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Locustream Tuner, Locus Sonus, 2007 (Bourges France, p. 451).

Dedicated to Michel Waiswicz (1949-2008)

**Edited by Locus Sonus**  
**with the NMSAT scientific development committee :**

**Brett Ian BALOGH**, SAIC, instructor, Art and Technology Studies, sound artist [www.saic.edu](http://www.saic.edu)  
**Álvaro BARBOSA**, CITAR UCP, Center for Research in Science and Technology of the Arts [citar.ucp.pt](http://citar.ucp.pt)  
**Clarisse BARDIOT**, ARIAS, researcher, CNRS Univ. Paris3, Lect. Univ. of Valenciennes, CECN [www.arias.cnrs.fr](http://www.arias.cnrs.fr)  
**Marc BATTIER**, Univ. Paris-Sorbonne, Dir. MINT, coDir. OMS Netw., Dir. EMSAN, composer [omf.paris-sorbonne.fr/](http://omf.paris-sorbonne.fr/)  
**DinahBIRD**, MAM Museum of Modern Art Paris, radio artist and feature maker [www.radio1001.org](http://www.radio1001.org)  
**Samuel BORDREUIL**, LAMES, Research Dir., CNRS, MMSH, Univ. of Provence [www.mmsch.univ-aix.fr/lames/](http://www.mmsch.univ-aix.fr/lames/)  
**Juan-Pablo CACERES**, CCRMA, Computer Music, PhD researcher, Stanford Univ., composer [ccrma.stanford.edu](http://ccrma.stanford.edu)  
**Angus CARLYLE**, CRISAP, co-director, Univ. of the Arts London, writer, editor, sound artist [crisap.org](http://crisap.org)  
**Alexandre CASTANT**, Aesthetics & Art History, Prof. School of Arts Bourges (F), art critic, writer [ensa-bourges.fr](http://ensa-bourges.fr)  
**Andrea CERA**, Conservatorio C. Pollini Padova (Italia), composer [andrea.cera.free.fr](http://andrea.cera.free.fr)  
**Chris CHAFE**, Dir. CCRMA, Stanford University, music researcher, composer [ccrma.stanford.edu](http://ccrma.stanford.edu)  
**Julien CLAUSS**, Locus Sonus – audio in art, Sonic Research Lab, sound artist [www.cycliq.org](http://www.cycliq.org)  
**Josep M. COMAJUNCOSAS**, Barcelona Laptop Orch. Music Technology Group, UPF [barcelonalaptoporchestra](http://barcelonalaptoporchestra)  
**Pierre COUPRIE**, Researcher OMF Univ. Paris-Sorbonne, TICE IUFM, musicologist, composer [www.pierrecooprie.fr](http://www.pierrecooprie.fr)  
**Jean CRISTOFOL**, Epistemology, School of Arts Aix en Provence [www.plotseme.net](http://www.plotseme.net)  
**Alain DEPOCAS**, Dir. CR+D, Fondation Langlois Montréal, Research Dir. DOCAM [fondation-langlois.org](http://fondation-langlois.org)  
**John Levack DREVER**, Goldsmiths College, Univ. of London, Dir. of SPR, Dept. of Music [www.goldsmiths.ac.uk](http://www.goldsmiths.ac.uk)  
**Alejo DUQUE**, Locus Sonus – audio in art, Sonic Research Lab, PhD researcher at EGS (Switzerland) [www.egs.edu](http://www.egs.edu)  
**John EACOTT**, Univ. of Westminster, School of Media, Arts & Design, CREAM, lect. in Music, composer [informal.org](http://informal.org)  
**Björn ERIKSSON**, Hola folk high school (Nyland, Sweden), field recordings & radio art [rucas.org/wiki.pl/Miulew](http://rucas.org/wiki.pl/Miulew)  
**Ken FIELDS**, Canada Research Chair, Telemedia Arts, ass. Prof. Dept. of Music, Univ. of Calgary [syneme.ucalgary.ca](http://syneme.ucalgary.ca)  
**Scott FITZGERALD**, Tisch School NYU, ITP, Adjunct ass. Prof. & Locus Sonus Lab [www.droolcup.com](http://www.droolcup.com)  
**Golo FÖLLMER**, Martin-Luther-Universität Halle-Wittenberg, Prof. Audio Culture [www.medienkomm.uni-halle.de](http://www.medienkomm.uni-halle.de)  
**Jean-Paul FOURMENTRAUX**, CESTA, Sociology, researcher, CNRS, EHESS Paris [cesta.ehess.fr](http://cesta.ehess.fr)  
**Marcus GAMMEL**, Dir. Klang Kunst Deutschlandradio Kultur, musicologist, playwright, journalist [www.dradio.de](http://www.dradio.de)  
**Peter GENA**, SAIC, Professor, Art and Technology Studies, composer [www.saic.edu](http://www.saic.edu)  
**Scot GRESHAM-LANCASTER**, composer, performer, instrument designer, educator [scot.greshamlancaster.com](http://scot.greshamlancaster.com)  
**Florian GROND**, Ambient Intelligence Group, PhD researcher at CITEC Bielefeld Univ. [grond.at](http://grond.at)  
**Georg HADJU**, Dir. Multimedia Composition Hamburg Hochschule für Musik und Theater, composer [georghajdu.de](http://georghajdu.de)  
**GH HOVAGYMIAN**, Computer Arts, School of Visual Arts NYC, digital artist [nujus.net/~gh](http://nujus.net/~gh)  
**Jérôme JOY**, Locus Sonus, Res. co-Dir., Prof. Nat. Sch. of Arts Bourges, PhD st. Univ. Laval, composer [locusonus.org](http://locusonus.org)  
**Rahma KHAZAM**, art critic and journalist, editor-in-chief of Earshot [architectones.net](http://architectones.net)  
**David KIM-BOYLE**, Asst. Prof., UMBC Univ. of Maryland Baltimore, audio engineer, composer [davidkimboyle.net](http://davidkimboyle.net)  
**Brandon LABELLE**, Prof. National Academy of the Arts, Bergen (Norway), writer, sound artist [errantbodies.org](http://errantbodies.org)  
**Anne LAFORET**, Culture & Communication Lab, PhD researcher, Univ. of Avignon [www.sakasama.net](http://www.sakasama.net)  
**Suzanne LEBLANC**, Prof. Visual Arts School, Research Dir., Université Laval Québec [www.arv.ulaval.ca](http://www.arv.ulaval.ca)  
**Marie LECHNER**, net & digital arts journalist, Libération Écrans [www.ecrans.fr](http://www.ecrans.fr)

Eric LEONARDSON, SAIC, Adjunct ass. professor, Sound Dept., WLP founder, music & radio art [www.saic.edu](http://www.saic.edu)  
 Patrice LOUBIER, UQAM Montreal, Art History Dept, art critic, independant curator [histoiredelart.uqam.ca](http://histoiredelart.uqam.ca)  
 Andra McCARTNEY, Concordia Univ., Comm. Studies, Ass. Prof., soundwalk artist [artsandscience.concordia.ca](http://artsandscience.concordia.ca)  
 Gilles MALATRAY, Le Centre du Son (Isère, France) [lecentreduson.info](http://lecentreduson.info) [desartsonnants.over-blog.com](http://desartsonnants.over-blog.com)  
 Cédric MARIDET, School of Creative Media, City Univ. of Hong Kong, PhD researcher, sound artist [moneme.com](http://moneme.com)  
 Sylvain MARQUIS, Univ. Marne-La-Vallée, Digital & Sound Arts Dept., musicologist, composer [sylvainmarquis.com](http://sylvainmarquis.com)  
 Luc MARTINEZ, composer, sound designer, Univ. Nice Sophia-Antipolis [www.demiaux.com/a&t/martinez.htm](http://www.demiaux.com/a&t/martinez.htm)  
 Udo NOLL, media artist & applied scientist for media technology [aporee.org](http://aporee.org) [king.dom.de](http://king.dom.de) [humbot.org](http://humbot.org)  
 Pauline OLIVEROS, Rensselaer Polytechnic Institute Troy NY, Deep Listening, composer [paulineoliveros.us](http://paulineoliveros.us)  
 Julien OTTAVI, artist-researcher, Apo33, co-dir. of Area10Medialab London [www.a10lab.info](http://www.a10lab.info) [www.apo33.org](http://www.apo33.org)  
 James PARTAIK, Prof. Digital Arts, Arts Dept., Univ. du Québec à Chicoutimi, artist [jamespartaik.com](http://jamespartaik.com)  
 Jenny PICKETT, artist/curator, creative manager, co-dir. of Area10Medialab London [www.jennypickett.co.uk](http://www.jennypickett.co.uk)  
 Andrea POLLI, Univ. of New Mexico, Dir. of the IFDM Program, digital media artist [andreapolli.com](http://andreapolli.com)  
 Jean-Paul PONTHOT, Dir. School of Arts Aix en Provence, res. Musiques de Traverses [ecole-art-aix.fr](http://ecole-art-aix.fr)  
 Céline PRUNNEAUX, EHESS Paris, PhD researcher, "History, Music, Society" Dept. [acoufene.free.fr](http://acoufene.free.fr)  
 Pedro REBELO, SARC, Dir. of Education, Queen's University Belfast, composer [www.sarc.qub.ac.uk](http://www.sarc.qub.ac.uk)  
 Marc RELIEU, Researcher and professor ENST Paris, ass. res. EHESS, LTCI CNRS [www.ltcienst.fr](http://www.ltcienst.fr)  
 Alain RENAUD, Smart Tech Research Centre, Bournemouth Univ., senior lecturer [www.bournemouth.ac.uk](http://www.bournemouth.ac.uk)  
 Jean-Philippe RENOULT, composer, radio producer, lecturer, journalist [www.jeanphilipperenoult.com](http://www.jeanphilipperenoult.com)  
 Jean-Claude RISSET, LMA CNRS, Hon. Doct. Univ. Edinburgh, CNRS Golden Medal 1999, composer [lma.cnrs-mrs.fr](http://lma.cnrs-mrs.fr)  
 Annick RIVOIRE, net & digital arts journalist, editor-in-chief of Poptronics [www.poptronics.fr](http://www.poptronics.fr)  
 Jocelyn ROBERT, École des arts visuels, Univ. Laval Québec, Professor [arv.ulaval.ca](http://arv.ulaval.ca) [jocelynrobert.com](http://jocelynrobert.com)  
 Anne ROQUIGNY, media artist (WJ-s), Coord. Locus Sonus – audio in art, Sonic Research Lab [locusonus.org](http://locusonus.org)  
 Franziska SCHROEDER, lecturer / RCUK fellow at SARC, Queen's University Belfast, performer [www.sarc.qub.ac.uk](http://www.sarc.qub.ac.uk)  
 Peter SINCLAIR, Locus Sonus, Res. co-Dir., PhD res. at CRiSAP, Prof. Sch. of Arts Aix, sound artist [locusonus.org](http://locusonus.org)  
 Douglas E. STANLEY, Digital Arts, School of Arts Aix en Provence, PhD res. at Paris8, artist [www.ecole-art-aix.fr](http://www.ecole-art-aix.fr)  
 Atau TANAKA, Newcastle Univ., (Dir.) Computing Culture Lab, Prof of Digital Media, artist [ncl.ac.uk](http://ncl.ac.uk)  
 Dante TANZI, LIM, Dpt Info & Comm, Univ. degli studi di Milano, composer [lim.dico.unimi.it](http://lim.dico.unimi.it)  
 J. Milo TAYLOR, CRiSAP, LCC, PhD researcher, Univ. of the Arts London [www.crisap.org](http://www.crisap.org)  
 Jean-Paul THIBAUD, CRESSON, Research Dir. CNRS, School of Architecture Grenoble [www.cresson.archi.fr](http://www.cresson.archi.fr)  
 Helen THORINGTON, Co-Director of New Radio and Performing Arts, Inc., writer, composer, [turbulence.org](http://turbulence.org)  
 Allen S. WEISS, Tisch School NYU, Performance & Cinema Studies, Ass. Adj. Prof., writer [performance.tisch.nyu.edu](http://performance.tisch.nyu.edu)  
 YEUNG Yang, General Education, Chinese Univ. of Hong Kong, lecturer and soundart curator [soundpocket.org.hk](http://soundpocket.org.hk)  
 Laura ZATTRA, Univ. di Padova, researcher, Dept di Storia delle arti visive e della musica [artemusica.unipd.it](http://artemusica.unipd.it)



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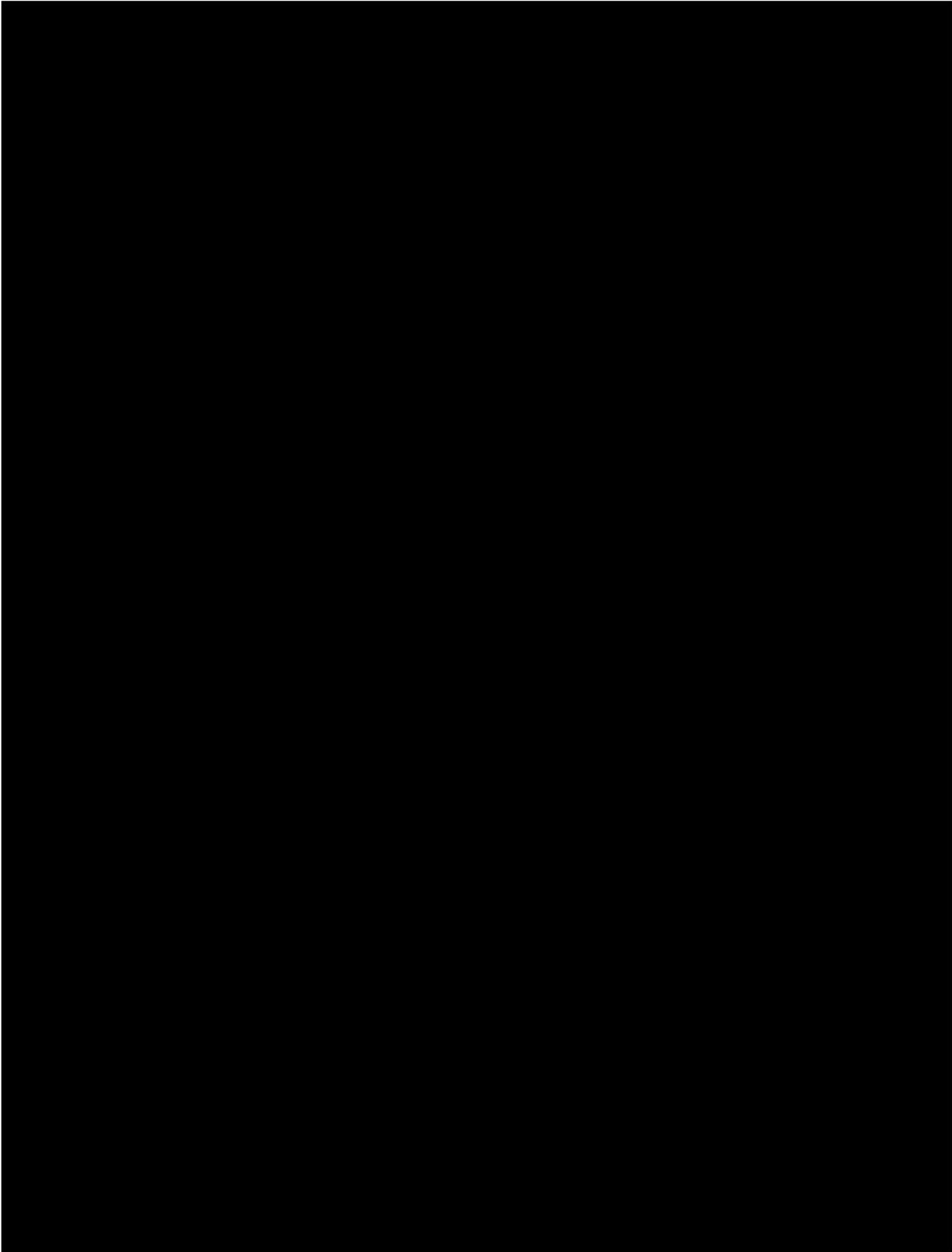
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- [FR] **Son & Distance - L’Écoute à Distance et les Auditoriums Internet (Distance Listening & Internet Auditoriums)** (Joy, 2010), in NMSAT Vol. 5 (Locus Sonus). (The English version of this text will be included into NMSAT Vol. 5)

## NOTE & GUIDELINES

Editor Contact : [support@locusonus.org](mailto:support@locusonus.org)

[NMSAT] Development committee mailing-list : <http://nujus.net/cgi-bin/mailman/listinfo/nmsat> (first opened on the 17th of March, 2009)

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**L'horizon du NMSAT** — Depuis son lancement en mai 2008 à partir d'études antérieures et de documentations à propos des projets de recherche que nous avons en cours, le NMSAT a pris une envergure grandissante en passant de quelques douzaines de feuillets contenant des séries de liens et de notes, à plusieurs centaines de pages et plus de 3000 entrées référencées. L'intérêt du NMSAT est d'offrir aujourd'hui un panorama historique et un état des lieux des projets artistiques contemporains, par l'accès à des références soit de première main, soit de seconde main, et à un environnement original pour la recherche. La vitalité et la pertinence de cette documentation aidera tous les partenaires et les autres chercheurs dans leurs propres recherches. Le sondage du contenu du NMSAT peut faciliter le développement d'analyses spécifiques sur les pratiques et les techniques de l'audio en réseau, tout autant qu'aider à distinguer les problématiques, les corrélations, les typologies et les notions singulières liées à ces pratiques. L'objectif est d'offrir une mise à jour des connaissances sur l'art audio en réseau (art sonore, musique) — en ouvrant par exemple la proposition d'une archéologie et d'une philologie de l'écoute à distance, et de toutes sortes d'autres objets de recherche identifiables historiquement —, tout autant que de raccourcir les temps d'investigations concernant la scène actuelle de l'art en réseau, et d'observer les évolutions des projets et recherches artistiques et des technologies utilisées.



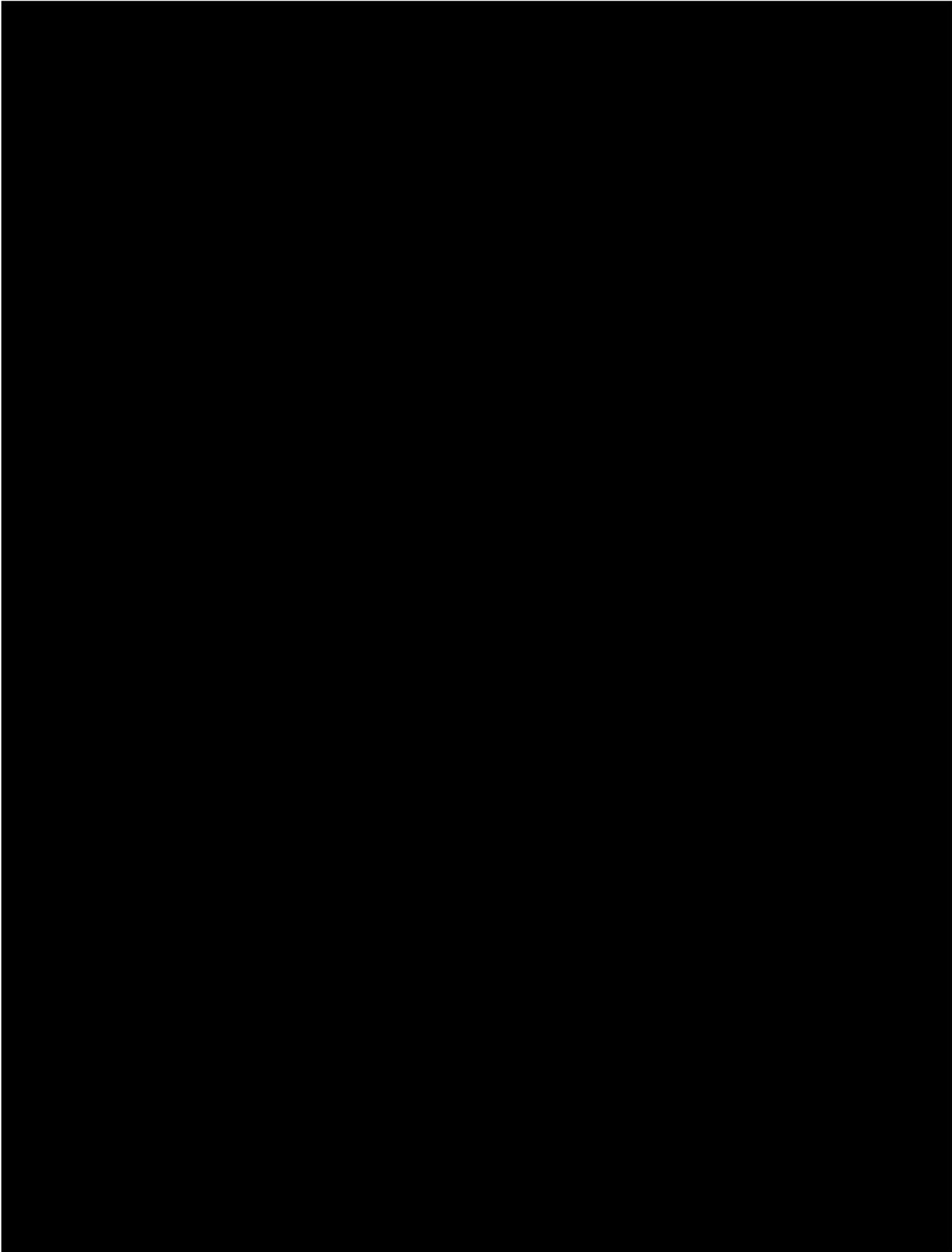




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NETWORKED MUSIC AND SOUND ART WORKS & TECHNOLOGICAL  
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- 1972 \_\_ *Le Capitole*, Fred Forest
- 1972 \_\_ **Center for Contemporary Music**, Jim Horton, Tom Zahuranec, Roger Kent, Mills College
- 1972 \_\_ *Construction of a Traditional Rural Oven for Making Bread*, Victor Grippo
- 1972 \_\_ **ELIZA and PARRY**
- 1972 \_\_ *LMA, Laboratoire de Mécanique et d'Acoustique*, Marseille
- 1972 \_\_ *München Projekt / Munich Project Olympic Games '72 – ORF Projekt Zugangsröhre / ORF Project Entrance Tube*, Bernhard Leitner
- 1972 \_\_ *People's Computer Company Newsletters*
- 1972 \_\_ *Space-Media*, Fred Forest
- 1972 \_\_ *The Spring Recordings*, David Tremlett
- 1972 \_\_ **Talk Out !**, Douglas Davis
- 1972 \_\_ *Turenas*, John Chowning
- 1972 \_\_ *Voltage swings*



## 1973

- 1973 \_\_ **Ambisonics - Periphony**
- 1973 \_\_ **ARPANET**
- 1973 \_\_ « *Autopoiesis* », Francisco Varela
- 1973 \_\_ **Birds Hotel Embarcadero San Francisco**, Bernhard Leitner
- 1973 \_\_ *Brain-Computer Interface*, Jacques Vidal
- 1973 \_\_ « *Community Memory* », Lee Felsenstein
- 1973 \_\_ **Corticalart III**, Pierre Henry
- 1973 \_\_ **Cybernéphone, Gmebaphone**, GMEB Bourges
- 1973 \_\_ **Cybersonic Cantilevers**, Gordon Mumma
- 1973 \_\_ *Electronic Email*
- 1973 \_\_ **First broadcast music concert via satellite : Elvis Presley, from Aloha Hawaii**
- 1973 \_\_ *In An Autumn Garden*, Toru Takemitsu
- 1973 \_\_ *Micral-N*
- 1973 \_\_ « **The Music of Environment** », Robert Murray Schafer

- 1973 \_\_ « *The Network City* », Paul Craven & Barry Wellman
- 1973 \_\_ *Pygmy Gamelan*, Paul DeMarinis
- 1973 \_\_ *PLANET, Planning Network*, Jacques Vallée
- 1973 \_\_ *Carl Sagan*
- 1973 \_\_ *Scelbi-8H*
- 1973 \_\_ « *Senza chiedere permesso; come rivoluzionare l'informazione* » (without asking permission; how to revolutionize information), Roberto Faenza
- 1973 \_\_ « *Six Years : The Dematerialization of the Art Object from 1966 to 1972* », Lucy Lippard
- 1973 \_\_ « *Social Sculpture* », Joseph Beuys
- 1973 \_\_ *Sociological Walk in Brooklyn*, Fred Forest
- 1973 \_\_ « *The Sociology of Community* », Jessie Bernard
- 1973 \_\_ *Sound Field Insertion*, Bill Viola
- 1973 \_\_ *Through the Night Softly*, Chris Burden
- 1973 \_\_ *Walkthrough (1973-1975)*, Max Neuhaus
- 1973 \_\_ « *World Music - WeltMusik - Au-delà de la polyphonie du village global / Beyond Global Village Polyphony* », Karlheinz Stockhausen
- 1973 \_\_ *The World Soundscape Project*



#### 1974

- 1974 \_\_ *Acousmonium*, Groupe de Recherche Musicales
- 1974 \_\_ *The Arcibo message*
- 1974 \_\_ *Audio Transmission via IP*
- 1974 \_\_ *EMS, Experimental Music Studio MIT MediaLab*
- 1974 \_\_ *Green Music*, John Lifton
- 1974 \_\_ *Internet TCP*
- 1974 \_\_ *Mark-8*
- 1974 \_\_ « *La Production de l'Espace* » (*The Production of Space*), Henri Lefebvre
- 1974 \_\_ « *A Protocol for Packet Network Interconnection* », Vinton Cerf & Robert Kahn
- 1974 \_\_ *Soundscapes of Canada*, World Soundscape Project
- 1974 \_\_ *Videotext*
- 1974 \_\_ *Watergate*



#### 1975

- 1975 \_\_ *5.1 Surround Sound*
- 1975 \_\_ *Altair 8800*
- 1975 \_\_ *APOLLO/SOYUZ*
- 1975 \_\_ « *Art - Action and Participation* », Frank Popper
- 1975 \_\_ *Art Com*
- 1975 \_\_ *The CrackleBox*, Michel Waisvisz
- 1975 \_\_ *Cybernetic Sculptures*, Wen-Ying Tsai
- 1975 \_\_ *Douglas Hollis*
- 1975 \_\_ *Electric Music Theatre*, Michel Waisvisz
- 1975 \_\_ *Experiment with loudspeaker phase displacement*, Jim Horton
- 1975 \_\_ *An Instructional Game for 1 to many musicians*, Click Nilson
- 1975 \_\_ *New Media 1*, Fred Forest
- 1975 \_\_ *The Performing Arts and the Future of Television*, Mark Schubin
- 1975 \_\_ *Pneumatic dispatch*, Jacques Lacan
- 1975 \_\_ *Scanners*, Keith Sonnier
- 1975 \_\_ *Virtual acoustic-space system*, Ron William



#### 1976

- 1976 \_\_ *Apple I*
- 1976 \_\_ *Children and Communication*, Robert Whitman, E.A.T
- 1976 \_\_ *Crackle Family*, Michel Waisvisz
- 1976 \_\_ *The Crackle Synthesizer (1976 - 1983)*, Michel Waisvisz
- 1976 \_\_ *Collective Actions Group*, Andrei Monastyrsky, Nikita Alexeev, Georgii Kizevalter, Nikolai Panitkov, Igor Makarevich, Elena Elagina, Sergei Romashko, Sabine Haensgen

- 1976 \_\_ « *L'Échange Symbolique et la Mort* » (*Symbolic Exchange and Death*), Jean Baudrillard
- 1976 \_\_ *Faraway Wind Organ* (1976-1984), Alan Lamb
- 1976 \_\_ *Homo-Parleur*, GMEM Marseille
- 1976 \_\_ *Kirribilli Wharf*, Bill Fontana
- 1976 \_\_ « *Network Sampling some First Steps* », Mark S. Granovetter
- 1976 \_\_ *Seven Thoughts*, Douglas Davis
- 1976 \_\_ *Two Cities, Flesh, a Text, and the Devil*, Douglas Davis



## 1977

- 1977 \_\_ *Apple II*
- 1977 \_\_ « *Écoute* » (*Listening*), Roland Barthes
- 1977 \_\_ **First networked concert performance**, Jim Horton, Rich Gold, Mills College
- 1977 \_\_ **Documenta 6 - Telecast**
- 1977 \_\_ « *Dromology* » (*Speed & Politics: An Essay on Dromology*), Paul Virilio
- 1977 \_\_ *Four Places Two Figures One Ghost*, Whitney Museum, Douglas Davis
- 1977 \_\_ *Golden Record, Murmurs of the Earth*, Carl Sagan
- 1977 \_\_ *The Last 9 Minutes*, Douglas Davis
- 1977 \_\_ **PALS/Action At A Distance**, Blue Gene Tyranny
- 1977 \_\_ **Radio Net**, Max Neuhaus
- 1977 \_\_ **Satellite Arts Project - A Space With No Geographical Boundaries**, Kit Galloway & Sherrie Rabinowitz
- 1977 \_\_ *Skydrift*, David Dunn
- 1977 \_\_ *Tuchan, village N° 11350*, Luc Ferrari
- 1977 \_\_ **Two-Way Demo - Phase II – Send/Receive Satellite Network**, Liza Bear, Willoughby Sharp & Keith Sonnier, Carl Loeffler
- 1977 \_\_ **WorldPool**, Sharon Lovett, Fred Gaysek, Norman White, Judith Doyle, Willoughby Sharp



## 1978

- 1978 \_\_ *Ambient Music*, Brian Eno
- 1978 \_\_ *CommuniTree*
- 1978 \_\_ « **Computer Network Music - Network Instrument** », Chris Brown
- 1978 \_\_ **A Dip in the Lake** — Ten Quick Steps, Sixty-one Waltzes and Fifty-six Marches for Chicago and Vicinity, John Cage
- 1978 \_\_ *GPS, Global Positioning System*
- 1978 \_\_ **League of Automatic Music Composers**, John Bischoff, Jim Horton, Tim Perkis, David Behrman, Paul DeMarinis, Rich Gold, Donald Day (1978 – 1982)
- 1978 \_\_ *MUD (Multi-User Dungeon)*
- 1978 \_\_ **Multi interactive computer music** (A MICROCOMPUTER NETWORK BAND), Rich Gold, David Behrman, John Bischoff, Jim Horton, (League of Automatic Music Composers)
- 1978 \_\_ *Perfect Lives - Computer Illusions*, Robert Ashley
- 1978 \_\_ « *The Network Nation: Human Communication Via Computer* », Starr Roxanne Hiltz & Murray Turoff
- 1978 \_\_ **REAL TIME COMPUTER NETWORK MUSIC**, Rich Gold, David Behrman, John Bischoff, Jim Horton (League of Automatic Music Composers)
- 1978 \_\_ *SAT-TEL-COMP (Satellite-Telephone-Computer)*, Bill Bartlett
- 1978 \_\_ *Solo*, Joel Chadabe
- 1978 \_\_ *Soundwalk - Soundwalking*, Hildegard Westercamp, Vancouver Co-operative Radio
- 1978 \_\_ *Studio 123*, Groupe de Recherche de Musique Concrète
- 1978 \_\_ *The Syter system*, Groupe de Recherches Musicales
- 1978 \_\_ **Télématique / Telematics**



## 1979

- 1979 \_\_ *Ars Electronica*, Linz
- 1979 \_\_ *Interplay*
- 1979 \_\_ *IPSA (IP Sharp Associates)*
- 1979 \_\_ **KIMs' network**, Finnish Hall Berkeley
- 1979 \_\_ *Porte-Vue*, Keith Sonnier

- 1979 \_\_ « **The Post Card** », Jacques Derrida
- 1979 \_\_ *Radio Lorraine Cœur d'Acier*
- 1979 \_\_ **Sounds and the Shadows of Sounds**, Paul DeMarinis
- 1979 \_\_ *Travelon Gamelon*, Richard Lerman
- 1979 \_\_ *Usenet*
- 1979 \_\_ *Warc Report: Allocating the Airwaves*



## 1980

- 1980 \_\_ *Artex*, Robert Adrian X
- 1980 \_\_ **The Conference on Artist's use of Telecommunications**
- 1980 \_\_ *Hole in Space*, Kit Galloway and Sherrie Rabinowitz
- 1980 \_\_ **(Concert) League of Automatic Music Composers**
- 1980 \_\_ « *Mille Plateaux* » (*A Thousand Plateaus*), Gilles Deleuze & Félix Guattari
- 1980 \_\_ « *Music for Instruments and Computer Processed Sound* »
- 1980 \_\_ **Music for Sound Joined Rooms**, Maryanne Amacher
- 1980 \_\_ **Oscillating Steel Grids along the Cincinnati-Covington Suspension Bridge**, Bill Fontana
- 1980 \_\_ *Pacific Rim - Slow Scan*, Peacesat users group
- 1980 \_\_ *Quatre Phonographies de l'Eau*, François-Bernard Mâche
- 1980 \_\_ *Roaratorio. an Irish Circus on Finnegans Wake*, For Speaker, Irish Musicians and 62-track tape, John Cage
- 1980 \_\_ « *Science Meets the Muse In The Arts of the Future* »
- 1980 \_\_ *Sferics*, Alvin Lucier
- 1980 \_\_ *Telnet*
- 1980 \_\_ *Terminal Consciousness* (*Terminal Art, First International Artists' Computer Conferencing project, Bristol*), Roy Ascott



## 1981

- 1981 \_\_ *BitNet*
- 1981 \_\_ **Canadian Coastlines: Canonic Fractals for Musicians and Computer Band**, Larry Austin
- 1981 \_\_ *CSNET*
- 1981 \_\_ « *Computers Turn Artistic and the Artists Like It* »
- 1981 \_\_ *Double Entendre*, Douglas Davis
- 1981 \_\_ *First Symphony*, Glenn Branca
- 1981 \_\_ **Landscape Sculpture with Fog Horns**, Bill Fontana
- 1981 \_\_ *LexsSor*, Steve s'Soreff
- 1981 \_\_ *Listserv*
- 1981 \_\_ *Light Transition*, Kit Galloway & Sherrie Rabinowitz
- 1981 \_\_ *Maritime Rites*, Alvin Curran
- 1981 \_\_ **Negativland - Over the Edge - radio programme**
- 1981 \_\_ *Satellite Radio Poets*, John Giorno
- 1981 \_\_ « *Simulacres et Simulations* » (*Simulation and Simulacra*), Jean Baudrillard
- 1981 \_\_ **De Slungels** (The Gawks), Michel Waisvisz
- 1981 \_\_ **Slungels in the street**, Michel Waisvisz
- 1981 \_\_ *Teletel project*
- 1981 \_\_ **Underwater Music - Musique Subaquatique**, Michel Redolfi
- 1981 \_\_ *Vienna-Amsterdam FAX* (*Kunst-Microkunst-Macrokunst*)



## 1982

- 1982 \_\_ *Art-Com*, Kit Galloway & Sherrie Rabinowitz
- 1982 \_\_ « *Art Worlds* », Howard S. Becker
- 1982 \_\_ **BASICODE**
- 1982 \_\_ « *Cyberspace* », William Gibson
- 1982 \_\_ *Ensemblance*, Peter Child
- 1982 \_\_ *Four Wings (Planetary I Ching)*, Directed by Roy Ascott
- 1982 \_\_ **Killed in a Bar When He Was Only Three**, Nicolas Collins
- 1982 \_\_ *Hans Otto Koenig*
- 1982 \_\_ *Levittown - How we Communicate*, Tom Klinkowstein

- 1982 \_\_ « *L'importance des exercices d'écoute en tant que pratiques de subjectivation* », Michel Foucault
- 1982 \_\_ **Music Room / Faultless Jamming**, Paul DeMarinis
- 1982 \_\_ **Radical Radio/Wilderness Radio**, Robert Murray Schafer
- 1982 \_\_ **Radio Computing Services**
- 1982 \_\_ **Radio Polybucket**, Tetsuo Kogawa
- 1982 \_\_ **Rota-League**
- 1982 \_\_ **SCANNING**, DAX Group
- 1982 \_\_ **Sound Fountain**, Paul DeMarinis, David Behrman
- 1982 \_\_ **Speaker Swinging**, Gordon Monahan
- 1982 \_\_ **Stock-Exchange of the Sensational**, Fred Forest
- 1982 \_\_ **Telephone events**, Liam Gillick
- 1982 \_\_ **Telesky**, Eric Gidney
- 1982 \_\_ **Ubiqua**
- 1982 \_\_ **The World in 24 Hours**, Linz Ars Electronica (Frankfurt, Amsterdam, Wien, Pittsburgh, Toronto, San Francisco, Honolulu, Tokyo, Sydney, Istanbul, Florence), Robert AdrianX, Helmut Mark, Zelko Wiener, Karl Kubacek, Gerhard Taschler (Gruppe BLIX)



### 1983

- 1983 \_\_ « *Aesthetics of Communication Group* », Frank Popper
- 1983 \_\_ **Answering Machine « Site »**, Patrick Sumner
- 1983 \_\_ **BLIX**
- 1983 \_\_ **The Communicating Space**, Fred Forest
- 1983 \_\_ **Electrographics**
- 1983 \_\_ **Installation Contact**, Natan Karczmar
- 1983 \_\_ « *Manifeste pour une esthétique de la communication* », Fred Forest
- 1983 \_\_ **MIDI (Musical Instrument Digital Interface)**
- 1983 \_\_ **Night Satellite**, Jean Piché, Osamu Shoji, Martin Wesley-Smith
- 1983 \_\_ **Pleiddes Project**, David Cope
- 1983 \_\_ **La Plissure du Texte (A Planetary Fairy Tale)**, Roy Ascott and Robert Adrian X
- 1983 \_\_ **Radio Home Run**, Tetsuo Kogawa
- 1983 \_\_ **Sound disinformation**
- 1983 \_\_ **Sound Sculpture with a Series of Level Crossings**, Bill Fontana
- 1983 \_\_ **Synthetic Performer**, Barry Vercoe
- 1983 \_\_ **TCP/IP**
- 1983 \_\_ **Telephone Music**
- 1983 \_\_ **Wiencouver IV**, Robert Adrian and Hank Bull



### 1984

- 1984 \_\_ « *Art and Telematics - Towards a Network Consciousness* », Roy Ascott
- 1984 \_\_ **Les cailloux radiophoniques** (the radio stones), Fred Forest
- 1984 \_\_ **Cleveland FreeNet**
- 1984 \_\_ **Computer Music Association Concert Series**
- 1984 \_\_ **DNS**
- 1984 \_\_ **Electronic Café Network (Communication Access For Everybody)**, Kit Galloway and Sherrie Rabinowitz
- 1984 \_\_ **Electronically Yours**, Helmut Mark for BLIX
- 1984 \_\_ **Entfernte Zuge**, Bill Fontana
- 1984 \_\_ « *L'Espace Critique* », Paul Virilio
- 1984 \_\_ **Festwochen Kunstfunk Technology Exhibition**. DAX Group
- 1984 \_\_ **FidoNet**
- 1984 \_\_ « *Good Morning, Mr. Orwell* », Nam June Paik
- 1984 \_\_ « *GNU Manifesto* », Richard Stallman
- 1984 \_\_ **The Hands** (first version 1984 - 1989), Michel Waisvisz
- 1984 \_\_ **KunstFunk (Artradio)**, BLIX
- 1984 \_\_ **Learn how to watch television by listening to your radio**, Fred Forest
- 1984 \_\_ **Minitel**
- 1984 \_\_ **Particifax**

- 1984 \_\_ **A Piece for Peace**, Alvin Curran
- 1984 \_\_ *Un re in ascolto (A King Listens)*, Italo Calvino
- 1984 \_\_ *Vertiges*, Camille Philibert & Jacques Élie Chabert
- 1984 \_\_ *Ken Webster*
- 1984 \_\_ *The Well*
- 1984 \_\_ « **The Walkman Effect** », Shuhei Hosokawa



## 1985

- 1985 \_\_ *Internet*
- 1985 \_\_ **Caméra Sonore** (Sound Camera), Gwek Bure-Soh
- 1985 \_\_ **Devil's Music**, Nicolas Collins
- 1985 \_\_ *Electronic Visions II, Life-O-Mation*, DAX Group
- 1985 \_\_ *Free Software Foundation*
- 1985 \_\_ *Hearsay*, Norman White
- 1985 \_\_ *Les Immatériaux, Épreuves d'Écriture*, Centre Georges Pompidou, Paris
- 1985 \_\_ *Langue de Pierre (Stone Tongue)*, David Ryan & Jérôme Joy
- 1985 \_\_ « *Machines of the Visible* », Jean-Louis Comolli
- 1985 \_\_ *Maggy Harsch-Fischbach*
- 1985 \_\_ *Media Spaces*, Xerox PARC
- 1985 \_\_ **Metropolis Cologne**, Bill Fontana
- 1985 \_\_ *Netiquette*
- 1985 \_\_ *Netweaver*
- 1985 \_\_ *NSFNET*
- 1985 \_\_ *Organe et Fonction d'Alice au Pays des Merveilles*, Roy Ascott, *Les Immatériaux*, Centre Georges Pompidou, Paris
- 1985 \_\_ **Place Works**, Max Neuhaus
- 1985 \_\_ **Planetary Telephonic Sculpture**, Fred Forest
- 1985 \_\_ *Reabracadabra*, Eduardo Kac
- 1985 \_\_ **Sonart : l'image à distance par le son**
- 1985 \_\_ *SOUND = SPACE*, Rolf Gelhaar, *Les Immatériaux*, Centre Georges Pompidou, Paris
- 1985 \_\_ **Synthetic Rehearsal**, Barry Vercoe
- 1985 \_\_ « *T. A. Z. - The Temporary Autonomous Zone, Ontological Anarchy, Poetic Terrorism* », Hakim Bey
- 1985 \_\_ *The Ultimate Contact \*1*, SAREX, The DAX Group



## 1986

- 1986 \_\_ *Internet*
- 1986 \_\_ *Le bras de fer transatlantique*, Doug Back, Norman White & Carl Hamfeldt (w/ Mario Costa & Derrick de Kerkhove)
- 1986 \_\_ **Burning Man**
- 1986 \_\_ « *A conversation on music* » (Morton Feldman with Iannis Xenakis)
- 1986 \_\_ *Harbour Symphony*, Vancouver, Hildegard Westercamp
- 1986 \_\_ **The Heart of the Machine**, Ian Ferrier and Fortner Andersen, Dromostexte
- 1986 \_\_ *The Line of the Horizon*, Mit Mitropoulos
- 1986 \_\_ *MaxMSP*
- 1986 \_\_ **Network Muse**, Automatic Music Band Festival, The Lab San Francisco, The Hub, John Bischoff, Tim Perkis, Scott Gresham-Lancaster, Richard Zvonar, Phil Burk, Larry Polansky, Phil Stone, Chris Brown, Mark Trayle
- 1986 \_\_ *Planetary Network (Laboratorio Ubiqua, XLII Esposizione d'Arte La Biennale di Venezia)*, Roy Ascott, Don Foresta, Tom Sherman
- 1986 \_\_ *RC Robot*, Eduardo Kac
- 1986 \_\_ **Real Electronic Music**, Nicolas Collins
- 1986 \_\_ « *The Songlines* », Bruce Chatwin
- 1986 \_\_ *Sonic Mirror*, David Dunn
- 1986 \_\_ *Transatlantic Copy-Art/Performance*, Toni Calvet
- 1986 \_\_ *Undirected (1986/1996)*, Christophe Charles
- 1986 \_\_ **VNS, Very Nervous System**, David Rokeby

- 1986 \_ **The Wave Organ**, Peter Richards, George Gonzales



## 1987

- 1987 \_\_ *Blackstone Bicycle Works*, Dan Peterman
- 1987 \_\_ **Borrowing and Stealing**, The Hub, Phil Stone
- 1987 \_\_ *Conversation*, Eduardo Kac
- 1987 \_\_ « **Digital Art Exchange** » (DAX), Trudy Ludwig, Accent on Research
- 1987 \_\_ *Digital Body Exchange*. Directed by Roy Ascott
- 1987 \_\_ **Echoes From the Moon (Lunar Opera)**, Pauline Oliveros, Morgan Ohara, Andres Bosshard
- 1987 \_\_ **Synthetic Performer & Hyperinstruments**, Barry Vercoe
- 1987 \_\_ **The Hub**, NYC multisite concert (Clocktower / Experimental Media NYC - Nicolas Collins, Phill Niblock), John Bischoff, Tim Perkis, Mark Trayle / Chris Brown, Scot Gresham-Lancaster, Phil Stone (1985 – 1995)
- 1987 \_\_ **International Radio Syndicate**, Documenta 8 / Kassel 1987
- 1987 \_\_ *Fritz Malkhoff and Adolf Homes*
- 1987 \_\_ **MINIX**
- 1987 \_\_ « **Musica Telephonica** », Kyle Gann
- 1987 \_\_ *Ordinary Conversation / Dialogue Ordinaire*
- 1987 \_\_ *Orient Express*, Stephan Barron
- 1987 \_\_ *The Palais Ideal*, DAX Group
- 1987 \_\_ **RazioNalnik**, Entgrenzte Grenzen Graz, Josep Klammer, Seppo Gruendler, Gabor Pesser (Budapest), Lado Jaksa (Ljubljana), De Carli Claudio (Trento)
- 1987 \_\_ **Satellite Soundbridge Cologne/San Francisco**, Bill Fontana
- 1987 \_\_ **Simple Degradation**, The Hub, Mark Trayle
- 1987 \_\_ *Snowball Project*, DAX Group
- 1987 \_\_ **Sound Sculptures through the Golden Gate**, Bill Fontana
- 1987 \_\_ **Thaon / New York**, Stephan Barron
- 1987 \_\_ *Tucker-Boatwright Festival: The Tri-city Interaction, and the Magical Dax 3*, DAX Group
- 1987 \_\_ **Vague Notions of Lost Textures**, The Hub, Scott Graham-Lancaster
- 1987 \_\_ *Video Crossing-Magical Dax*, DAX Group
- 1987 \_\_ « **The Virtual Community : Homesteading on the Electronic Frontier** », Howard Rheingold
- 1987 \_\_ **Wasserkorso, Waterworks** (1989), Alvin Curran
- 1987 \_\_ « *What is a Fax art installation ?* », György Galántai
- 1987 \_\_ **World Broadcast Premier**, Jim Horton, Sam Ashley and Ben Azarm
- 1987 \_\_ *Yamaha Disklavier*
- 1987 \_\_ **Zero Chat Chat**: John Bischoff, Tim Perkis, Mark Trayle



## 1988

- 1988 \_\_ *Internet*
- 1988 \_\_ **100 of the World's Most Beautiful Melodies**, Nicolas Collins
- 1988 \_\_ **Acoustical Views**, Bill Fontana
- 1988 \_\_ *Berlin / Pékin*, Stephan Barron
- 1988 \_\_ *Big Sky Telegraph*, Dave Hugues
- 1988 \_\_ *Caged Beast*, Erik Samakh
- 1988 \_\_ **Crystal Psalms**, Alvin Curran
- 1988 \_\_ « **Design and Immateriality: What of It in a Post Industrial Society?** », Abraham Moles
- 1988 \_\_ *Electronic Café International*, Kit Galloway & Sherrie Rabinowitz
- 1988 \_\_ *Une Excursion de l'Esprit: une Voyage sur la Mer Telematique, Mind Excursion-Travelling Through the Telematic Sea: An Interactive Art Event*, DAX Group
- 1988 \_\_ « **Extropianism** »
- 1988 \_\_ **Global Business Network**
- 1988 \_\_ *Intercities: Sao Paulo-Pittsburgh*, DAX Group
- 1988 \_\_ **IRC - Internet Relay Chat**
- 1988 \_\_ « **La Machine de Vision** » (*The Vision Machine*), Paul Virilio
- 1988 \_\_ **Making the Invisible Visible**. Directed by Roy Ascott, Paul Thomas (Perth), Eric Gidney (Sydney)
- 1988 \_\_ *Matrix*, Jeff Mann, InterAccess
- 1988 \_\_ **Mountains, Rivers, and Glaciers**, DAX Group

- 1988 \_\_ **The Number Readers**, Joel Ryan
- 1988 \_\_ **Satellite Symphony: Beethoven and One Woman's Dream**, Francoise Legrand
- 1988 \_\_ « *The Sources of Innovation* », Eric Von Hippel
- 1988 \_\_ **Les Transinterractifs**, Canadian Cultural Centre Paris, Ontario Science Centre Toronto, Derrick De Kerckhove
- 1988 \_\_ **Up-down-v?**, Jim Horton
- 1988 \_\_ « *When Old Technologies Were New - Thinking About Electric Communication in the Late Nineteenth Century* », Carolyn Marvin
- 1988 \_\_ **Wrap Around The World**, Nam June Paik



## 1989

- 1989 \_\_ **Internet**
- 1989 \_\_ **Aspects of Gaia: digital pathways across the whole earth** . Roy Ascott with Mathias Fuchs (communications), Peter Appleton (sound), Miles Visman & Robert Pepperell (programming)
- 1989 \_\_ **Biosphere**
- 1989 \_\_ **City Portraits**, Karen O'Rourke, Art-Réseaux / Connect
- 1989 \_\_ « *Das Gesamtdatenwerk* », Roy Ascott
- 1989 \_\_ **The Hands II (1989 - 2000)**, Michel Waisvisz
- 1989 \_\_ **(He)ARTbeats**, Ars Electronica Linz, ORF Kunstradio Vienna, Wolfgang Temmel
- 1989 \_\_ « *Heterogenesis* », Félix Guattari
- 1989 \_\_ **HubRenga**, The Hub, Ramon Sender
- 1989 \_\_ **Kits Beach Soundwalk**, Hildegard Westercamp
- 1989 \_\_ **McCall.DEM**, Scot Gresham-Lancaster, Bill Thibault
- 1989 \_\_ **Natural VLF Radio Phenomena**, Stephen P. McGreevy
- 1989 \_\_ **Parsifal 1882-38,969,364,735**, Rodney Graham
- 1989 \_\_ **Photophonie I**, Luc Ferrari
- 1989 \_\_ **RadioZeit**, Richard Kriesche
- 1989 \_\_ **Regime Change Ballad**, Fred Forest
- 1989 \_\_ **Resonant Landscape**, Francis White
- 1989 \_\_ **Simulplay 1, That Place / Simulplay 2**, ORF Kunstradio Vienna, Australian Broadcasting Cooperation ABC, Ross Bolleter, Jim Denley (Perth)
- 1989 \_\_ **A Sound Map of the Hudson River**, Annea Lockwood
- 1989 \_\_ **Telebration**
- 1989 \_\_ **Telecollaboration US West**
- 1989 \_\_ **Tele-Poetry**
- 1989 \_\_ **Three-City Link**, Eduardo Kac
- 1989 \_\_ **Traits**, Stephan Barron
- 1989 \_\_ **World Wide Web (The World Wide Web)**

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## 1990

- 1990 \_\_ **Internet**
- 1990 \_\_ **Archie FTP**
- 1990 \_\_ **Auditory Scene**, A.S. Bregman
- 1990 \_\_ **DrahtVenusKörper** (Wire Venus Body), Vienna, Mia Zabelka
- 1990 \_\_ **Earth Signals**, Paul Sermon
- 1990 \_\_ **Electronic Frontier Foundation**
- 1990 \_\_ **The Globe Show**, Paul Sermon
- 1990 \_\_ **Goree/Almadies Memorial Celebration DAX Dakar d'Accord: Goree Song**, DAX Group
- 1990 \_\_ **Landscape Soundings**, Bill Fontana
- 1990 \_\_ **The Minnesota Permanent Forest Terrain Instrument**, Leif Brush
- 1990 \_\_ **MOO (MUD object oriented)**

- 1990 \_\_ *NetJam (MIDI collaborative network)*
- 1990 \_\_ *Oktophonie, Karlheinz Stockhausen*
- 1990 \_\_ « *Toward Polymorphous Radio* », Tetsuo Kogawa
- 1990 \_\_ *Up-down-v17*, Jim Horton, Duet for Two Continents, ATA Gallery SF
- 1990 \_\_ *WWW server*



## 1991

- 1991 \_\_ *À Perte d'Entendre*, Stephan Barron
- 1991 \_\_ *ArtSat*, Richard Kriesche
- 1991 \_\_ « *Art Works as Organic Communications Systems* », Anna Couey
- 1991 \_\_ *Autoportrait*, Stephan Barron
- 1991 \_\_ *Big Father*, Simon Penny
- 1991 \_\_ *Connect*, Gilbertto Prado
- 1991 \_\_ *DARTnet*
- 1991 \_\_ *The Geometry of Silence*
- 1991 \_\_ *The Glass Hand*, The Hub, John Bischoff
- 1991 \_\_ *The Industrial Revolution*, a project by John Bischoff, Ed Osborn, Krystyna Bobrowski, Joel Davel
- 1991 \_\_ *Linux*
- 1991 \_\_ *Multi-City Collaborative Tele-Music Event*, Electronic Café, Santa Monica / Houston / San Diego / New-York / San Francisco / Kingston, Pauline Oliveros
- 1991 \_\_ *The Museum inside the Telephone Network*, NTT ICC Tokyo
- 1991 \_\_ *NC92 NETWORKER DATABANK CONGRESS*, University of Iowa Libraries
- 1991 \_\_ *Poets at the Café Byron*, Andrew Garton
- 1991 \_\_ *Pressures of the unspeakable : a nervous system for the City of Sydney*, Gregory Whitehead
- 1991 \_\_ *Series : Center for Experiments in Art, Information and Technology (CEAIT)* / California Institute of the Arts, Morton Subotnik, David Behrman, Colon Nancarrow (Mexico), Tod Machover, David Rosenboom, Mark Trayle, Dean Jacobs, STEIM (Amsterdam)
- 1991 \_\_ *SoundCulture'91*
- 1991 \_\_ *Sound Walks, Audio Walks*, Janet Cardiff
- 1991 \_\_ *Space Bodies*, Mia Zabelka
- 1991 \_\_ *Teamworkstation/Clearboard NTT (1991-1994)*
- 1991 \_\_ *Telefonia*, Andres Bosshard, Ron Kuivila
- 1991 \_\_ *Telescanfax*, Gilbertto Prado
- 1991 \_\_ *Texts, Bombs and Videotape. Directed by Roy Ascott*
- 1991 \_\_ *Texts Bombs and Videotape*, Paul Sermon
- 1991 \_\_ *The Thing*, Wolfgang Staehle
- 1991 \_\_ *Transcontinental Jam*
- 1991 \_\_ *Les Virtualistes*
- 1991 \_\_ « *War in the Age of Intelligent Machines* », Manuel de Landa
- 1991 \_\_ *WaxLips*, The Hub, Tim Perkis
- 1991 \_\_ *WaxWeb*, David Blair
- 1991 \_\_ *WWW*
- 1991 \_\_ *WWW server*



## 1992

- 1992 \_\_ *Internet*
- 1992 \_\_ *Le Banquet Télématique*, Michel Suret-Canale & Marie Dominique Wicke
- 1992 \_\_ *BioMuse*, Benjamin Knapp, Hugh Lusted
- 1992 \_\_ *Brunch in California - Dinner in Nice*, Teleconcert Santa Monica/Nice, Electronic Café, Morton Subotnik, David Rosenboom, Terry Riley, Michel Redolfi, Festival Manca Nice
- 1992 \_\_ *Chip-Radio - A simultaneous telematic concert by Andreas Bosshard, Seppo Gründler, Horst Hörtner, Gerfried Stocker, Mia Zabelka*
- 1992 \_\_ *Chip-Radio - Artists as Experts*
- 1992 \_\_ *CUSeeMe*
- 1992 \_\_ *CYPRES*, Marseilles
- 1992 \_\_ « *Digerati* »

- 1992 \_\_ **Droit de Cité**, Radio-Canada, Mario Gauthier, Claire Bourque
- 1992 \_\_ **Earth Tones I**, Bill Fontana, Oliver Ranch Northern California
- 1992 \_\_ « *The Economy of Ideas - Selling Wine Without Bottles on the Global Net* », John Perry Barlow
- 1992 \_\_ **Electronic Café International - Deaf Poetry in the image space together**
- 1992 \_\_ **The Email Centre**, first nongovernmental organization bulletin board service in the Philippines, Roberto Verzola
- 1992 \_\_ **Générateur Poétique**, Olivier Auber
- 1992 \_\_ **Global Brain Music** (Freiburg / Santa Monica), Electronic Café, Mark Coniglio
- 1992 \_\_ **InterActor**, Mark Coniglio, Morton Subotnik
- 1992 \_\_ **InterCommunication N°0**, NTT ICC Tokyo
- 1992 \_\_ **Is Anyone There?**, Stephen Wilson, IGCHI, Monterrey, 1992 and SIGGRAPH, Chicago, 1992
- 1992 \_\_ **Moone**, Gilberto Prado
- 1992 \_\_ **A New Work**, Philip Perkins, Scott Fraser, Bonnie Barnett
- 1992 \_\_ **Ornitorrinco on the Moon**, Eduardo Kac, Siggraph'92
- 1992 \_\_ **Un Passage Parisien**, Jérôme Joy
- 1992 \_\_ **Puente Telefonico - Sound Poles**, ORF Kunstradio Vienna / Expo'92 Séville, Horst Hoertner, Gerfried Stocker, Seppo Gruendler, Josef Klammer
- 1992 \_\_ **Rave Parties**
- 1992 \_\_ **Santa Monica – Paris Murmuring**, Electronic Café, Bonnie Barnett
- 1992 \_\_ **Scanner**, Robin Rimbaud
- 1992 \_\_ **Soundscape composition**, Barry Truax
- 1992 \_\_ **Telematic Dreaming**, Paul Sermon
- 1992 \_\_ **Telenoia: a global networking project for the eight day of the week**. Directed by Roy Ascott
- 1992 \_\_ **The Telephonic Faucet**, Fred Forest
- 1992 \_\_ **Truth in Clouds**, Nicolas Collins
- 1992 \_\_ **Undirected** (1992/2002), Christophe Charles
- 1992 \_\_ **Unsilent Night**, Phil Kline
- 1992 \_\_ **Upper Atmospheric Research Collaboratory**
- 1992 \_\_ **Vertical Water**, Bill Fontana
- 1992 \_\_ **Wheelies**, The Hub, Chris Brown
- 1992 \_\_ **ZERO - The Art of Being Everywhere**, Robert Adrian X



## 1993

- 1993 \_\_ **Internet**
- 1993 \_\_ **? (distributed trio)**
- 1993 \_\_ « *Auditory Display: Sonification, Audification, and Auditory Interfaces* », Gregory Kramer
- 1993 \_\_ **Babble**, Disembodied Art Gallery
- 1993 \_\_ **Deposition Yokohama**, Christophe Charles
- 1993 \_\_ **Disklavier Jazz Piano Duet**, Electronic Café
- 1993 \_\_ **"Distributed Music: A Foray into Networked Performance"**, International Network Music Festival, Electronic Cafe, Santa Monica, CA
- 1993 \_\_ **Duets**, Frank Sinatra
- 1993 \_\_ **ECI Jerusalem**, Electronic Café, Steve Hornstein
- 1993 \_\_ **ECI Rio de Janeiro/Nice/Santa Monica**, CCCB Cafe Magneto Centreo de Midia, Electronic Café, Philip Glass, Michel Redolfi, Terry Riley
- 1993 \_\_ **FIERCE/InterRave**, Andrew Garton
- 1993 \_\_ **Hamnet**, The Hamnet Players
- 1993 \_\_ **Helikopter - Streichquartett**, Karlheinz Stockhausen
- 1993 \_\_ **Internet Radio**, Scot Gresham-Lancaster, CSU Hayward
- 1993 \_\_ **Internet Underground Music Archive**
- 1993 \_\_ **La Lunga Notte** - Halaila Ha'aroch / Leilun Taul, Roberto Paci Dalò, Giardini Pensili
- 1993 \_\_ **Les Miradors de la Paix** (The Watchtowers of Peace), Fred Forest
- 1993 \_\_ **One-man Band**, Thomas Dolby, Electronic Café
- 1993 \_\_ **MétaFort**
- 1993 \_\_ **Neural.it**, Alessandro Ludivico
- 1993 \_\_ **Next Five Minutes**, Amsterdam
- 1993 \_\_ **Pan-Demoniam**, Electronic Café Santa Monica/NYC/PAN Network, Richard Zvonar, Bonnie

- Barnett, Ricard Bugg, Simon Higgs, Alex Noyes, Tom Hamillton, Phill Niblock
- 1993 \_\_ *Paris-Vancouver Slow-Scan*, Gwek Bure-Soh
- 1993 \_\_ **Realtime**, Vienna (Innsbruck, Linz, Graz), Isabella Bordoni, Andres Bosshard, Kurt Hentschläger, Horst Hörtnert, Michael Kreihsl, Roberto Paci Dalò, Waldemar Rogojsza, Martin Schitter, Hans Soukup, Gerfried Stocker, Tamas Ungvary, Mia Zabelka
- 1993 \_\_ **Realtime - Problems of Documentation**, R. Froeis, Heidi Grundmann
- 1993 \_\_ *The Room of Desires*, Pavel Smetana
- 1993 \_\_ **SITO**
- 1993 \_\_ **Soundbridge Köln - Kyoto**, Bill Fontana
- 1993 \_\_ *SoundCulture'93*
- 1993 \_\_ **Telay, TELEphone - DeLAY** - concert with two satellites between Sydney and New York, european month of culture in Graz, Teleskulptur III, Kulturdata, Josef Klammer
- 1993 \_\_ *Telematic Seance*, Paul Sermon, MUUI Festival Finland
- 1993 \_\_ **Telematic Vision**, Paul Sermon
- 1993 \_\_ **Telepresence Art**, Eduardo Kac
- 1993 \_\_ « *Time Out* », William Gibson
- 1993 \_\_ *Trojan room coffee pot*, The first webcam



## 1994

- 1994 \_\_ **Internet**
- 1994 \_\_ **A.A.R.T - Radio**, Garrett Phelan
- 1994 \_\_ *Art.Net*
- 1994 \_\_ « **The Aural Walk** », Iain Chambers
- 1994 \_\_ **Before and After Ambient**, Santa Monica, The Kitchen NYC, London, telematic concert, Electronic Café
- 1994 \_\_ **Black Harlequin**, Andrew Garton
- 1994 \_\_ *Le Bleu du Ciel*, Stephan Barron
- 1994 \_\_ *By-Pass*
- 1994 \_\_ **CAiiA-STAR**
- 1994 \_\_ **CIRM**
- 1994 \_\_ « **Cyberdemocracy - digital democracy, e-democracy, teledemocracy** »
- 1994 \_\_ "Electronic Café" **Santa Monica / Nice**, Festival Manca
- 1994 \_\_ *The File Room*, Antoni Muntadas
- 1994 \_\_ « *Free Music Philosophy - The Future of Music* », Ram Samudrala
- 1994 \_\_ **Gasflow**, directed by Roy ASCOTT
- 1994 \_\_ « *The Geometry of Silence* », Heidi Grundmann
- 1994 \_\_ « *The Hacker Crackdown: Law And Disorder on the Electronic Frontier* », Bruce Sterling
- 1994 \_\_ « *In the Noise of the Signals* », Richard Kriesche
- 1994 \_\_ « *L'intelligence collective. Pour une anthropologie du cyberspace* » (*Collective Intelligence: Mankind's Emerging World in Cyberspace*), Pierre Lévy
- 1994 \_\_ **Intercom Ontario (1994-98)**, Paul Hoffert
- 1994 \_\_ **ISDN**, Future Sound of London (FSOL)
- 1994 \_\_ **King's Cross Phone In**, Heath Bunting
- 1994 \_\_ **Light on a Wall**, Scott Fraser, Philip Perkins, Doug Carroll, Tim Perkis
- 1994 \_\_ **Mreza Netz**, live telephone concert (Belgrad, Ljubljana, Pula, Sarajevo, Skopje, Vienna) (Barbara Doser, Birgit Flos, Hofstetter Kurt, Barbara Holub, Snezana Kostic-Uveric, Rocko Marjanovic, Nicole Marjanovic-Zoubek, Norbert Math, Milos Uveric-Kostic)
- 1994 \_\_ **Openfield**, Tim Perkis
- 1994 \_\_ « **Radio Space** », Douglas Kahn
- 1994 \_\_ **RNIS/ISDN concerts – Sensorband**
- 1994 \_\_ *Rocket Network / ResRocket*
- 1994 \_\_ **Seven Gates**, Mark Trayle
- 1994 \_\_ **Sound Island**, Bill Fontana
- 1994 \_\_ « **The Soundscape of Radio** », Hildegard Westercamp
- 1994 \_\_ **State of Transition**, telematic hyper radio event, (Graz, V2 Rotterdam), Andrea Sodomka, Martin Breindl, X-Space, Gerfried Stocker, Martin Schitter, Horst Hörtnert, Norbert Math, Joel Ryan (STEIM)

- 1994 \_\_ « *La Technique et le Temps* » (*Technics and Time*), Bernard Stiegler
- 1994 \_\_ **Teknofemme**, Cyberlab7
- 1994 \_\_ **Terrain Reader**, Scot Gresham-Lancaster
- 1994 \_\_ **Three Cities / Multimedia Tele-Concert**, CalArts, Electronic Café , Morton Subotnick, David Rosenboom, Steina Vasulka, Leo Smith, J.B. Floyd



## 1995

- 1995 \_\_ *Internet*
- 1995 \_\_ **3 City Teleconcert**, ECI Santa Monica / ECI The Kitchen NYC / Cyber X Cafe Minneapolis, Brian Haggerty
- 1995 \_\_ **Artel**
- 1995 \_\_ *The Asphaltophone - Road Melodies*, Steen Krarup Jensen and Jakob Freud-Magnus
- 1995 \_\_ « *Chaosmos: An Ethico-Aesthetic Paradigm* », Félix Guattari
- 1995 \_\_ « *CyberDemocracy: Internet and the Public Sphere* », Mark Poster
- 1995 \_\_ *Devil's Music Revisited*, Nicolas Collins
- 1995 \_\_ **Electronic Café International Network**
- 1995 \_\_ **Fantastic Prayers**, Constance DeJong, Tony Oursler, Stephen Vitiello
- 1995 \_\_ **George Coates Performance Works (GCPW)**, The Nowhere Band
- 1995 \_\_ **Habitation**, Jérôme Joy
- 1995 \_\_ **Horizontal Radio**, ORF Kunstradio Vienna
- 1995 \_\_ **Information Transcript / MIT <-> Lyon**, Piotr Kowalski
- 1995 \_\_ *I/O/D 2*, Matthew Fuller, Colin Green and Simon Pope
- 1995 \_\_ *Le Jour et La Nuit (Day & Night)*, Stephan Barron
- 1995 \_\_ *LiveCd or Live Distros*
- 1995 \_\_ **Kippure**, Garrett Phelan
- 1995 \_\_ *Laminated Object Manufacturing (LOM)*
- 1995 \_\_ *MP3, Fraunhofer IIS, AT&T-Bell Labs, Thomson-Brandt and CCETT*
- 1995 \_\_ *The Museum Inside the Network*, NTT ICC Tokyo
- 1995 \_\_ « *Netizens - The Netizens and Community Networks* », Michael F. Hauben
- 1995 \_\_ **Netochka Nezvanova**
- 1995 \_\_ **Network concert Earth to the Unknown Power**, Le Thoronet (F) / The Kitchen (NYC), David Hykes, Michel Redolfi, John Maxwell Hobbs (Cinema Volta), Festival Manca
- 1995 \_\_ **NOOD**, Ulf Knudsen and Per Platou
- 1995 \_\_ *Orthodoxy*, Bill Talsma
- 1995 \_\_ **Piano-as image media**, Toshiro Iwai
- 1995 \_\_ « *Public Access to the Internet* » - *Public Access Issues: An Introduction*, James Keller
- 1995 \_\_ **Public Organ**, Carla Scaletti
- 1995 \_\_ *Real Audio*
- 1995 \_\_ **The Second Week of January**, composed by: David Tudor, Takehisa Kosugi, John D.S. Adams, and D'Arcy Philip Gray
- 1995 \_\_ **Singing Bridges**, Jodi Rose
- 1995 \_\_ *STIMBOD - Split Body - Voltage In/Voltage Out*, Stelarc
- 1995 \_\_ **Tele-concert Atau Tanaka & Les Virtualistes**
- 1995 \_\_ *Telegarden*, Ken Goldberg and Joseph Santarromana
- 1995 \_\_ *Telephones*, Christian Marclay
- 1995 \_\_ **Transatlantic TeleKonzert**, Copenhagen / ECI Santa Monica, Trio Dørge - Irene Becker - Morten Carlsen (Copenhagen), Adam Rudolf - Hammet Drake - Bryan Pezone (Santa Monica)
- 1995 \_\_ *Underground Overlays from the Cistern Chapel*, Stuart Dempster
- 1995 \_\_ *WAWRWT*, Gilberto Prado
- 1995 \_\_ **Web Phases**, John Maxwell Hobbs (Cinema Volta)
- 1995 \_\_ *Wiki technology*



## 1996

- 1996 \_\_ *Internet*
- 1996 \_\_ **24-Hour Internet Project**, John Hopkins
- 1996 \_\_ **24 Hours in Cyberspace**
- 1996 \_\_ *The Archeology of Stones*, Phil Dadson, SoundCulture'96

- 1996 \_\_ « *The Artist as Ethnographer* », Hal Foster
- 1996 \_\_ *Backspace*
- 1996 \_\_ **Cassandra Project - Navigating Global Cultures**, New York University, John Gilbert, Dinu Ghezso
- 1996 \_\_ **Collective JukeBox**, The Thing, Jérôme Joy
- 1996 \_\_ *Contact*, Stephan Barron
- 1996 \_\_ **The Counting Game**, Kathy Kennedy, SoundCulture'96
- 1996 \_\_ « *Cybermonde, la politique du pire* » (*Cyberworld: Politics of the Very Worst*), Paul Virilio
- 1996 \_\_ *Cyber Soirée*, Paul Hoffert
- 1996 \_\_ *Degree Confluence Project*
- 1996 \_\_ **Distributed Musical Rehearsal Environment**, Dimitri Konstantas
- 1996 \_\_ **EIS Expanded Instrument System**, ISDN multisite concert, Pauline Oliveros
- 1996 \_\_ **Electronic Café International-HQ**
- 1996 \_\_ *FutureSonic Festival*, Manchester
- 1996 \_\_ **Hidden Music of the Golden Gate Bridge**, Wang Po Shu, SoundCulture'96
- 1996 \_\_ **Holophon**, Holospat, GMEM Marseille
- 1996 \_\_ « *Hypermedia Freedom* », Richard Barbroom
- 1996 \_\_ *Internet2 - or UCAID*
- 1996 \_\_ *Internet Archive*
- 1996 \_\_ *irational.org*, Heath Bunting
- 1996 \_\_ *JenniCam*, Jennifer Kaye Ringley
- 1996 \_\_ **Liquid City Parkbad**, Michel Redolfi, Ars Electronica Linz « Memesis », ORF Kunstradio Vienna, CIRM Nice
- 1996 \_\_ **The Museum of the Future**, Ian Pollack, Janet Silk, SoundCulture'96
- 1996 \_\_ **Netfield**, Tim Perkis, Philip Perkins, Bill Thibault, SoundCulture'96
- 1996 \_\_ **Ozone**, Stephan Barron, Adelaïde Festival
- 1996 \_\_ *Ping Body*, Stelarc
- 1996 \_\_ *Rara Avis*, Eduardo Kac
- 1996 \_\_ **Rivers and Bridges** - Backward Translation as a Creative Strategy, Jocelyn Robert, Janos Sugar, Roberto Paci Dalò, world-wide project for radio and all communications media (Internet, BBS, Telephone, Fax, etc.), ORF Kunstradio Vienna / Linz, Ars Acustica International, Ars Electronica
- 1996 \_\_ *Small Web or Belly Web*, Michel Waisvisz
- 1996 \_\_ **SoundCulture'96**
- 1996 \_\_ *Soundwalk*, Landa Townsend, SoundCulture'96
- 1996 \_\_ *SuperCollider*
- 1996 \_\_ *Syndicate*
- 1996 \_\_ *Technologies To The People®*, Daniel García Andújar
- 1996 \_\_ **Tele-concert Sensor Band/Les Virtualistes**
- 1996 \_\_ **Telematic Encounter**, Paul Sermon
- 1996 \_\_ **Three Sites / Multiple Views** : NYC / Santa Monica / Santa Fe, Electronic Café, Morton Subotnick, Mark Coniglio, Dawn Stoppiello/Troika Ranch, Joan La Barbara, Carl Stone, Michael Fink
- 1996 \_\_ *Türen der Wahrnehmung-Doors of Perception*, ORF Kunstradio, Ars Electronica, Hlidegard Westercamp
- 1996 \_\_ **Uirapuru**, Eduardo Kac
- 1996 \_\_ **Vocales**, Jérôme Joy
- 1996 \_\_ « **Waiting for the nomads. Mobile telephony and social change** », Chantal de Gournay

## 1997

- 1997 \_\_ ?
- 1997 \_\_ *491.org* (194.98.174.16)
- 1997 \_\_ « **Acoustic Cyberspace** », Erik Davis
- 1997 \_\_ **Algorithmic Music Stream**, Maurice Methot, Hector LaPlante, Brown University
- 1997 \_\_ **Art's Birthday**
- 1997 \_\_ **Audible Distance**, Akitsugu Maebayashi
- 1997 \_\_ *Biennale' 97*, NTT ICC Tokyo
- 1997 \_\_ *Bitplane (AER)*, product bureau
- 1997 \_\_ **Cathedral Project**, William Duckworth & Nora Farrell

- 1997 \_\_ « *Connected Intelligence : The Arrival of the Web Society* », Derrick de Kerkhove
- 1997 \_\_ **Disclavier - a virtual instrument for collaboration**, Akitsugu Maebayashi, NTT ICC Tokyo
- 1997 \_\_ **Distributed musical rehearsals**
- 1997 \_\_ « *Elements for an aesthetics of technological art* », Marcel Frémiot, MIM, Laboratoire Musique et Informatique de Marseille
- 1997 \_\_ *The Encounter*
- 1997 \_\_ **FMOL F@ust Music On Line**, Sergi Jorda
- 1997 \_\_ **Global Visual Music Project**, Vibeke Sorensen, Miller Puckette, Rand Steiger, Mark Danks, George Lewis, Stephen Schick
- 1997 \_\_ **Global Visual Music Project**, Millet Puckette, Vikebe Sorensen, Rand Steiger
- 1997 \_\_ **Golden Boomerang Machine**
- 1997 \_\_ *GRM Tools, Groupe de Recherches Musicales*
- 1997 \_\_ *Hybrid Workspace, Pit Schultz and Geert Lovink, Documenta X, Kassel*
- 1997 \_\_ **Hybrid Workspace - FUTUREScan**, ORF Kunstradio, Documenta X
- 1997 \_\_ *Imag/ine, STEIM*
- 1997 \_\_ *In Touch, Ishii Hiroshi, MIT Tangible Media Group*
- 1997 \_\_ **Iriomote**, SoundExplorer, Yoshihiro Kawasaki
- 1997 \_\_ **Lemma 1 (Global Visual Music Project)**, improvisatory jam session between Greece and USA, USD San Diego, USC South California
- 1997 \_\_ **Living with Electricity**, Paul DeMarinis
- 1997 \_\_ **Local 411**, Ian Pollock, Janet Silk
- 1997 \_\_ *Makrolab, Marko Peljhan*
- 1997 \_\_ **Malaise | Unsound | SASS** (short attention span syndrome), Andrew Garton, Kim Bound and Dale Nason, Kunstradio, Recycling the Future, Ars Electronica
- 1997 \_\_ *Mirage City - Another Utopia, NTT ICC Tokyo*
- 1997 \_\_ *The Multi-Cultural Recycler, Amy Alexander*
- 1997 \_\_ **Natural Radio**, Tetsuo Kogawa
- 1997 \_\_ **Networked concert, Grottes de Saint-Cézaire**
- 1997 \_\_ **OMA: Ausländer und Staatenlose** (Grandmother: Foreigners and Stateless Persons), Andrew Garton
- 1997 \_\_ *OSC Open Sound Control*
- 1997 \_\_ *Oudeis, Kis Productions, Gernot Lechner, Monika Wunderer, Santiago Pereson*
- 1997 \_\_ *Perfectly Strange, Jan Kopp, NTT ICC Tokyo*
- 1997 \_\_ **Points of Presence**, Institute for Studies in the Arts (ISA) at Arizona State University (ASU) / Center for Contemporary Music (CCM) at Mills College in Oakland, The Hub
- 1997 \_\_ *Pure Data*
- 1997 \_\_ **Recycling the Future**, ORF Kunstradio Vienna (Avatar Québec, Toy Satellite Melbourne, Berliner Theorie Berlin, Radio Fro Linz,, Radio Laba Arles & Rimini), Geert Lovink, Pit Schulz
- 1997 \_\_ **RemotePiano Installation**, Ryuichi Sakamoto + Toshio Iwai + Koichiro Eto, NTT ICC Tokyo
- 1997 \_\_ **RGB**, synchronised music project between Berlin and Graz, ORF Kunstradio and Jazz Radio 101,9 Berlin; conducted and synchronised via TV-signal, Musikprotokoll 97, Steirischer Herbst (styrian autumn) 97, Josef Klammer
- 1997 \_\_ *Satellite TV Workshop, NTT ICC Tokyo*
- 1997 \_\_ **Sensorium Dial**, Andrew Garton, Grosse Sendesaal, RadioKulturhaus, Vienna
- 1997 \_\_ **SoundExplorer**, Yoshihiro Kawasaki
- 1997 \_\_ *The Tables Turned - A Telematic Scene on the Same Subject, Paul Sermon, net\_condition ZKM*
- 1997 \_\_ **Sound Mapping**, Iain Mott, Marc Raszewski, Jim Sosnin
- 1997 \_\_ **TAM TAM** - The Spirit of the Digital Djembé, Michel Waisvisz, July 1997 Nagoya, Japan
- 1997 \_\_ *TransJam*
- 1997 \_\_ **Variations for WWW**, Seinoshin Yamagishi, Kohji Setoh
- 1997 \_\_ **Voice treated at a distance**
- 1997 \_\_ **Webdrum**, Phil Burk
- 1997 \_\_ *Weblog*
- 1997 \_\_ **XChange Compilations**, Rasa Šmite, Raitis Šmits, Jaanis Garancs
- 1997 \_\_ **XChange on-air session**



- 1998 \_ ?
- 1998 \_ *6 Villages - Acoustic Environments in Change*
- 1998 \_\_ *Acoustic World Atlas*, Thomas Gerwin, ZKM
- 1998 \_\_ « *Agapē Agape* », William Gaddis
- 1998 \_\_ *Always Three Words*, Matmos
- 1998 \_\_ *Art Servers Unlimited*
- 1998 \_\_ *Biophony*, Bernie Krause
- 1998 \_\_ *Clickscape98*, Thomas Lehner
- 1998 \_\_ *Depois do Turismo vem o Colonialismo*, Gilbertto Prado
- 1998 \_\_ « *Dissolution and Fragmentation: Problems in Online Communities* », Elizabeth Reid & Beth Kolko
- 1998 \_\_ *Distributed Legible City*, Jeffrey Shaw
- 1998 \_\_ *Ebb and Flow*, Nina Sobell & Jesse Gilbert
- 1998 \_\_ *Electronic Café International's Roadside Attractions*, Kit Galloway
- 1998 \_\_ *EPC (Electro Pathological Consort)*, Andrew Garton, Sergio Messina, Ludwig Zeininger
- 1998 \_\_ *Global String*, DEAF 2000, V2 Rotterdam, Ars Electronica Linz, Atau Tanaka, Kasper Toeplitz
- 1998 \_\_ *GNUsic - An Open Studio on the Network for Electronic Musicians*, Akihiro Kubota, Kenji Yasaka, Kohji Setoh
- 1998 \_\_ « *Homesteading the Noosphere* », Eric S. Raymond
- 1998 \_\_ *Icecast*
- 1998 \_\_ *Immersive Sound*, ORF Kunstradio Vienna, Kunst in der Stadt II Bregenz, Bill Fontana, Terry Fox, Stoph Sauter, Roberto Paci Dalò, Weidenhammer & Courtemance, Bill Furlong, Jérôme Joy, Les Gilbert, Robert Murray Schafer
- 1998 \_\_ *Koan^oasis*, SSEYO Ltd
- 1998 \_\_ *The Messenger*, Paul DeMarinis
- 1998 \_\_ *Mélange à trois* (Blue - Version III), Shinji Kanki
- 1998 \_\_ « *Metamusic/Telemusic/Programming/Composition* », Jérôme Joy
- 1998 \_\_ *Motifs*, Jérôme Joy, Alex Grillo, Lawrence Casserley, Daniel Biro, Festival Lust ICA London / MANCA CIRM Nice
- 1998 \_\_ *Neo Shamanism*, Tjebbe Van Tijen, Fred Gales
- 1998 \_\_ *NetOsc (Network Oscillator)*, Studio 303 Montreal, Fondation Gulbenkian Lisbon, V2 Rotterdam, Podewil Berlin, Sensorband
- 1998 \_\_ « *FROM NET.ART TO NET.RADIO AND BACK AGAIN - rediscovering and enlarging the entire radio spectrum* », Josephine Bosma
- 1998 \_\_ "Network Society / Eurecom"
- 1998 \_\_ *Le Placard*, Erik Minkinnen
- 1998 \_\_ *Polar Circuit*, University of Lapland
- 1998 \_\_ *Portable Sacred Grounds - Telepresence World*, NTT ICC Tokyo
- 1998 \_\_ *Post-Sampling Music Theory - Music Production after Sampling*, NTT ICC Tokyo
- 1998 \_\_ *Radiation*, Robert Adrian X and Norbert Math
- 1998 \_\_ *Revolting Temporary Media Lab*, ISEA 98, Manchester
- 1998 \_\_ *The Sensorium*, Andrew Garton
- 1998 \_\_ *Talking Drum at CNMAT*, Chris Brown
- 1998 \_\_ *Terra Present / Terra Past*, ART+COM
- 1998 \_\_ *Time Out*, Fred Forest
- 1998 \_\_ *TransMIDI*
- 1998 \_\_ *Two Places at One Time*, Amy Knoles, Neil B. Rolnick, Composers Forum, Inc, The Kitchen, The iEAR Studios of RPI, Harvestworks / Studio Pass
- 1998 \_\_ *Web radio*, Tetsuo Kogawa
- 1998 \_\_ *XChange 56h Live*
- 1998 \_\_ *XChange Open Channel* : a space for co-broadcasting experiments and live co-sessions
- 1998 \_\_ *XChange Unlimited*, Riga
- 1998 \_\_ *Your Favourite London Sounds*, Peter Cusack, radio station ResonanceFM



**1999**

- 1999 \_\_ *ART'S BIRTHDAY 1999 - 24 HOURS OF RADIO ART*, Western Front, Vancouver
- 1999 \_\_ *audiostructures*, Steve Symons

- 1999 \_ **Bits & Pieces** - a sonic installation for the web, Peter Traub
- 1999 \_ *A Body of Water*, Paul Sermon and Andrea Zapp
- 1999 \_ **capital magnetic**, Mark Trayle, Net\_Condition - Art in the Online Universe , ZKM
- 1999 \_ **Chain Tape Collective**
- 1999 \_ **Constellations**, Atau Tanaka, Coexistencias Lisbon 1999, Web2000 Webbar Paris
- 1999 \_ *CTRL-SPACE, JODI, net\_condition* ZKM
- 1999 \_ **da braccio**, Karlheinz Ess
- 1999 \_ **EARTH SOUNDS FOR SPACE**, Michel Redolfi, Amsterdam Planetarium, Ysbreker Festival
- 1999 \_ **Eternal Network Music**, Chris Brown, Net\_Condition - Art in the Online Universe, ZKM
- 1999 \_ **First real-time Multichannel Audio Internet Demo**, Cooperstock J. R. et al.
- 1999 \_ **fmwalks**, Udo Noll
- 1999 \_ **ForumHub**, moderated by Jérôme Joy, The Thing
- 1999 \_ « **From Broadcasting to Narrowcasting** », Josephine Bosma
- 1999 \_ **Future Schwitters**, Andrew Garton
- 1999 \_ *Getting Ready*, Michelle Teran
- 1999 \_ *H|U|M|B|O|T*, Daniel Burckhardt, Roberto Cabot, Jürgen Enge, gruppo A12, Udo Noll, Philip Pockock, Wolfgang Staehle, Gregor Stehle, Florian Wenz, Birgit Wien and others, net\_condition ZKM
- 1999 \_ *Idoru*, Michelle Teran, Amanda Steggell, Ulf Knudsen, Per Platou, InterAccess Toronto
- 1999 \_ **InfiniteCD**, Antoine Schmitt, Vincent Epplay
- 1999 \_ *Introduction to net.art*, Blank & Jeron / Natalie Bookchin & Alexej Shulgin, net\_condition ZKM
- 1999 \_ **Invention#5**, Mills College Oakland, Chris Brown
- 1999 \_ *IO\_Dencies*, Knowbotic Research, net\_condition ZKM
- 1999 \_ *Lascaux2.org*, Paul Devautour, Jérôme Joy, Villa Arson Nice
- 1999 \_ *IOOp*, Makoto Yoshihara
- 1999 \_ **The Music While You Wait**, Alvin Curran
- 1999 \_ **Musikschrank Rheingold**, Johannes Goebel / Torsten Belschner / Bernhard Sturm, net\_condition ZKM
- 1999 \_ *Napster*
- 1999 \_ **nato.0+55+3d** (previously nato.0+55)
- 1999 \_ **net\_condition, art global - global media**, Barcelona - Graz - Karlsruhe - Tokyo
- 1999 \_ **Nocinema - Interludes**, Jérôme Joy, Walker Art Center, AEN Art Entertainment Network curated by Steve Dietz
- 1999 \_ **Orchestra !**, Dino Giuli, Franco Pirri, Paolo Bussotti
- 1999 \_ *Peer-To-Peer*
- 1999 \_ « **PRÉSENCES À DISTANCE - Déplacement virtuel et réseaux numériques : POURQUOI NOUS NE CROYONS PLUS LA TELEVISION** », Jean-Louis Weissberg
- 1999 \_ **The Relative Violin**, Vienna/Vancouver, Jon Rose
- 1999 \_ *Safe Distance*, Paul Garrin
- 1999 \_ **Séance Box No.1**, Ken Feingold, net\_condition ZKM
- 1999 \_ **Sonic Interface**, Akitsugu Maebayashi, FutureSonic04
- 1999 \_ **Sound Bum**, Yoshihiro Kawasaki, Haruo Okada, Yoshiaki Miyata, Yoshiaki Nishimura
- 1999 \_ **Sound Drifting : I silenzi parlano tra loro**, ORF Kunstradio Vienna
- 1999 \_ **summer99** \_ Sha
- 1999 \_ **Tat Fat Size Temple (TFST) - Sound Drifting**, Andrew Garton
- 1999 \_ *TEMP, a Temporary Media Lab*, Kiasma, Museum for Contemporary Arts, Helsinki, Finland
- 1999 \_ *There's no simulation like home*, Paul Sermon
- 1999 \_ **Toto Donaueschingen**, Alvin Curran
- 1999 \_ *Traces*, Simon Penny
- 1999 \_ **Truth in Clouds**, Nicolas Collins, net\_condition ZKM
- 1999 \_ *Vertical Elevation*, Rafael Lozano-Hemmer
- 1999 \_ **World Tune**, Wolfgang Neuhaus



## 2000

- 2000 \_ *Internet*
- 2000 \_ *The Internet Archive*
- 2000 \_ *Archives sauvées des eaux, Exploitation des concepts n°1 (2000) et 3 (2000/2005)*, Luc Ferrari, Gent Vooruit May 2000 with DJ Olive

- 2000 \_\_ **Art's Birthday 2000**
- 2000 \_\_ **Brain Opera, Future Music Blender** (House of Music, Vienna), Tod Machover
- 2000 \_\_ **CA\*net3**
- 2000 \_\_ **Carnivore**, Alex Galloway
- 2000 \_ « **Du Contre-Pouvoir (On Counter-power)** », Miguel Benasayag & Diego Sztulwark
- 2000 - **Cycle des Souvenirs, Exploitation des concepts n°2** (1995/2000), Luc Ferrari, CCMix 2000 Paris
- 2000 \_ **Dakar on line**, Voix-ci, Voix-là, festival de préfiguration de la cité des Musiques vivantes
- 2000 \_\_ **Discs**, Jane Dowe, Sound Art - Sound as Media, NTT ICC Tokyo
- 2000 \_\_ « **Empire** », Antonio Negri, Michael Hardt
- 2000 \_\_ **Fiber Jelly**, ZKM, Justin Bennett, Nicolas Collins, Kaffe Matthews, Scanner, Anne Wellmer, Zeitblom
- 2000 \_\_ « **Figures de l'amateur. Formes objets et pratiques de l'amour de la musique aujourd'hui** », Antoine Hennion
- **Free Speech**, (KromoZone 1st prototype), SEAMUS 2000 Denton Texas, Stephan Moore, Timothy Place
- 2000 \_\_ **Freenet**, Ian Clarke
- 2000 \_\_ **Geocaching**
- 2000 \_\_ **Glasbead**, John Klima
- 2000 \_\_ **Gnutella**
- 2000 \_\_ **GPS Trans**, Marc Choloniewski
- 2000 \_\_ **THE HOTWIRED LIVE ELECTRONIC RESISTANCE NETWORK ART PARTY PLAN**, Per Platou & Amanda Steggell & Michelle Teran
- 2000 \_\_ **HWLA (Hot Wired Live Art)**, Amanda Steggell, Per Platou, Motherboard, BEK
- 2000 \_\_ « **L'Innovation Ordinaire** », Norbert Alter
- 2000 \_\_ **Isadora**, Mark Coniglio, Troika Ranch
- 2000 \_\_ **Japanese Whispers**, Usaman Haque
- 2000 \_\_ **Life Sharing**, 0100101110101101.ORG, a.k.a. Franco Birkut and Eva Mattes
- 2000 \_\_ **Longplayer**, Jem Finer
- 2000 \_\_ **Ménage à Trois**, Michelle Teran
- 2000 \_\_ « **Moistmedia** », Roy Ascott
- 2000 \_\_ **mp3q**, Atau Tanaka
- 2000 \_\_ « **Musaic : the merging of all sound spaces** », Josephine Bosma
- 2000 \_\_ **The Nature of Contingency**, (KromoZone 3rd prototype), Seoul International Computer Music Festival, Stephan Moore, Timothy Place
- 2000 \_\_ **Neo-luddism**
- 2000 \_\_ **net.congestion**, International Festival of Streaming Media, Amsterdam
- 2000 \_\_ **A Networked Jazz Concert**
- 2000 \_\_ « **Networking the World, 1794 - 2000** », Armand Mattelart
- 2000 \_\_ **O+E**, AudioRom and Waag Society, net.congestion International Festival of Streaming Media, a connected concert between London+Amsterdam using KeyStroke
- 2000 \_\_ « **Le Partage du Sensible** » (*The Politics Of Aesthetics: The Distribution of the Sensible*), Jacques Rancière
- 2000 \_\_ **Project Citizens Band, Four Times Daily for 27 Mhz**, Brennan McGaffey
- 2000 \_\_ **Quintet.net**, Georg Hadju
- 2000 \_\_ **Radiotopie**, Bruno Guiganti
- 2000 \_\_ **remote control lounge**, J.Rohrhuber, Institut für Telenautik
- 2000 \_\_ « **Sounding out the City: Personal Stereos and the Management of Everyday** », Michael Bull
- 2000 \_\_ **SoundMesh**
- 2000 \_\_ **Street (e)scape**, Andrew Garton
- 2000 \_\_ **Tat Fat Size Temple (TFST 2)**, Andrew Garton
- 2000 \_\_ **Telemusic #1**, a collaborative intermedia work by Randall Packer, Steve Bradley, John P. Young
- 2000 \_\_ **Telephony**, Alison Craighead, Jon Thomson
- 2000 \_\_ **Two Cities, One Concert**
- 2000 \_\_ **Young Farmers Claim Future**, Guy Van Belle, Brussels 2000
- 2000 \_\_ **Wiencouver**, ORF Kunstradio Vienna, Western Front Vancouver
- 2000 \_\_ **World's First Remote Barbershop Quartet**, Internet2 Initiative



- 2001 \_\_ *Internet*
- 2001 \_\_ *The Internet Archive*
- 2001 \_\_ **Acoustic Space Lab symposium**
- 2001 \_\_ **Adrift - A multiple-location performance spectacle**, Helen Thorington, Jesse Gilbert, Marek Walczak, Hal Eager & Martin Wattenberg
- 2001 \_\_ **AFK**, a series of onsite /online performances by Michelle Terran & Isabelle Jenniches
- 2001 \_\_ **Albert Einstein's quotation**
- 2001 \_\_ *Bedlam*, Simon Penny
- 2001 \_\_ *BookCrossing*
- 2001 \_\_ *Can you see me now ?*, Blast Theory
- 2001 \_\_ **CarPhone**, Jonah Brucker-Cohen
- 2001 \_\_ **CloudStream/Bellwethers**, Chris Brown
- 2001 \_\_ **Cuidado Project**, IRCAM
- 2001 \_\_ **Curated By**, ORF Kunstradio
- 2001 \_\_ **Daisy Chain**, Peter Sinclair, GH Hovagimyan, Guillaume Stagnaro, Fabrice Gallis, François Parra, and al.
- 2001 \_\_ **Dialtones (A Telesymphony)**, Golan Levin, Gregory Shakar, Scott Gibbons, Yasmin Sohrawardy, Joris Gruber, Erich Semlak, Gunther Schmidl, Joerg Lehner
- 2001 \_\_ *Digital Commons*
- 2001 \_\_ **Distance Duo**, Christopher Dobrian
- 2001 \_\_ *Dust Theories*, Kim Cascone
- 2001 \_\_ « *Earworms, Surgery and Musical hallucinations - : The Cognitive Itch Theory* », James Kellaris
- 2001 \_\_ **Enchain me @**, Tamara Lai
- 2001 \_\_ **The Exchange**, Giles Perring
- 2001 \_\_ **Ex Post Factum**, Tamara Lai
- 2001 \_\_ **Extended Radio**, August Black, Manfred Soellner (fon), Derek Holzer, ORF Kunstradio Vienna, Acoustic Space Lab Riga
- 2001 \_\_ *Gas Chamber*, Dmitry Gelfand and Evelina Domnitch
- 2001 \_\_ « *Hacker Ethic* », Pekka Himanen
- 2001 \_\_ **Handywolke**, Peter Hrubesch, Dirk Scherkowski
- 2001 \_\_ *HWLA 2 - AIRWAVES*, Banff Center
- 2001 \_\_ « *The Imaginary of Internet* », Patrice Flichy
- 2001 \_\_ **Integer**, audio installation for live radio and internet by Michael Iber
- 2001 \_\_ **Interaxis**, Jesse Gilbert, Mark Trayle
- 2001 \_\_ **International Funkaustellung Opening Ceremony**
- 2001 \_\_ **[I/O] Distant Place**, Maebayashi Akitsugu, NTT ICC Tokyo
- 2001 \_\_ *Keystroke*, Waag Labs
- 2001 \_\_ **Kick Baby Kick - Baby Play**, Shu Lea Cheang, NTT ICC Tokyo
- 2001 \_\_ **KromoZone**, Stephan Moore, Timothy Place
- 2001 \_\_ **Listen**, IRCAM Paris
- 2001 \_\_ *Looking forward, see you soon!*, Keystroke event, Landmark, Bergen
- 2001 \_\_ **MobilSynfoni**, Tobias Trier
- 2001 \_\_ **Musical / Devices**, Jonah Brucker-Cohen
- 2001 \_\_ **Network Musical Performance**, John Lazzaro, John Wawrzynek
- 2001 \_\_ « *Networked Art* », Craig J. Saper
- 2001 \_\_ **Nomusic**, Laboiteblanche & Carl Young
- 2001 \_\_ *On-Line Sound Palette – CUIDADO*, IRCAM Paris
- 2001 \_\_ **Owl Project**, Simon Blackmore, Antony Hall, Steve Symons
- 2001 \_\_ **PacJap – Dsystem**, NTT ICC Tokyo, ISEA Nagoya, Kenji Ito, Jérôme Joy, Kyoko, Yuko Nexus6, Peter Sinclair, Kojima Takashi, Colette Tron, Renaud Vercey, Suguru Yamaguchi, Tadahiko Yokogawa (2000-2003)
- 2001 \_\_ *phonography.org*
- 2001 \_\_ **Ping**, Chris Chafe
- 2001 \_\_ **Planet CCRMA (Karma)**
- 2001 \_\_ **Radiocicleta** (maybe launched on 1991)
- 2001 \_\_ **RadioMatic - Streaps**, The Thing, Jérôme Joy, Ralf Homann, Justus Wunschik, Hans Wastlhuber, Jan-Hendrik Brueggemeier, Daniel Fischer, Oliver Thuns, Harv Stanic, Guillaume

- Stagnaro, Olaf Matthes, radiostudio.org Weimar Bauhaus University, ENSA Villa Arson Nice
- 2001 \_\_ **Shakespeare Cuisinart**, Jason Freeman
- 2001 \_\_ **Silophone**, The User, Montréal harbour (Emmanuel Madan, Thomas McIntosh)
- 2001 \_\_ **Soinu Mapa**, Audiolab Arteleku
- 2001 \_\_ **Spring Cellphony**
- 2001 \_\_ **Sound Jewelry**, Takuya Yamauchi, Toru Iwatake
- 2001 \_\_ **Studies for Radio Transceiver: Study 1.0 (FM)**, Matthew Burtner
- 2001 \_\_ **The Technophobe and the Madman**
- 2001 \_\_ **TextFm**, Mongrel
- 2001 \_\_ *Thinking Sounds, What is the Sound of Naked Men?*, Miya Masaoka
- 2001 \_\_ **Tonos** - online musician's network. TC8 - Music Collaboration Tool
- 2001 \_\_ *Virgin Mobile Inc. Promotional Event*
- 2001 \_\_ **Worldbeat/GlobeMusic**, Ars Electronica Linz



## 2002

- 2002 \_\_ *Internet*
- 2002 \_\_ **2.4 Interference Interaction**, Michelle Teran
- 2002 \_\_ **AGNULA**, IRCAM Paris
- 2002 \_\_ *Amsterdam RealTime*, Esther Polak, Waag Society
- 2002 \_\_ **Art's Birthday 2002**
- 2002 \_\_ « *Art Contextuel* » (*Contextual Art*), Paul Ardenne
- 2002 \_\_ **Atmospherics / Weather Works**, Andrea Polli
- 2002 \_\_ **Auto Mobile**, the Center for Knowledge Societies, FutureSonic04
- 2002 \_\_ **ChucK**, Strongly-timed, Concurrent, and On-the-fly Audio Programming Language, Ge Wang and Perry Cook
- 2002 \_\_ **com\_muni\_port**, neuroTransmitter
- 2002 \_\_ *Cosy Corner*, Anne Roquigny
- 2002 \_\_ **...Devolve into II ...**, ORF Kunstradio Vienna, Western Front Vancouver
- 2002 \_\_ **Distance Made Good**, Jen Southern
- 2002 \_\_ **DM-nomusic**, laboiteblanche
- 2003 \_\_ **The Earth's Original 4.5 Billion Year Old Electronic Music Composition** (A Work in Progress), Robin McGinley
- 2002 \_\_ **Remote Elevator Music**, Julian Rohrerhuber
- 2002 \_\_ « *Esthétique Relationnelle* » (*Relational Aesthetics*), Nicolas Bourriaud
- 2002 \_\_ **Eternal Network Music**, Chris Brown, John Bischoff
- 2002 \_\_ « *Free Culture* », Lawrence Lessig
- 2002 \_\_ **GOO**, Apo33
- 2002 \_\_ *Instant Places*, Maciej Wisniewski
- 2002 \_\_ **Interplay #1 - Collaborations in 4 Cities**
- 2002 \_\_ **Invisible Cities**, fallt.com
- 2002 \_\_ **Jam-O-Drum**, Tina Blaine
- 2002 \_\_ **J.S.B. is walking in the stone garden**, Shinji Kanki
- 2002 \_\_ **Leinster**, Yannick Dauby, Julien Ottavi
- 2002 \_\_ **Listen!, Sound Bum**, Earth Lounge, National Museum of Emerging Science and Innovation, Odaiba, Tokyo 2002, Yoshihiro Kawasaki, Haruo Okada, Yoshiaki Miyata, Yoshiaki Nishimura
- 2002 \_\_ **Musical/Devices**, Jonah Brucker-Cohen
- 2002 \_\_ *Multiplace Festival*, Slavo Krekovič, Bratislava
- 2002 \_\_ **New Journey For Four**, Scot Gresham-Lancaster
- 2002 \_\_ *Octophonic system, Michael's Youth, Donnerstag aus Licht*, Karlheinz Stockhausen
- 2002 \_\_ **PeerCast**
- 2002 \_\_ **Pegasus/Improvisession II**, Yoichi Nagashima (SUAC/ASL)
- 2002 \_\_ **Piano-e-Competition**
- 2002 \_\_ **picNIC**, Festival Résonances Nantes, Jérôme Joy (Formanex : Julien Ottavi, Emmanuel Leduc, Christophe Havard, Anthony Taillard)
- 2002 \_\_ *Planet CCRMA at Home*
- 2002 \_\_ **Prométhée Numérique / Frankenstein's Netz**, Atau Tanaka
- 2002 \_\_ **Public Radio**, neuroTransmitter

- 2002 \_\_ **Radiotopia** - Kunstradio: The Long Night of Radio Art
- 2002 \_\_ **Satellite Cabaret Grenoble / Salvador de Bahia**, Luc Martinez, Festival 38èmes Rugissants
- 2002 \_\_ **SIM-phone-ya (New Ring Cycle)**, Simon Turner, Marcus Moore
- 2002 \_\_ **Sleep-Less-Net**, Anne Roquigny
- 2002 \_\_ **Sound Travels - Global Internet Exchange** (Vancouver, New York, San Diego, Toulouse, Melbourne, Vienna), ORF Kunstradio Vienna, Mia Zabelka
- 2002 \_\_ « **Smart Mobs - The Next Social Revolution** », Howard Rheingold
- 2002 \_\_ **SpeakerPhone**, Jonah Brucker-Cohen
- 2002 \_\_ **Streaming - Libsquare**, AGGLO, Lib\_, Leinster, Streamlab (Jérôme Joy, Silvia Argüello, Yannick Dauby, Julien Ottavi, Thomas Lucas)
- 2002 \_\_ **Stream Yourself**, laboiteblanche, Carl Young
- 2002 \_\_ **Streetscape**, Iori Nakai, FutureSonic04
- 2002 \_\_ **Telemusic #2**, a collaborative intermedia work by Randall Packer, Steve Bradley, John P. Young
- 2002 \_\_ **Transmission Naranja**, Chris Brown, Guillermo Galindo
- 2002 \_\_ **Two Pieces**, Scot Gresham-Lancaster
- 2002 \_\_ **URBANGS**, Tamara Lai
- 2002 \_\_ **Viral Synthesia**, Steve Symons
- 2002 \_\_ **Vopos**, 0100101110101101.ORG, a.k.a. Franco Birkut and Eva Mattes
- 2002 \_\_ **YIMA**, *Integrated Media Systems Center USC Southern California*



## 2003

- 2003 \_\_ **Internet**
- 2003 \_\_ **AB\_TIME**, Scot Gresham-Lancaster
- 2003 \_\_ **AGRM-NG**, Abstract Generative Radio Mix New Generation, Antoine Schmitt, Vincent Epplay
- 2003 \_\_ **Amodal Suspension**, Rafael Lozano-Hemmer
- 2003 \_\_ **Art's Birthday 2003**, voices and audio art from the eternal network, radio - performance - netcast - telephone - messages
- 2003 \_\_ **Art+Communication, Media Architecture**
- 2003 \_\_ **Audio Nomad**, Nick Mariette
- 2003 \_\_ **AudioBored**, Jonah Brucker-Cohen
- 2003 \_\_ **AudioTrace**, NoMusic (LBB & Carl Y)
- 2003 \_\_ **The Bio-Kinetic Sonosphere Interrogator**, Robin McGinley
- 2003 \_\_ **Camping Sonore** (Sound Camping), Apo33
- 2003 \_\_ « **Composing the now** » - notes for a lecture - on engagement with sonic time through sensors, electronica, loudspeakers and ears, Michel Waisvisz
- 2003 \_\_ **DRM**, Apo33, Forum Social Européen
- 2003 \_\_ **Drumming Hands Orchestra**, Bernd Kremling
- 2003 \_\_ **Electrical Walks**, Christina Kubisch
- 2003 \_\_ **Experimental live concert**, Tim Didymus
- 2003 \_\_ « **Flash Mob** »
- 2003 \_\_ **GigaPop Ritual**, Ajay Kapur, McGill University / Princeton University
- 2003 \_\_ **Le Hurloir**, Thierry Fontaine, André Lozano aka (loz), Elli Medeiros
- 2003 \_\_ **Interfacing Realities/Radiotopia/KeyWorx**, Michelle Teran
- 2003 \_\_ **Interplay #2 - Collaborations in 4 Cities**
- 2003 \_\_ **The Invisible Landscapes**, Malmö
- 2003 \_\_ **Kalerner**, Yannick Dauby
- 2003 \_\_ **LAC, Linux Audio Conference** (ZKM Karlsruhe 2003/2004/2005/2006, TU Berlin 2007, KHM Köln 2008)
- 2003 \_\_ **Life: A User's Manual**, Michelle Teran
- 2003 \_\_ **Light Curtain**, Achim Wollscheid
- 2003 \_\_ **Listening Post**, Mark Hansen, Ben Rubin, 3rd Takeway Festival, London
- 2003 \_\_ **Live Coding Duet**, Nick Collins and Fabrice Mogini
- 2003 \_\_ « **Locative Media** »
- 2003 \_\_ **Metronome Piece**, Akitsugu Maebayashi
- 2003 \_\_ **Monodialogs**, Jeff Gates
- 2003 \_\_ **[murmur]**, Shawn Micallef, James Roussel, Gabe Sawhney

- 2003 \_\_ **N.A.G. - Network Auralization for Gnutella**, Jason Freeman
- 2003 \_\_ *Nine(9)*, Mongrel
- 2003 \_\_ **On-the-fly Counterpoint**, Ge Wang and Perry Cook, Princeton University
- 2003 \_\_ **Ozone**, Bas van Koolwijk & Derek Holzer
- 2003 \_\_ **PEEP Variation for network auralizer**, Shinji Kanki
- 2003 \_\_ **Peerings**, Scot Gresham-Lancaster
- 2003 \_\_ *Peeringscope*, Doug Van Nort
- 2003 \_\_ **PeerSynth**, Jörg Stelkens
- 2003 \_\_ « **Peer-to-Peer: the collective, collaborative and liberated memory of sound** », Alessandro Ludovico
- 2003 \_\_ **Phonographic Migrations**, Yannick Dauby
- 2003 \_\_ *Pieces for Plants*, Miya Masaoka
- 2003 \_\_ **pim**, pizMO, Yannick Dauby, Jérôme Joy, Julien Ottavi (2001-2003), SFMOMA 33RPM
- 2003 \_\_ **Ping Melody**, Pawel Janicki, WRO Center For Media Art, EyesWeb system from Laboratorio di Informatica Musicale DIST - University of Genoa
- 2003 \_\_ **PoliceState**, Jonah Brucker-Cohen, Dutch Electronics Arts Festival (DEAF)
- 2003 \_\_ *Pure : Dyne - Dyne : bolic*
- 2003 \_\_ **Raccorps**, Apo33
- 2003 \_\_ *Radio 4x4*, free103point9
- 2003 \_\_ **Radio Kinesonus**, Tetsuo Kogawa
- 2003 \_\_ **Rant/ Rant Back/ Back Rant**, Peter Sinclair & GH Hovagymian
- 2003 \_\_ **Resonance fm London Soundscape**, Tom Wallace
- 2003 \_\_ **Semantic HiFi**, IRCAM Paris
- 2003 \_\_ **SimpleTEXT**, Jonah Brucker-Cohen, Tim Redfern, Duncan Murphy
- 2003 \_\_ **SisterO Trinity**, Nancy Mauro-Flude, Linda Dement, Michelle Teran
- 2003 \_\_ **Six Pack Radio**, Per Platou
- 2003 \_\_ **Sounding the Net**, John Levack Drever
- 2003 \_\_ **Sound Walks via SoundCity**, Jakob Hougaard Andersen, Stanza
- 2003 \_\_ **Talking Crosswalks - An Acoustic World Atlas**, ORF Kunstradio Vienna, Wolfgang Temmel, Norbert Math
- 2003 \_\_ « *Telematic Embrace* », Roy Ascott
- 2003 \_\_ *Tune(In))*, free103point9
- 2003 \_\_ **Wählt die Signale! Ein Radiokonzert für 144 Handys** (Dial the Signals !), Ligna, in combination with Radioballett
- 2003 \_\_ *Windows Oscillations*, Katherine Moriwaki



## 2004

- 2004 \_\_ **212 925 2035 ext 17**, The Swiss Institute
- 2004 \_\_ *AgoraXchange*, Natalie Bookchin
- 2004 \_\_ **Anywhere**, The Kitchen NYC
- 2004 \_\_ **Apodio multimedia GNU/Linux LiveCD**, Apo33
- 2004 \_\_ **(area) code** : a collaboration between centrifugalforces and Jen Southern, FutureSonic04
- 2004 \_\_ **Art's Birthday 2004, Scrambled\_Bites**
- 2004 \_\_ **Audicle**, Ge Wang, Perry Cook, Ananya Misra, Philip Davidson
- 2004 \_\_ **Aura**, Steve Symons, FutureSonic04
- 2004 \_\_ **Auracle**, Max Neuhaus (Jason Freeman, C. Ramakrishnan, Kristjan Varnik, Phil Burk, David Birchfield)
- 2004 \_\_ **The Burning Question**, Abinadi Meza
- 2004 \_\_ **The Bush Telegraph - Networked Cooperative Music-Making**, Rodney Berry, Mao Makino, Naoto Hikawa, Masami Suzuki
- 2004 \_\_ *CERNET2 - China Education and Research Network*
- 2004 \_\_ **City Sounds 1.0**, Spatial Information Architecture Laboratory (SIAL) RMIT University Melbourne
- 2004 \_\_ **Come Closer**, Squidsoup
- 2004 \_\_ **Compatible / Téléchargeable**, Richard Kongrosian & Jérôme Joy, Oeuvres dans la ville II / Works in the city II, La Villette, Festival d'Automne, Paris - in collaboration with Locus Sonus
- 2004 \_\_ **Daisyphone**, Nick Bryan-Kinns

- 2004 \_\_ *Determinale Verschweifungen*, Thom Kubli, Sven Mann
- 2004 \_\_ **DIP v.2 (Distributed Immersive Performance)**, Univ. Of Southern California
- 2004 \_\_ **Disembodied Voices**, Jody Zellan, FutureSonic04
- 2004 \_\_ « *L'Époque des Appareils* » (*The Epoch of Devices*), Jean-Louis Déotte
- 2004 \_\_ *Fada'iat*, Tarifa/Tangiers
- 2004 \_\_ **GÉANT2**
- 2004 \_\_ « *How Control Exists After Decentralization* », Alex Galloway
- 2004 \_\_ **The Hub at the Dutch Electronic Arts Festival DEAF 2004**
- 2004 \_\_ *ImproMasters – version 1*, Open Free Collective Oscillation Sessions, Shinji Kanki, Sibelius Academy Helsinki
- 2004 \_\_ « *Interaction, Participation, Networking - Art and telecommunication* », Inke Arns, Medien Kunst Net - Media Art Net
- 2004 \_\_ **Interplay**, Locus Sonus, Aix en Provence / Musashino University Tokyo (Christophe Charles)
- 2004 \_\_ **InterUrban** - an interactive narrative, Jeff Knowlton, Naomi Spellman & Jeremy Hight, FutureSonic04
- 2004 \_\_ **Jazz Combo Virtual Performance**
- 2004 \_\_ **Kalerner.Netradio**, Yannick Dauby
- 2004 \_\_ **London Noise-map**
- 2004 \_\_ *Lunaphone*, Brian Duffy
- 2004 \_\_ **Macadamcadam**, Antoine Schmitt
- 2004 \_\_ **MicroRadio Sound Walk**, free103point9
- 2004 \_\_ **MicWorld**, Software Instrument, Multiple international sites, IXI audio software
- 2004 \_\_ *MILKproject*, Esther Polak
- 2004 \_\_ **Mind the World, Sound Bum**, Encounters in the 21st Century: Polyphony - Emerging Resonances, Museum of Contemporary Art of Kanazawa, Yoshihiro Kawasaki, Haruo Okada, Yoshiaki Miyata, Yoshiaki Nishimura
- 2004 \_\_ **Mobile Connections**, Futuresonic04
- 2004 \_\_ **M.U.S.H.**, Joachim Montessuis & Eleonore Hellio
- 2004 \_\_ **My Way of Life**, Toru Takemitsu
- 2004 \_\_ **Network-centric Music Performance**, Zefir Kurtisi, Xiaoyuan Gu, Prof. Dr.-Ing. Lars Wolf, Matthias Dick
- 2004 \_\_ **Networked\_performance blog**, Turbulence.org media arts organization
- 2004 \_\_ « **New Intimacy** »
- 2004 \_\_ **Nocinema.org**, Jérôme Joy, Jocelyn Robert, Christophe Charles, Yannick Dauby, Dinahbird, Chantal Dumas, Magali Babin, Alain Michon, Luc Kerléo, Emmanuelle Gibello - The Thing, / nujus.net
- 2004 \_\_ « *OuterNet* »
- 2004 \_\_ **The Pavilion « Into the 21st Century »**, Randall Packer
- 2004 \_\_ **the-phone-book Limited**
- 2004 \_\_ **Phonographic Migrations 3 : SoundscapeFM**, Yannick Dauby, Derek Holzer, Sara Kolster, Garage Festival Stralsund (G)
- 2004 \_\_ **Ping 2.0**, Chris Chafe, Greg Niemeyer
- 2004 \_\_ **Podcasting**
- 2004 \_\_ **Le Poulpe**, Apo33
- 2004 \_\_ **Prototype #44, Net Pirate Number Station**, Yoshi Sodeoka
- 2004 \_\_ **Radio Astronomy**, Radioqualia, Adam Hyde
- 2004 \_\_ **Rock music performance transmitted over mobile phones**, Rooster (Nick Atkinson et.al.), in cooperation with BMG and 3 (Mobile service provider)
- 2004 \_\_ **Round table on the history of network performance**, Vilette Numérique
- 2004 \_\_ **Semaphore** - Mapping Acoustic Space of Radio Communications residency (La Plate-Forme, Dunkerque, FR)
- 2004 \_\_ **SIGNAL\_SEVER! - TRANSIGNAL 1**, Projekt Atol, Makrolab and Pact Systems, FutureSonic04
- 2004 \_\_ **Sky Ear**, Usman Haque
- 2004 \_\_ **Sonosphere - Biosphere of Sounds**, Tokui Nao, n\_ext NTT ICC Tokyo
- 2004 \_\_ **Son-O-House**, Edwin van der Heide & Nox
- 2004 \_\_ **Soundbeam sensing technology**

- 2004 \_\_ **SoundTransit**, Derek Holzer, Sara Kolster, Marc Boon
- 2004 \_\_ **Telematic Circle**, CCRMA Stanford, Pauline Oliveros, Deep Listening
- 2004 \_\_ **Telenono**, Ruper Griffiths, FutureSonic04
- 2004 \_\_ « *That I Be! Echo Chambers and Rhetoric* », Pierre Maranda
- 2004 \_\_ **TopLap**
- 2004 \_\_ **Ubuntu**
- 2004 \_\_ **userradio**, August Black
- 2004 \_\_ **Walk**, John Campbell
- 2004 \_\_ *When Attitudes become - Curating*, Rainer Ganahl
- 2004 \_\_ **Wifiledefrance** - wireless art event



## 2005

- 2005 \_\_ *12 Miles Out*, neuroTransmitter
- 2005 \_\_ **AB\_TIME II**, Scot Gresham-Lancaster
- 2005 \_\_ **AB\_TIME III**, Scot Gresham-Lancaster, NIME'05
- 2005 \_\_ **ARoundHead**, Mongrel
- 2005 \_\_ **Art's Birthday**, reverie : noise city
- 2005 \_\_ **bend ++**
- 2005 \_\_ **Berlin.Soundscape-FM**, Sara Kolster, Derek Holzer and Marc Boon, Transmediale 05 Festival
- 2005 \_\_ **Branching to Broadcast**, neuroTransmitter with Daniela Fabricius
- 2005 \_\_ *Chop 10*, Tarikh Korula
- 2005 \_\_ **Concrescence / 8=8 / Hypertable**, Douglas Edric Stanley
- 2005 \_\_ *Conte pour une jurisprudence*, Patrick Bernier
- 2005 \_\_ **Distant Views - Culture Catchers**, Michael Sheridan
- 2005 \_\_ *Ether Ferry*, LoVid
- 2005 \_\_ *Exhibition Transmission II: Airborne*
- 2005 \_\_ **FON**
- 2005 \_\_ **Freesound Project**, Bram de Jong, Music Technology Group (Pompeu Fabra University)
- 2005 \_\_ **G.I.S.S Global Independent Streaming Support**
- 2005 \_\_ **Graph Theory**, Georgia Tech, Jason Freeman
- 2005 \_\_ **Great International Audio Streaming Orchestra**
- 2005 \_\_ **The Hub**, Chris Brown, Phil Stone, John Bischoff, Scot Gresham-Lancaster, Tim Perkis
- 2005 \_\_ **I am on the net**, David Worrall, Network and Sound Installation
- 2005 \_\_ *ImproMasters – version 2, A study of performance technology in free collective improvisation*, Shinji Kanki, Sibelius Academy Helsinki
- 2005 \_\_ *The Internet of Things*, published by the ITU
- 2005 \_\_ **Interplay #3 - Collaborations in 4 Cities**
- 2005 \_\_ **iTunes Signature Maker**, Jason Freeman
- 2005 \_\_ **The Lake**, Julie Freeman
- 2005 \_\_ **Long Range Audio Device LRAD**
- 2005 \_\_ **Lost & Last Transmissions**, Melissa Dubbin and Aaron S. Davidson
- 2005 \_\_ *Making Things Public - Atmospheres of Democracy*, Bruno Latour, Peter Weibel & Steve Dietz
- 2005 \_\_ **Microradio**, Kristen Roos
- 2005 \_\_ **Mobile Radio**, Sarah Washington and Knut Aufermann
- 2005 \_\_ **Neocommunicability**, Franck Popper
- 2005 \_\_ **NetPD**, Roman Haefeli
- 2005 \_\_ **One Square Inch of Silence**
- 2005 \_\_ **panDEV**, Derek Holzer, Sara Kolster and Marc Boon
- 2005 \_\_ **Paul Mc Cartney, International Space Station**, first live space broadcast
- 2005 \_\_ **PDRadio**, Winfried Ritsch, Georg Holzmann
- 2005 \_\_ **Phone Slam - Southend Soundbites**, Mongrel
- 2005 \_\_ **The Presence Project - Performing Presence: From the Live to the Simulated**, Stanford University, Gabriella Giannachi (Exeter UK), Nick Kaye (Exeter UK), Mel Slater (University College London), Michael Shanks (Stanford USA)
- 2005 \_\_ **Radio Aporee**, Udo Noll
- 2005 \_\_ **Radio WNE**, laboiteblanche, Carl Young
- 2005 \_\_ **ResonanCity**, Live audiovisual performance, Sara Kolster & Derek Holzer

- 2005 \_\_ **Skint Stream**, Mongrel
- 2005 \_\_ **SoundWire – SOUND Waves on the Internet from Real-time Echoes (Internet2)**, CCRMA Stanford
- 2005 \_\_ **Soundwire / XMess**, teleconcert CCRMA Stanford, SARC Belfast, Stanford/NY/Montreal/Seoul, Chris Jaffe
- 2005 \_\_ **S.O.U.P. - The Shapes of (Un)warped Packets**, Alejo Duque, Lorenz Schori
- 2005 \_\_ **Speeds of Time**, Bill Fontana
- 2005 \_\_ **TeleSon**, for two "reacTables", connected via the internet, Chris Brown
- 2005 \_\_ **Tool for armchair activists**, Troika
- 2005 \_\_ **Trespassing Boundaries**, Barbara Rose-Haum
- 2005 \_\_ **Untitled 2005**, Rirkrit Tiravanija
- 2005 \_\_ **A Vernacular Web - MIDI**, Olia Lialina
- 2005 \_\_ **Virtual Marathon**, tsunamii.net
- 2005 \_\_ **Wanderlost**, 31 Down
- 2005 \_\_ **WJ-S**, Anne Roquigny



## 2006

- 2006 \_\_ **2.4GHz Scape**, Sawako Kato
- 2006 \_\_ « **Ad Loc** »
- 2006 \_\_ **Always ON**, Sonar'06, CCCB Barcelona
- 2006 \_\_ **Ambient Addition**, Noah Vawter
- 2006 \_\_ **The Anyang Singing Road**
- 2006 \_\_ **Art's Birthday, TransDadaExpress**
- 2006 \_\_ **AudioTagger**, Eva Sjuve
- 2006 \_\_ **Black Brain Radio**, Garrett Phelan
- 2006 \_\_ **CCRemix – CCMixer**
- 2006 \_\_ **Call**, Germaine Koh
- 2006 \_\_ **Cellphonia: San Jose**, a karaoke cell phone interactive sound/video installation by Steve Bull, Scot Gresham-Lancaster, Tim Perkis
- 2006 \_\_ **City Sounds 2.0**
- 2006 \_\_ « **Command Tones : Digitazion and Sounded Time** », Jonathan Sterne & Emily Raine
- 2006 \_\_ **Connecting Media**, International Conference, Hochschule für Musik und Theater, Hamburg
- 2006 \_\_ « **Digital Art / Public Art : Governance and Agency in the Networked Commons** », Christiane Paul
- 2006 \_\_ **Digital Fringe**, Jon Pak, Michael Borthwick, Mark Walsh, Joseph Barrows, Josie Matthiesson, Isabel (Nemo) Mettler
- 2006 \_\_ **Ecos, International convention on eco-creation**, Apo33
- 2006 \_\_ **escoitar.org**, Arte Sonora
- 2006 \_\_ **Exploration #5**, Michelle Teran, Tesla Berlin
- 2006 \_\_ **FeteMobile**
- 2006 \_\_ **Finland-Alaska Improv**, National Computing Center, Ixi Software, Thor Magnusson
- 2006 \_\_ **Frequencyliator**, SARC, Pedro Rebelo, Alain Renaud
- 2006 \_\_ **Heart Chamber Orchestra**
- 2006 \_\_ **JamSpace**, Michael Gurevich
- 2006 \_\_ **Likn**, criticalartware
- 2006 \_\_ **LiveCoding**
- 2006 \_\_ **The LiveForm : Telekinetics**, Michelle Teran, Jeff Mann
- 2006 \_\_ **Locosound**, Alain Bellet, Iris Rennert, Fabien Girardin, HansJakob Fehr, Oliver Friedli
- 2006 \_\_ **Locustream**, Locus Sonus
- 2006 \_\_ **Manchester Peripheral**, Folk Songs Project, Futuresonic
- 2006 \_\_ **Mapchester**, OpenStreetMap.org
- 2006 \_\_ **Micromedia**, Apo33, Piksel 06
- 2006 \_\_ **Moving Spaces**
- 2006 \_\_ **Net\_Derive**, Atau Tanaka
- 2006 \_\_ **NYSoundMap Seeker**, NYSAE, New-York, Andrea Callard, Andrea Polli, Sha sha Feng, Edmund Mooney, Andrea Williams, Shiri Sandler, Jonny Farrow, Ricardo Arias and others
- 2006 \_\_ **On Everything**, Pall Thayer

- 2006 \_\_ **Optofonica**, Maurizio Martinucci aka TeZ
- 2006 \_\_ **The Owl Project**, Dale Joachim, Eben Goodale, MIT Media Lab
- 2006 \_\_ *Passing Beneath the Surface*, Scanner
- 2006 \_\_ **PigeonBlog**, Beatriz da Costa, Cina Hazegh and Kevin Ponto
- 2006 \_\_ « *Processpatching* », Anne Nigten
- 2006 \_\_ « *Qu'est-ce qu'un dispositif?* » (*Che cos'è un dispositivo? What is a device?*), Giorgio Agamben
- 2006 \_\_ **Radio City 299-MW**, neuroTransmitter
- 2006 \_\_ **re:draw:III**, Rob Lycett
- 2006 \_\_ **Re-Titled**, Paul DeMarinis
- 2006 \_\_ **Rome to Tripoli**, Paul Demarinis
- 2006 \_\_ **Rogue Wave - Sight and Sound**, Steve Symons
- 2006 \_\_ **Satellite Jockey**, Rick Silva
- 2006 \_\_ **Solar Listening Station**, radioqualia Honor Harger & Adam Hyde
- 2006 \_\_ **SongBike**, Kelly Andres
- 2006 \_\_ **Sotavento**, The Tilt - Carlos Sandoval, Oori Shalev
- 2006 \_\_ **Sonification of You**, Martin John Callanan & Michael Rodgers
- 2006 \_\_ **Sound Jewelry**, Takuya Yamauchi
- 2006 \_\_ **sound.of.life**, Steve Symons
- 2006 \_\_ **Soundwire / XMess**, teleconcert CCRMA Stanford, SARC Belfast, Chris Jaffe
- 2006 \_\_ **Tactical Sound Garden**, Mark Shepard
- 2006 \_\_ **Taking Soundings**, Yolande Harris
- 2006 \_\_ **Tavofono - Telepafono**, Crispin Jones
- 2006 \_\_ **Telephone Trottoire**, Mongrel
- 2006 \_\_ *Twitter*
- 2006 \_\_ **Waves**
- 2006 \_\_ *WhisperBox*, Robbie Dingo
- 2006 \_\_ **Wifio**, Adam Hyde and Aleksandar Erkalovic
- 2006 \_\_ **Wimicam**, Locus Sonus
- 2006 \_\_ **World Opera Project**, Academy of Music, Tromsø, Norway
- 2006 \_\_ *Xubuntu*
- 2006 \_\_ **YesNation**, Yes.net



## 2007

- 2007 \_\_ **21 cities at once performed**: a performative, global network where participants create public intersections to occur simultaneously around the world, Conflux Festival
- 2007 \_\_ **60x365 - new music every day** - July 1, 2007 / June 30, 2008, David Morneau
- 2007 \_\_ *A20 Recall*, Michelle Terran
- 2007 \_\_ **Always Something Somewhere Else**, Duncan Speakman
- 2007 \_\_ **Art's Birthday, The 100th Anniversary of Radio Broadcast**
- 2007 \_\_ **AOM – Avatar Orchestra Metaverse**, Andreas Mueller, Biagio Franci, Sachiko Hayashi, Leif Inge, Nathalie Fougeras, Björn Eriksson, Chris Wittkowsky, Jeremy Owen Turner, Pauline Oliveros, and others
- 2007 \_\_ **Arougate**, Apo33, Julien Ottavi (the noiser)
- 2007 \_\_ **Audiodetour: Disco-nnect**, Maebh Cheasty
- 2007 \_\_ **aura:the stuff that forms around you**, Steve Symons
- 2007 \_\_ **AutoTune**, François Parra
- 2007 \_\_ **Bio-Tracking**, Anna Dumitriu
- 2007 \_\_ **Black Room**, Niki Dhur
- 2007 \_\_ **BliK**, Roberto Osorio-Goenaga
- 2007 \_\_ **Brain Avatar**, Martin Schöne, Concert & Resonance Experiment, Part 1, Mario Diaz de Leon, Zeljko McMullen, Doron Sadja
- 2007 \_\_ **Broadway**, Jacob Kirkegaard
- 2007 \_\_ **Call <-> Response**, tEnt
- 2007 \_\_ **Cellphonia: WET**, a karaoke cell phone interactive sound/ video installation by Steve Bull, Scot Gresham-Lancaster, Kalin Mintchev, and Terese Svobod
- 2007 \_\_ **Cell Tagging**, Brooke A. Knight, turbulence.org
- 2007 \_\_ **COMEDIA**, IRCAM Paris, SARC Belfast, UNIGE Università degli Studi di Genova (IT), Center

- for Art and New Technologies (CZ), Institute of Electronic Music and Acoustics (AT), Hochschule für Musik und Theater Hamburg (GE), Hungarian Computer Music Foundation (HU)
- 2007 \_\_ **Concert with co-located telepresence**
- 2007 \_\_ **Concerts in LIMb0 #3 - janoide1**, oe3+yaco+computo
- 2007 \_\_ **Concert Sympathique Mondial**, Locus Sonus, GMEM, Sabrina Issa, Björn Eriksson
- 2007 \_\_ **Convergence**, Deep Listening, Guelph Jazz Festival Colloquium, Pauline Oliveros, Scott Graham-Lancaster
- 2007 \_\_ **Core Sample**, Teri Rueb
- 2007 \_\_ **Dancing in Second Life**, - Mixed Reality Performance in Second Life & Real Life - part of The International Society for Improvised Music (ISIM) Second Annual Conference: Building Bridges
- 2007 \_\_ **A day without the mobile-phone**, Eve Arpo & Riin Kranna-Rõds, Plektrum Festival
- 2007 \_\_ **Deezer**
- 2007 \_\_ **Disparate Bodies 1.0** – network performance, Stanford (CCRMA) / New York (NYU) / Belfast (SARC), Pedro Rebelo (Mark Applebaum, Tom Davis, Alain Renaud, Franziska Schroeder)
- 2007 \_\_ **Disparate Bodies 2.0: A three-way Network Performance**, SARC Belfast / Hochschule für Musik und Theatre Hamburg / Institut für Elektronische Musik and Akustik (KUG Graz), Pedro Rebelo (Alain Renaud, Franziska Schroeder, Elisabeth Harnik, Wolfgang Tischhart, Clemens Frühstück, Alexander Schubert, Andrej Koroliiov, Nora-Louise Müller, Turo Grolimund)
- 2007 \_\_ **Divertimento Ritmico for Two Synthesizers** - Two Locations, and One Acoustic Network of Four Channels by Net vs. Net (Juan-Pablo Cáceres @ Center for Computer Research in Music and Acoustics (CCRMA) & Alain Renaud @ Sonic Arts Research Centre (SARC))
- 2007 \_\_ **Dump**, Alberto Gaitán
- 2007 \_\_ **Dynamic Spaces - Minding Mining Morphing**
- 2007 \_\_ **Ear on Arm - ENGINEERING INTERNET ORGAN**, Stelarc
- 2007 \_\_ **Echologue**, Orkan Telhan
- 2007 \_\_ **eJamming**
- 2007 \_\_ **Field-Recordings\_by\_Phone**
- 2007 \_\_ **Flock**, Georgia Tech, Jason Freeman
- 2007 \_\_ *Friluftskino: Experiments in Open Air Surveillance Cinema*, Michelle Terran, Urban Interface Oslo
- 2007 \_\_ **Google Earth Sounds**
- 2007 \_\_ **GridJam**, Artslab
- 2007 \_\_ **HandyDandy**
- 2007 \_\_ **Help Carry a Tune**, LoVid
- 2007 \_\_ **HKM+**, Bremen, NYC, Ludger Hennig, Christof Knoche, Markus Markowski
- 2007 \_\_ *inclusiva.net*, Medialab Madrid, Juan Martín Prada
- 2007 \_\_ *Interactive Chronology (1991 - 2005)*, Open Space 2007 NTT ICC Tokyo
- 2007 \_\_ **Interplay #4 - Collaborations in 4 Cities**
- 2007 \_\_ **Juum-Auro - Net-concert**, Juum Duet
- 2007 \_\_ **Kiln**, Philippe Faujas
- 2007 \_\_ **Listen to that Soundscape**
- 2007 \_\_ *Meipi.org*, Colectivo Meipi
- 2007 \_\_ **Music in Global Village**, September 6-8, 2007 in Budapest
- 2007 \_\_ *Network Art Timeline*, Aether9
- 2007 \_\_ **Network Sonification**, Zach Layton
- 2007 \_\_ *NINJAM -- Novel Intervallic Network Jamming Architecture for Music*
- 2007 \_\_ **Noisefold**, David Stout & Cory Metcalf
- 2007 \_\_ **Opera Calling - Arias for all !**, !Mediengruppe Bitnik and Sven König
- 2007 \_\_ **Orpheus**, William Duckworth & Nora Farrell
- 2007 \_\_ *« Paysage technologique – théories et pratiques autour du Global Positioning System »*, Andrea Urlberger, CIREN Univ Paris 8
- 2007 \_\_ **PSOs, Public Sound Objects**, Music Technology Group (Pompeu Fabra University), Álvaro Barbosa, Jorge Cardoso, Günter Geiger, Martin Kaltenbrunner
- 2007 \_\_ **Quasimodo The Great Lover** (Alvin Lucier), Transnational Ecologies, Sounds Travel, Matt Rogalsky, Laura Cameron
- 2007 \_\_ **Radioactive Radiophony**, Festival Radiophonic Brussels, Knut Aufermann & Sarah Washington (Resonance104.4fm, Mobile Radio), Dinahbird, Jean-Philippe Renoult, Anton Aeki,

Paulo Raposo (Lisbon), Udo Israel & Ralf Wendt (Halle), Tante Hortense & Eddy Godeberge (Marseille)

- 2007 \_ **Radio Flirt**, Brandon Labelle in collaboration with James Webb
- 2007 \_\_ **Resonating with Second Life Wind**, Edo Paulus (Edo Autopoeisis)
- 2007 \_ **A Rose Heard At Dusk**, Adam Nash (Adam Ramona)
- 2007 \_\_ **Routes**, Thadeus Frazier-Reed
- 2007 \_\_ **RXT Radio Tower XChange** – Networked Sound Performance Event
- 2007 \_\_ **Semorphonic Orchestra**, Mike McInerney, Duncan Chapman
- 2007 \_\_ **Seventeen Unsung Songs**, Adam Nash
- 2007 \_\_ **The Silence of the Lands**, University of Colorado at Boulder
- 2007 \_\_ **SimTrans - Simultaneous Translator**, John Roach & Willy Whip, turbulence.org
- 2007 \_\_ **Singing Website Wallpaper**, Ursula Endlicher
- 2007 \_\_ **smSage**, Tim Redfern & Ralph Borland
- 2007 \_\_ **Sobralasolas !**, Jérôme Joy, Kaffe Matthews, Björn Eriksson, Gregory Whitehead, Dinahbird, Caroline B. (nujus.net)
- 2007 \_\_ **Sonic Graffiti**, Chia Ying Lee
- 2007 \_\_ **The Sonic Map of Battersea Park**, Gaya M. Gajewska
- 2007 \_\_ *Sound Art Museum*
- 2007 \_\_ **The Sound of Mercadolibre**, UBERMORGEN.COM
- 2007 \_\_ **The Sound of Vatnajokull**, Katie Peterson
- 2007 \_\_ **SoundPockets**, HC Gilje
- 2007 \_\_ **SoundTrack**, Gokce Kinayoglu
- 2007 \_\_ *SoundWire / JMess*
- 2007 \_\_ **My Space Sound**, Sawako Kato
- 2007 \_\_ **Stationary Aemotion**, Aether9
- 2007 \_\_ **Strings Apart**, Soundwire CCRMA Stanford, SARC Belfast
- 2007 \_\_ **TBA, PLOrk**, The Princeton Laptop Orchestra
- 2007 \_\_ **Tele-Colonization**
- 2007 \_\_ **Telematic Concert**, SoundWire Ensemble, CCRMA Stanford, Tintinnabulate RPI NYC, VistaMus CRCA UCSD
- 2007 \_\_ **Ten-Hand Piano**, Alvaro Barbosa
- 2007 \_\_ **Time Out – 100 Meeting Places**, Soundwire CCRMA Stanford, 4-way concert Chicago/NY/ Santa Cruz/Stanford, Chris Chafe, Juan Pablo Caceres
- 2007 \_\_ **Tintinnabulate**, Pauline Oliveros
- 2007 \_\_ **Tomato Quintet**, Chris Chafe
- 2007 \_\_ **Tone23 - Second Life** Mabinogion (190, 43, 63), Jay Hardesty, Drazen Bosnjak and Harris Skibell
- 2007 \_\_ **TopLap**
- 2007 \_\_ *Touch, Oslo School of Architecture and Design*
- 2007 \_\_ *transTerritoriale Generation, Paço das Artes de São Paulo, Universidade Católica de São Paulo (PUC), Goethe-Institut São Paulo, Kunsthochschule für Medien Köln (KHM)*
- 2007 \_\_ **Ubuntu Studio**
- 2007 \_\_ **Why can't you go back home forever and let me be?**, Kieren Reed, Ritter Zamet, London
- 2007 \_\_ **Worldwide Tuning Meditation**, Deep Listening, Pauline Oliveros, Damrosch Park in the South Plaza, NYC
- 2007 \_\_ **Yokohama Soundscape '07**, Tokui Nao



## 2008

- 2008 \_\_ *Internet*
- 2008 \_\_ *The Internet Archive*
- 2008 \_\_ *2.4Ghz, Benjamin Gaulon*
- 2008 \_\_ **Aqua-Scape**, Shinichi Takemura
- 2008 \_\_ **Are We There Yet ?**, Dee Hibbert-Jones & Nomi Talisman
- 2008 \_\_ **Audible Realities - iPhone Art Project**, Tokui Nao
- 2008 \_\_ **Between Two Plates**, Networked Sound Installation SARC Belfast (Ormeau Baths Gallery Belfast / University of Limerick) Pedro Rebelo, Michael Alcorn
- 2008 \_\_ **BLISS**, SARC Belfast / Siren Festivalen för ny music

- 2008 \_\_ **Bloom**, ambient music app for iPhone, Brian Eno & Peter Chilvers
- 2008 \_\_ **Bot**, Apo33
- 2008 \_\_ **Buffer Breakdown Orchestra**, Marc Chia, One Man Nation
- 2008 \_\_ **Cellphonia: Tempo Variabile**, a karaoke cell phone interactive sound/video installation by Steve Bull, Scot Gresham-Lancaster
- 2008 \_\_ **China Gates - Mobile Music Piece for Gongs and Satellitest - Sister Cities**, Art Clay & Erratum Ensemble Shanghai-Basel
- 2008 \_\_ **City+**, Chris Chafe
- 2008 \_\_ **Commonalities Between Tape Machines and Network Streams**, Marc Chia
- 2008 \_\_ **Disklavier Mark IV**
- 2008 \_\_ **European Sound Delta**, Valérie Vivancos and Joachim Montessuis
- 2008 \_\_ **The Fragmented Orchestra**, Jane Grant, John Matthias & Nick Ryan
- 2008 \_\_ « **Global Art** », Derrick de Kerkhove
- 2008 \_\_ **The Hispaniola**, Christopher Williams
- 2008 \_\_ *Hokkaido Industrial Research's 'Melody Road'*
- 2008 \_\_ *Honda Civic 'Musical Road'*
- 2008 \_\_ **In Hear, Out There**, Mat Green (SARC), Andrew Henley, Maria Prieto, Artur Vidal, Horacio González, Luis Ayuso, Carlos Panero Zurbriggen
- 2008 \_\_ *The Internal 'Orchestra' of the Earth*
- 2008 \_\_ **LAPS**, Locus Sonus, Nicolas Maigret
- 2008 \_\_ **LS in SL**, Locus Sonus in Second Life
- 2008 \_\_ **Marvelo Bikes**, Kaffe Matthews
- 2008 \_\_ **Massh!**, Tokui Nao
- 2008 \_\_ **Netrooms – The Long Feedback**, CNMAT University of California Berkeley, CCRMA, Stanford University, SARC Belfast Pedro Rebelo - Michael Zbyszynski (Berkeley), Jerome Joy (Nice), Alejo Duque (Nice), Alain Renaud (SARC), Chris Chong (Second Life)
- 2008 \_\_ *NomadicMILK, Esther Polak*
- 2008 \_\_ *Olinda*
- 2008 \_\_ **Oterp**, Antonin Fourneau, Alejandro Palmero, Jankepopp, Saitone, TM
- 2008 \_\_ **Pacific Rim-of-Wire**, Pan Asian Music Festival, Stanford Laptop Orchestra Premiere in a Live Networked Concert with Beijing, Stanford, SLOrk
- 2008 \_\_ *PALAOA - Transmitting live from the Ocean below the Antarctic Ice*
- 2008 \_\_ **Pings**, Simon Whitehead & Barnaby Oliver
- 2008 \_\_ *Programmable Media II: Networked Music, Pace University, NYC*
- 2008 \_\_ **RJDJ**, Michael Breidenbruecker
- 2008 \_\_ **Riffworld**, Somona Wire
- 2008 \_\_ **RoadMusic - Autosync**, Peter Sinclair
- 2008 \_\_ **Say The Music**, The Cathedral Band
- 2008 \_\_ **Silent Rave**
- 2008 \_\_ **Streaming Festival : onsite()online{**, <AREA 10: MEDIALAB /> London
- 2008 \_\_ **Sun Run Sun: Sonic Navigations**, Yolande Harris, STEIM, NIMk Amsterdam
- 2008 \_\_ *SoundWire / JackTrip - Multimachine jam sessions over the Internet2*
- 2008 \_\_ **Street Radio**, Armin Medosch
- 2008 \_\_ « **Tapping into the Internet as an Acoustical and Musical Medium** », Chris Chafe
- 2008 \_\_ **Telematic Performance. From Soho to Rio: What's wrong with the world ?**
- 2008 \_\_ **Telemurgence**, Deep Listening, Pauline Oliveros
- 2008 \_\_ **The Telephone Game: Oil/Water/Ether**, Princeton Laptop Orchestra (PLOrk)
- 2008 \_\_ **Trace Aureity**, Adam Nash
- 2008 \_\_ **Tuned City - Between sound and space speculation**, Berlin
- 2008 \_\_ **Urban Spaces with 4-Channel online stream**, HMSS, RIXC (Centre for New Media Culture in Riga)
- 2008 \_\_ **World Listening Project**







# NMSAT Vol. 3

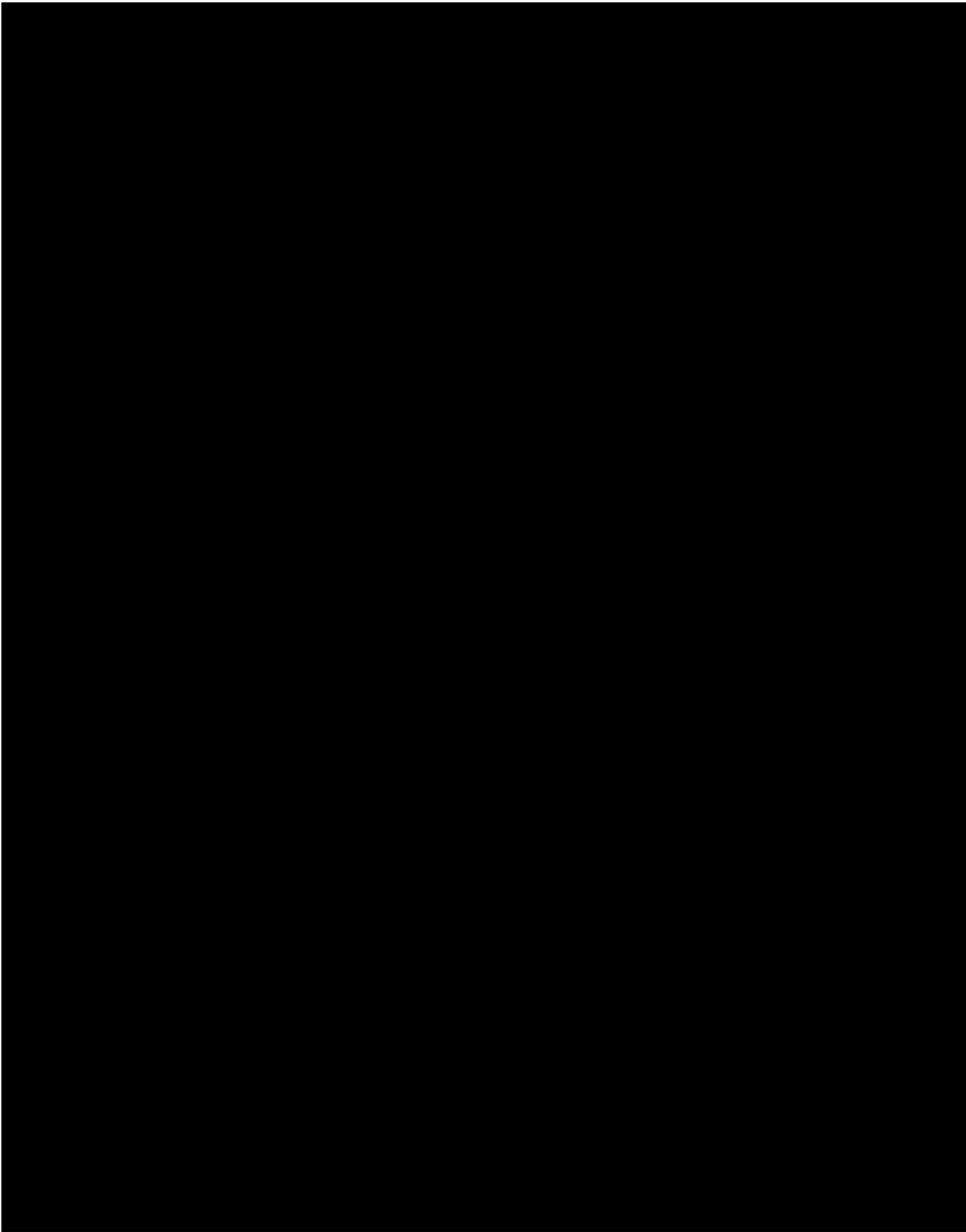
## Part 2 - Chap. 1

### (1950 - 1989)

NETWORKED MUSIC AND SOUND ART WORKS & TECHNOLOGICAL DEVELOPMENTS AND CONTEMPORARY HISTORY REFERENCES



Corpus



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**CORPUS : PART 2**

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THIS VOLUME IS NOT YET FINALIZED : NOT FORMATTED AND NOT CORRECTED.  
ENTRIES MUST BE : VERIFIED, COMPLETED, REFERENCED, TAGGED.

**1950**[TOP - NEXT](#)**1951**[BACK - TOP - NEXT](#)

- **1951 \_\_ Imaginary Landscape IV**, John Cage (For 12 radios and 24 players. Premiered May 2 (Fetterman) or 10 (Revill), 1951 in McMillin Theater at Columbia University in New York. Among the performers were Beck and Malina, Remy Charlip, Lou Harrison, Richard Miller, Harold Norse, Richard Stryker and others. John Cage conducted. A conductor arrived and half of them picked up their radios. This piece is for twelve radios each of them played by two people, one musician "tunes" and the other operates volume and tone, following chance-generated notations. The score contains timed changes to the tuning and volume in terms of amounts to turn the knobs. The conductor marked time and seemed a bit superfluous, clearly they could have just used a time piece. But it worked out and there was a wide variety of radio material from football announcing, pop music and lots of static, of a wide variety of textures and densities. Each time there were some great serendipitous captures, meaning that every performance is unrepeatable and unique due to the fact that the choice of frequencies varies according to the time and place of execution. « It is thus possible to make a musical composition the continuity of which is free of individual taste and memory (psychology) and also of the literature and ›traditions‹ of the art. The sounds enter the time-space centered within themselves, unimpeded by the service to any abstraction, their 360 degrees of circumference free for an infinite play of interpenetration. Value judgments are not in the nature of this work as regards either composition, performance, or listening. The idea of relation being absent, anything may happen. A "mistake" is beside the point, for once anything happens it authentically is. » (John Cage, *Silence*, 1967, Cambridge Mass. S. 59). In fact, "Imaginary Landscape No. 4" represents a fresh start in Cage's work in three respects: it is the first performance of a piece in which he uses the "I Ging", and it is the first use of media information that is not entirely predetermined. The piece is four minutes long, and here, a year to come before his famous silent piece «4'33'» Cage makes two random structures overlap: for the composition he uses incidental components from the Chinese oracle "I Ging" combined with incidental sounds from the radios; sounds that are in the air have to be received on the predetermined frequencies according to the time and location of the production. Thus Cage is realizing one of the first fully "open artworks" using technical media—incidentally, even before Umberto Eco coined this term. Thirdly, «Imaginary Landscape No. 4» also uses silence as a compositional element: Cage says that «almost no sound» was to be heard at the 1951 premiere, and that he was aware of the soundless quality of this piece even while writing it. As with «4'33'», the audience of «Imaginary Landscape No. 4» experienced four minutes of heightened sensitivity in which musical content is replaced by pure listening, though still mediated through the twelve radios used as instruments, allowing the mass media omnipresence of the broadcasting stations to be experienced as aesthetic raw material at the time of performance. In today's terminology, it would be possible to speak of « 4'33' » as an «unplugged» version of the piece for radio. Another version of Imaginary Landscape IV : Two performers are stationed at each radio, one for dialing the radio-stations, the second performer controlling amplitude and timbre. Durations are written in conventional notation, using notes, placed on a five-line staff. The rhythmic structure of the work is 2-1-3 and is expressed in changing tempi. Cage uses proportional notation where 1/2 inch equals a quarter note. The notation is not entirely proportional though, since *accelerandos* and *ritardandos* are still present in the score. The score gives notations for tuning (controlled by player 1) as well as volume and tone color (controlled by the second player). When one listens to the work, it is obvious that one cannot predict what will be heard, which is exactly what Cage was aiming at with this composition. Apart from that it was a way of abandoning his preferences and dislikes (Cage wasn't very fond of radios). As he puts it himself in *For the Birds*: "I had a goal, that of erasing all will and the very idea of success". The method of composing is basically the same as used in *Music of Changes*. Cage used the I-Ching to create charts, which refer to superimpositions, tempi, durations, sounds and dynamics. In the sound charts 32 out of 64 fields are silences. In the charts for dynamics, only sixteen produce changes, while the other maintain the previous situation. Similar charts were produced for the the other parameters. Cage gives an extensive description of the composing means in his *To Describe the Process of Composition Used in Music of Changes and Imaginary Landscape No.4* (In 'Silence', pp.57-60.) (En 1937, il élabore un manifeste historique (L'Avenir de la musique : Credo) par lequel il réclame, de façon prémonitoire, que soient ouverts des laboratoires ou studios permettant de composer de la musique électronique. Et comme pour en anticiper le résultat, il va

composer, entre 1939 et 1952, les cinq "Paysages imaginaires" (Imaginary Landscapes), pour petits ensembles de batteurs. Dès le premier (1939), la part belle revient à la distillation, rythmiquement raffinée, de plusieurs innovations instrumentales – n'oublions pas qu'avant la fin 1938, Cage avait défrayé la chronique en inventant le "piano préparé" – ; et au nombre de ces innovations figure – plusieurs années avant la "musique concrète" du Parisien Pierre Schaeffer – l'usage des premières sonorités électro-acoustiques. Les second et troisième Landscapes (1942) développeront une liberté du même genre, et s'inscriront dans une mouvance esthétique analogue. Mais la perspective change radicalement en 1951. Dans l'Imaginary Landscape Number Four, œuvre dont le succès de scandale ne manquera pas de corroborer la réputation quelque peu sulfureuse déjà faite à John Cage, celui-ci se permet d'afficher plus ouvertement la fascination qu'il éprouve pour les sonorités "extra-instrumentales". En effet, la partition fait appel, en tout et pour tout, à 12 récepteurs de radio actionnés par 24 exécutants. Et un an plus tard, soit en 1952, l'Imaginary Landscape Number Five – lequel se trouve être immédiatement antérieur à la célèbre pièce silencieuse 4'33" – va définitivement enfoncer le clou : l'auteur, séduit par le principe d'une écriture à base de graphes que vient de mettre au point son collègue Morton Feldman, décide de l'appliquer au domaine électro-acoustique. Du coup, la partition requiert que l'on enregistre sur une bande magnétique huit strates de sonorités distinctes, elles-mêmes prélevées sur un ensemble de 42 disques pris au hasard. Il s'agit, comme l'auteur l'a laissé entendre, d'un galop d'essai en vue de la réalisation de l'une de ses pièces électro-acoustiques majeures, le Williams Mix (à venir, également en 1952), pour laquelle sera employée une procédure complexe de superposition et d'emboîtement de strates. Le déferlement sonore ainsi organisé excèdera de ce fait, tout comme dans le cas des 12 radios du Number Four, les possibilités d'anticipation de son (ou de ses) initiateur(s) – si bien que l'"imaginaire" auquel faisait référence le titre des Imaginary Landscapes n'est même plus de saison, le musicien n'hésitant plus à affronter de plein fouet l'indétermination. (...) Notons au passage que ceux des musiciens (européens, en premier lieu) qui n'avaient pas reçu cette problématique de John Cage en 1952 ont eu ensuite l'occasion de se familiariser avec elle, grâce (entre autres) à un manifeste ironique professé au Festival de Palerme par Mauricio Kagel, et que son intitulé (latin), *Decompositio est*, a rendu fameux. (On songe à ce propos à la manière dont Derrida a traduit la notion heideggerienne de *Destruktion*, en se contentant d'insérer, à même ce mot, un (modeste) supplément d'une syllabe – ce qui lui a permis d'obtenir en français le concept-clef de déconstruction.) Que, par un si mince ajout, on puisse se permettre non seulement de retrancher, mais bien de démolir, un tel oxymore mérite sans doute d'être considéré d'un peu plus près. Reprenons à cet effet l'exemple de l'Imaginary Landscape pour 12 radios. La création en fut, dit-on, tumultueuse, car l'œuvre, programmée pour la fin de la soirée, fut jouée après minuit ; la plupart des stations ayant cessé d'émettre, on entendit essentiellement un concert de parasites. En choisissant de s'en tenir à cet instrumentarium radiophonique, le compositeur avait-il piégé ses interprètes et son public ? Non, car cette décision n'avait nullement cherché à soustraire ou à perturber quoi que ce fût, de l'œuvre et de son économie – et pourtant la partition mettait quiconque au défi, même si l'exécution avait eu lieu à une heure ouvrable, de supputer par exemple quels émetteurs fonctionneraient, ni ce qu'ils diffuseraient. Il eût fallu, pour cela, se lever tôt et calculer d'arrache-pied... Tout, en somme, reposait sur une question de temps. Mais le temps n'est-il pas, à l'époque de la technologie déchaînée, ce qui manque le plus ? (...) Les Imaginary Landscapes ne sont pas seulement "imaginaires" au titre des interactions entre leurs diverses composantes. Pour le dire à la façon de Murray Schäfer, ce sont aussi des Soundscapes. Et dès lors qu'ils instaurent des paysages sonores, l'"image" qu'ils véhiculent prend valeur de témoignage, non seulement sur l'évolution ou la mutabilité évanescence de la sensation auditive qu'ils procurent, mais sur l'émergence, à même son écoute, de l'esquisse fictionnelle d'un spectacle – comme si ce qui est à entendre n'avait de cesse que de se donner à voir. (...) C'est cette subtilité qui fait assurément le prix des équivoques cagiennes, de plus en plus teintées de logique bouddhiste à mesure que se succèdent les Imaginary Landscapes, et c'est à elle que renvoie clairement, dans la production de Cage à partir de 1952, l'éthique de l'"indétermination" telle que l'œuvre, dans le sillage des Landscapes mais avec toute la saveur d'un kôan, la première pièce silencieuse 4'33". Et c'est de cette même subtilité, ourlée assurément de tous les risques et incertitudes liés au déchiffrement de la nouveauté, que participe le temps "néo-technologique" (Mario Costa, "L'esthétique de la communication et le temps technologique", *Art press*, éd. spéciale *Artmedia VIII* (29 nov.-2 déc. 2002), p. 6-7.) dont fait état Mario Costa, et que l'on définira volontiers avec lui comme "un flux d'énergie indiscernable", c'est-à-dire "comme un flux d'une énergie engendrée par l'entrelacement qui existe entre le temps de l'organisme et le temps de la machine communicante et, par conséquent, entre le temps du sujet et le temps de l'espèce. Tout cela produit l'affaiblissement réciproque de chacun de ces termes : organisme, machine, sujet et hypersujet se confondent et se dissipent l'un dans l'autre. Leur place est alors l'écoulement, en un présent continu et universellement répandu, d'un fracas indistinct d'énergie, vitale et en même temps machinique, subjective et en même temps collective. L'esthétique de la communication est un détecteur de zones de perturbations et de champs de vibrations ; elle signale ces zones et ces champs, les fait apparaître et les laisse subsister." [Daniel Charles, "À Propos des Imaginary Landscapes (1939-1952) de John Cage", *ArtMedia VIII*, Paris 2002] <http://www.medienkunstnetz.de/works/imaginary-landscape-4/> [http://www.olats.org/projetpart/artmedia/2002/t\\_dCharles.html](http://www.olats.org/projetpart/artmedia/2002/t_dCharles.html)

- 1952 \_\_ *Silence*, John Cage (“Cage wrote in 1952 (in “Silence”), “The sounds enter the time-space centered within themselves, unimpeded by service to any abstraction, their 360 degrees of circumference free for an infinite play of interpenetration ... ” SparkleDog recently posted to a music message board, “Cage had the Internet down only he didn’t name it.” Of the billions of people on Earth with different things in their heads at any given moment, millions use the Net, so developing still other venues and methods for highly individual and splendidly social expression and spontaneity seems to be a compelling aesthetic imperative.” [“Blue” Gene Tyranny, “Out To The Stars, Into The Heart: Spatial Movement in Recent and Earlier Music”]

## 1953

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## 1954

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- 1954 \_\_ **Early computer music performance at MoMA by the founders of Computer Music Center at Columbia University of New York.** *The forerunner of the Columbia-Princeton Electronic Music Center was a studio founded in the early 1950s by Columbia University professors Vladimir Ussachevsky and Otto Luening, and Princeton University professors Milton Babbitt and Roger Sessions. Originally concerned with experiments in music composition involving the new technology of reel-to-reel tape, the studio soon branched out into all areas of electronic music research.)*

- 1954 \_\_ **Sonification** (Sonification in one sentence described is the use of non-speech audio to convey information. The expression Sonification comes from the two latin syllables “sonus” which means sound and the ending “fication” which forms nouns out of verbs which are ending with ‘-fy’. To “sonify” means therefore to convey the information via sound. As a very basic example for Sonification can be seen a Geiger detector which “conveys” information about the level of radiation or even more basically a church bell which “conveys” the current time. Alone or in combination with visual imaging techniques, Sonification offers a powerful tool of transmitting information. It can improve and increase the bandwidth of the interface “human-computer” and can find a lot of applications in the wide range of information technology. The first pioneers of Sonification however who started with Sonification the way we understand it nowadays were Pollack and Ficks in 1954 Pollack, I, and L. Ficks. “Information of Elementary Multidimensional Auditory Display”. J. Acoustic Society America, 1954). They published a paper detailing research into the use of abstract auditory variables to convey quantitative information. Using tone and noise bursts, they designed a display that presented eight binary variables encoded as the pitch area of the noise, the loudness of the noise, the pitch of the tone, the loudness of the tone, the pitch/noise alternation rate, the temporal ratio of tone to noise, the total duration of the display, and the stereo location of the display. They also created a display without the noise bursts which yielded six binary variables. Not later than 1961, Speeth Speeth, S. D. “Seismometer Sounds”. J. Acoustic Society America, 1961) reported the results of experiments that used Audification of seismic data to determine if subjects could differentiate earthquakes from underground bomb blasts. Because of their complexity, seismograms that resulted from these events were difficult to understand and categorize. By speeding up the recordings of the seismic data, the complex wave was shifted into the audible range. For over 90% of the trials, subjects were able to correctly classify seismic records as either bomb blasts or earthquakes. Additionally, by speeding up the playback of the data, analysts could review 24 hours of data in about five minutes. In 1974 three scientists, Chambers, Mathews, and Moore (Chambers, J. M., M. V. Mathews, and F. R. Moore. “Auditory Data Inspection”. Technical Memorandum no. 74-1214-20, AT&T Bell Laboratories, 1974) designed a three-dimensional auditory display at AT&T Bell Laboratories. In an auditory enhancement of a scatter plot, they encoded three data variables as pitch, timbre and amplitude modulation. While no formal testing was conducted, they found that the auditory representation did assist in the classification of the data. J. Keller defined in 2003, that Sonification can be categorized in three ways: 1/ Iconic Sonification: This type of Sonification is when someone maps data to sounds that are associated with certain phenomena. For example, if we gathered weather data, such as cloud cover, temperature, and humidity, to calculate the probability of rain tomorrow, then using the sound of rain to indicate when there is a high probability of rain would be an iconic Sonification. 2/ Direct Conversion Sonification: This type of Sonification is when someone maps data to sound to listen for patterns that are represented in the data. For example, space scientists map data of waves made up of magnetic and electric fields called electromagnetic waves to sound waves. This direct conversion Sonification can be as simple as taking the frequencies of the waves and making sound waves with the same frequencies, which is most useful as long as the frequencies are at pitches that our ears can hear. Earth’s whistler wave is such an electromagnetic wave that scientists have been sonifying for over 30 years. 3/ Musical Sonification: This type of Sonification is when someone maps data to sound in a musical way. For example, we have created a computer software program that will convert data of very fast particles that have come from the Sun and are captured by an instrument on one of 2 satellites in space, called Helios 1 and Helios 2, to bell-like sounds. Several musicians have used musical Sonification of space data to create quartet or

orchestra music pieces. For years data structures have been perceived in sound and these structures have become a basis for musical systems. Predating Pythagoras, who analyzed the structure of harmonics and applied them to musical scales, we see the application of natural law to human-generated sound-producing systems. Pythagoras, referred to his results as "sounding members". Refinements and extensions of this law defined the development of the musical scales in use all over the world, from the Shakuhachi (bamboo flute) of Japan to the diatonically tuned music synthesizers of global popular music. Manipulating sound for musical ends based upon data or mathematically derived structures arises from a distinguished tradition. Early in the Christian era, the astronomer Ptolemy remarked on the elements of musical modulation and wrote widely studied book on harmonics, as did Kepler and Newton.) <http://spdf.gsfc.nasa.gov/research/sonification/documents/Chapter1.pdf> [http://spdf.gsfc.nasa.gov/research/sonification/sonification\\_documentation.html](http://spdf.gsfc.nasa.gov/research/sonification/sonification_documentation.html)

## 1955

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- 1955 \_\_ *Gesang der Jünglinge*, Karlheinz Stockhausen (In the 1950s, the German composer Karlheinz Stockhausen experimented with and produced ground-breaking electronic compositions such as "Gesang der Jünglinge" and "Kontakte", the latter using fully discrete and rotating quadraphonic sounds generated with industrial electronic equipment in Herbert Eimert's studio at the Westdeutscher Rundfunk (WDR). *Gesang der Jünglinge* is also noted for its early use of spatiality; it was originally in five-channel sound, which was later reduced to just four channels (mixed to monaural and later to stereo for commercial recording release).)

## 1956

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- 1956 \_\_ **Radio Music**, John Cage (*Radio Music*, composed in May, 1956, premiered on May 30, 1956 at the Carl Fisher Hall in New York City. Performance by John Cage, pianists Maro Ajemian, David Tudor, Grete Sultan and the four members of the Juilliard String Quartet. An 'all musicians' super group, though the score does not require musical literacy, unlike the other radio work 'Imaginary Landscape nr. 4' (1951), for 12 radios, which is musically notated and requires a conductor. A third work by Cage, requiring radios (5) and one newsreader, is 'Speech' (1955). Radios in Cage's works, just like turntables/records (cf. *Imaginary Landscape nr. 1* (1939), using test records (with constant tones) which some sources give the credit of being the first ever electro acoustic work, but there were earlier examples like Respighi's 'Pini di Roma' (1924), using pre-recorded sounds of birds) are to be heard more as 'objets trouvés' or 'found sounds' rather than sound generating tools (which they were in the hands of 'arbitrary' composers like Pierre Schaeffer (records) or Karlheinz Stockhausen (shortwave radio)). The score to *Radio Music* (for 1 to 8 performers) indicates very brief instructions: ...to be played alone or in combination with the other parts. In 4 sections to be programmed by the player with or without silence between the sections, the 4 to take place within a total time-length of 6 minutes. Duration of individual tunings is free. Each tuning to be expressed by maximum amplitude. A \_\_\_\_\_ indicates 'silence' obtained by reducing amplitude approximately to zero. The list of frequencies ranging from 55 to 156 is confusing at first (at least to me), especially when Cage mentions in interviews (cf. *Conversing with Cage* - Richard Kostelanetz ed.) kilocycles. The range between 55 and 155 kHz being the LW band, which in the US (contrary to Europe) has no commercial broadcasting, only 'services' like weather forecasts. But then pictures and people made me aware of the fact that AM radios in the 50's omitted the last 0's on the dial wheel. This placed the *Radio Music* frequencies in the AM band. [Guy De Bièvre]) <http://okno.be/?id=591>

- 1956 \_\_ **This is Tomorrow**, ICA Independent Group ("This Is Tomorrow" was a seminal art exhibition in August 1956 at the Whitechapel Art Gallery, facilitated by the innovative curator Bryan Robertson. "This is Tomorrow" has become an iconic exhibition notable not only for the arrival of the naming of Pop Art but also as a captured moment for the multi-disciplinary merging of the disciplines of art and architecture. This legendary exhibition (June 1956, Whitechapel Art Gallery) was an attempt at a super-juxtaposition, in order to explore a notion of space from multiple approaches: architectural, pop-cultural, social, aesthetical, and perceptual. The core of the exhibition was the ICA Independent Group. It was conceived by architectural critic Theo Crosby, who was the editor of *Architectural Design* magazine, and a member of the ICA. Theo Crosby had attended a congress in Paris in 1954 on the drawing together of fine and applied arts, and later approached about a similar concept to This Is Tomorrow by representatives of Groupe Espace in London. This Is Tomorrow exhibition included artists, architects, musicians and graphic designers working together in 12 teams, an example of multi-disciplinary collaboration that was still unusual. Each group took as their starting point the human senses and the theme of habitation. The exhibitions most remembered exhibit was the room by Richard Hamilton, John Voelcker and John McHale, with collaboration from Magda and Frank Cordell. It included the Op Art Dazzle panels, collage Space modules, and Pop Art 'readymade' Found art of a Marilyn Monroe poster, the Van Gogh Sunflowers poster, a film advertising

billboard of the Forbidden Planet, Robby the Robot, a Jukebox, the strawberry perfumed carpet, the endless reel of film depicting the Royal Navy Fleet at sea, the large Guinness beer bottles, the Marlon Brando poster image and the 'CinemaScope' collage mural design, and the design of the Pop art collage poster that were all provided by John McHale. Frank Cordell assisted McHale with accessing the film posters such as Julius Caesar (1953 film) for the collage murals, the Forbidden Planet items, the juke box with an endless selection of popular records, including Frank Cordell's pop hit, and installing the film projector, and installing the Duchamp rotor discs given to McHale by Marcel Duchamp in New York. Frank Cordell also installed the electronic amplifier and microphone enabling the ambient sounds from audience cybernetic feedback; and this was the first example of an artistic "Happening" in Britain. The Senses panel with arrows featuring Tito was a joint collaboration between Hamilton and McHale, and the version reproduced in the catalogue was slightly different in wording to alter the optical perception of viewers. Parts of This Is Tomorrow were recreated in 1990 for an exhibition at the Institute of Contemporary Arts. Group One: Theo Crosby, Germano Facetti, William Turnbull, Edward Wright / Group Two: Richard Hamilton, John McHale, John Voelcker / Group Three: J. D. H. Catleugh, James Hull, Leslie Thornton / Group Four: Anthony Jackson, Sarah Johnson, Emilio Scanavino / Group Five: John Ernest, Anthony Hill, Denis Williams / Group Six: Eduardo Paolozzi, Alison and Peter Smithson, Nigel Henderson / Group Seven: Victor Pasmore, Erno Goldfinger, Helen Phillips / Group Eight: James Stirling, Michael Pine (CMHC Ottawa architect), Richard Matthews / Group Nine: Kenneth Martin, Mary Martin and John Weeks / Group Ten: Robert Adams, Frank Newby, Peter Carter, Colin St. John Wilson / Group Eleven: Adrian Heath, John Weeks / Group Twelve: Lawrence Alloway, Geoffrey Holroyd, Toni del Renzio.) [http://www.thisistomorrow2.com/pages\\_gb/1956gb.html](http://www.thisistomorrow2.com/pages_gb/1956gb.html)

## 1957

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- **1957 \_\_ Grand Composition**, Pauline Oliveros (After receiving her bachelor's degree in composition in 1957, Pauline conducted the experiment that would change her life completely. She had begun working with electronic means, and the whole field of time and sound became her material, as John Cage predicted for composers in 1937. Sitting in her little apartment on Presidio Avenue one day, Pauline pointed a microphone out an open window and recorded the sound environment until the tape ran off the reel. "What shall I record next?" had been her impetus. While the recorder ran she sat and listened carefully, and discovered upon replaying the tape that she had not heard all of the sounds found there. "I discovered for the first time how selectively I listened and that the microphone discriminated much differently from that which I did." From that moment she became determined to expand her awareness of the entire sound field. To do this, she gave herself a seemingly impossible task: To literally listen to everything all the time. Why? "If nothing else, music in any of its multitudinous manifestations," including the songs of nature, "is a sign of life. Sound is intelligence. If I don't listen I don't learn, I don't expand, I don't change." Through this exercise, which by now has become a life-long process, Pauline began to hear the sound environment as a Grand Composition. The rhythms and relationships that occurred began to enter her work consciously. But her listening assignment proved painful at times. Whenever she found herself not doing it, she realized this caused gaps in the Grand Composition, at least for her. And the artificial environment and its wastes were snuffing out what must have been a world symphony of natural sounds. Anyone can attest to how distasteful industrial noise pollution can be. But her work with electronic music provided a channel for that and allowed her to experiment further with tonal composites, splintering overtones and partials, and what she calls "the delightful ambiguity between pitch and sounds." But doing her assignment soon made it clear that it was possible to give equal attention to all that entered the sound field. This awareness is very general, open, and non-judgmental, as compared to concentrated attention which is narrow, clear, and selective but limited in capacity. What is amazing is that Pauline discovered she could use both modes at the same time, that listening to everything generally did not distract at all from her ability to concentrate on specific things.) <http://www.o-art.org/history/50s&60s/TapeCenter/Oliveros/INTERVAL86.html>

- **1957 \_\_ Friedrich Jürgenson** (In 1957 in Sweden Friedrich Jürgenson bought a tape-recorder to record his own singing and he started to notice at this time some quite strange phenomena; inexplicable fade-ins and fade-outs on the tapes; abstract visions and telepathic messages. Jürgenson understood that these events were produced by his highly developed aural and visual senses caused by his artistic process. « I sat by the table, clearly awake and relaxed. I sensed that soon something was going to happen. Following an inner pleasurable calmness, long sentences in English appeared in my consciousness. I did not perceive these sentences acoustically but they formed themselves as long phonetic sentences and after a closer study I couldn't conceive the words as correct English but in a disfigured almost alphabetical way - completely deformed. I did not hear a voice, a sound nor a whisper. It was all soundless. » Later he also recalled that in the spring of 1959 he « got a message about a Central Investigation Station In Space, from where they conducted profound observations of Mankind » and « My friends spoke about certain electro-magnetic screens or radars, that were frequently transmitted, day and night, in thousands to our three dimensional life levels and like living beings had a mission as mental messengers. Undoubtedly one could see these radars as half-living robots that, remote controlled, had the ability like an oversensitive television or radio to correctly register and transmit all our conscious and unconscious impulses, feelings and

thoughts. » Jürgenson knew that these fantastic facts really belonged in a Science Fiction world but he carried on hoping to capture these messages on tape. On June 12, 1959, Jürgenson, and his wife Monica went to visit their country house to enjoy the warm summer. Jürgenson brought his tape-recorder to record the singing of wild birds, especially the chaffinch. Listening to the tape he « heard a noise, vibrating like a storm, where you could only remotely hear the chirping of the birds. My first thought was that maybe some of the tubes had been damaged. In spite of this I switched on the machine again and let the tape roll. Again I heard this peculiar noise and the distant chirping. Then I heard a trumpet solo, a kind of a signal for attention. Stunned, I continued to listen when suddenly a man's voice began to speak in Norwegian. Even though the voice was quite low I could clearly hear and understand the words. The man spoke about 'nightly bird voices' and I perceived a row of piping, splashing and rattling sounds. Suddenly the choir of birds and the vibrating noise stopped. In the next moment the chirping of a chaffinch was heard and you could hear the tits singing at a distance - the machine worked perfectly! ». From this point Jürgenson continued to investigate in these phenomena and at first he thought it was his "friends from outer space" but very soon he began to believe that these voices were "from the other side", or the 'Voices of the Dead'. At this point Jürgenson abandoned painting for his audio recordings and in 1964 he published 'The Voices From Space' (Rösterna Från Rymden, Saxon & Lindström Förlag, Stockholm). At first Jürgenson only used a microphone and a tape recorder. He simply set up the microphone, set the recorder to 'record' and spoke clearly into the room, leaving space for voices to respond. This was a bit tricky for Jürgenson since he always had to play back the tape, sometimes at a lower speed, to hear the voices. These voices spoke in a combination of various languages such as Swedish, German, Russian, English, Italian - all languages that Jürgenson knew and could speak. He called this new mixture of languages 'polyglot', or 'many tongues'. In spring 1960 one of the voices told him to "use the radio" as a medium and this was the technique he used until his death. He connected a microphone and a radio receiver to the tape recorder and in this way he could have a real-time conversation with his "friends". Usually he set the radio reception in between the frequencies where there's generally a variation of noises. Later he fixed the receiving frequencies to around 1445-1500 kHz (1485.0 kHz is now called the Jürgenson Frequency.) <http://www.fargfabriken.se/fjf/life.html>

## 1958

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- **1958** \_\_ **Kontakte** (Contacts), Karlheinz Stockhausen (Kontakte ("Contacts") is a celebrated electronic music work by Karlheinz Stockhausen, realized in 1958-60 at the Westdeutscher Rundfunk (WDR) electronic-music studio in Cologne with the assistance of Gottfried Michael Koenig. The title of the work "refers both to contacts between instrumental and electronic sound groups and to contacts between self-sufficient, strongly characterized moments. In the case of four-channel loudspeaker reproduction, it also refers to contacts between various forms of spatial movement" (Stockhausen 1964). According to the composer, "In the preparatory work for my composition Kontakte, I found, for the first time, ways to bring all properties [i.e., timbre, pitch, intensity, and duration] under a single control" (Stockhausen 1962), thereby realizing a longstanding goal of total serialism. The most famous moment, at the very center of the work, is a potent illustration of these connections: a high, bright, slowly wavering pitch descends in several waves, becoming louder as it gradually acquires a snarling timbre, and finally passes below the point where it can be heard any longer as a pitch. As it crosses this threshold, it becomes evident that the sound is comprised of a succession of pulses, which continue to slow until they become a steady beat. With increasing reverberation, the individual pulses become transformed into tones once again. Stockhausen also made advances over his previous electronic composition, *Gesang der Jünglinge*, in the realm of spatial composition, adding the parameters of spatial location, group type, register, and speed (Toop 2005). Kontakte is composed in four channels, with loudspeakers placed at the corners of a square surrounding the audience. With the aid of a "rotation table", consisting of a rotatable loudspeaker surrounded by four microphones, he was able to send sounds through and around the auditorium with unprecedented variety.)

- **1958** \_\_ « **Musik im Raum** » (Music in Space), Karlheinz Stockhausen (in die Reihe, n° 5, 1959) (In lectures such as "Music in Space" from 1958 (Stockhausen Texte 1:152-75) in Darmstadt, he called for new kinds of concert halls to be built, "suited to the requirements of spatial music". His idea was a spherical space which is fitted all around with loudspeakers. In the middle of this spherical space a sound-permeable, transparent platform would be suspended for the listeners. They could hear music composed for such standardized spaces coming from above, from below and from all points of the compass. (Stockhausen Texte 1:153) This was realized from 1968 : For the 1970 World Expo in Osaka in 1970, Germany built the world's first, and so far only, spherical concert hall (a complete sphere). It was based on artistic concepts by Karlheinz Stockhausen and an audio-technical concept from the Electronic Studio at the Technical University in Berlin. The audience sat on a sound-permeable grid just below the centre of the sphere, 50 groups of loudspeakers arranged all around reproduced, fully in three dimensions, electro-acoustic sound compositions that had been specially commissioned or adapted for this unique space. Works by composers including Bernd Alois Zimmermann and Boris Blacher were played from the multi-track tape, along with Bach and Beethoven. In the course of the 180-day exhibition, Stockhausen and a high-calibre, 19-strong ensemble gave live concerts for over a million visitors; «Spiral,» for a soloist and short-wave receiver was played over 1300 times, for example. It was possible to achieve the three-dimensional sound distribution live, using

a spherical sensor built in Berlin to feed the 50 sound sources, but a ten-channel rotary mill constructed to Stockhausen's design was deployed more frequently. [Golo Föllmer]) (« Dans *Gesang der Jünglinge*, j'ai été le premier à réaliser l'insertion à l'intérieur même de la composition de la direction sonore et de la mobilité spatiale des sons, à constituer donc une nouvelle dimension de l'expérience musicale. (...) Un espace sphérique à la surface duquel seraient disposés des haut-parleurs. Au milieu de cet espace sphérique serait suspendue une plate-forme acoustiquement perméable et transparente où les auditeurs prendraient place. » - *Contrechamps*, n°9, *L'Age d'Homme*, Paris, 1988, pp. 78-100)

- 1958 \_\_ *L'Homme et la machine, Poème électronique*, Edgard Varèse (This was one of his only purely electronic pieces and it represents what he had been working towards for years- he had been imagining a composition that was made by unconventional means. In a way, it was the culmination of years of work in his attempt to capture sounds and ideas that couldn't be done with traditional instruments. Although you don't have the sense of the way it was presented originally at the World's Fair with 400 speakers, it still presents itself as a very poetic piece with a large variety of sound sources that are combined in an exciting way. You can also experience how these sounds move through space in a way that had never been attempted before. I saw him regularly and we talked about ideas. Varese talked abstractly about his music. He didn't talk about it too specifically. He was more concerned about principles and aesthetics. He was concerned with the kind of sound he had in mind, the specific compositional goals. In reference to the piece, he was talking his need for adequate equipment to project the kind of sounds that he had in mind. He was unhappy about his experience with "Deserts" so he talked about what he wanted to achieve through adequate electronic means. He was very hopeful at that time that the laboratory in Eindhoven would be able to provide him the opportunity of realizing the sounds he had in mind. He was thinking of the sound being set free in space and very much concerned about how sound can move, interact, collide and integrate with sound. He talked about sound masses. In his conversations, he would talk about poetic implications, a kind of music that would emerge out of realizing the natural attributes of sound. Subsequently, he became more and more disillusioned with the environment in the studio. He had to deal with the scientists and engineers there at Eindhoven and they were very difficult. He said "we thought we were getting rid of prima-donna's in music but now we have prima-donna engineers!" (laughs) That really reflects his frustration. Then there was also the controversy about the premiere performance. Le Corbusier fought for him to be the composer but the board members wanted someone more conventional. So there was a struggle going on. Some of the engineers and technicians were very good to him and others weren't. He felt very frustrated to convince people and tried to convey his ideas to people. He really did a lot of work there. He brought along some sketches of some pieces and had a chorus and percussion part for "Deserts." He made revisions of the recordings to be used in "Poème Electronique." He also used organ music that I had to transpose in different ways which had been used for "Deserts." You can recognize these things in "Poème Electronique," although transformed. There's a continuity of the past there, the musical ideas that he began to conceive since the 1930's. He gradually evolved "Espace" as the word implies (French for "space"). He had the idea of how sound would travel in space. At one stage, he was talking about having the piece performed in different parts of the world and then received in a concert hall using radio transmitters and capturing all the static interference and other sounds there. You can see how lively his mind was and how he was really thinking of the space in all the senses of it. He was not a scientist although many people accuse him of being too scientific. Not at all. When he wrote about "Deserts," when he was talking about 'space,' he said "I don't mean space in the universe, it could happen in your mind." Ever since his childhood, he was attracted to various types of exploration, especially through science. [Chou Wen-chung]) (pour bande magnétique, distribution spatiale par 400 haut-parleurs (Exposition de Bruxelles). L'occasion rêvée pour Varèse - la seule véritablement réalisée par lui - est le spectacle son et lumière présenté en 1958 à l'Exposition de Bruxelles au pavillon dessiné pour la Corporation Philips de Hollande par Le Corbusier aidé par le compositeur et architecte Iannis Xenakis. La partie visuelle de Le Corbusier, constituée de lumières colorées et mouvantes et d'images projetées sur les murs du pavillon concurrence la musique de Varèse : son Poème Électronique est diffusé par 425 haut-parleurs. "Il y avait 20 groupes d'amplificateurs. La musique était enregistrée sur une bande magnétique à 3 pistes qui pouvait varier en intensité et en qualité. Les haut-parleurs étaient échafaudés par groupes et dans ce qu'on appelle des "routes de sons" pour parvenir à rélaiser des effets divers : impression d'une musique qui tourne autour du pavillon, qui jaillit de différentes directions; phénomène de réverbération... etc. Pour la première fois j'entendais ma musique littéralement projetée dans l'espace." (Edgar Varèse). C'est précisément l'œuvre à 4 dimensions, l'œuvre spatialisée vivant dans l'espace unique de la salle où jouent les faisceaux des projections sonores qui rend possible une expérience esthétique à l'intérieur de la matière de la musique, expérience non reproductible par la suite. [Ivanka Stoianova, "Varèse et la musique contemporaine", in "Edgard Varèse du son organisé aux arts audio" par Timothée Horodyski, 2008])

- 1958 \_\_ « *Du mode d'existence des objets techniques* », Gilbert Simondon (In 1958 Simondon saw culture as unbalanced because it enshrined the aesthetic object in the world of significations while driving the technical object back into the structureless world of what had no signification but a use. Simondon sought to integrate the machine into the family of human things as a component of a global rebirth of culture. The gap which separated the occidental man from the work of his hands demanded to be bridged. And the activities of the craftsman, simultaneously ancient and modern, provided a model of understanding, employment, and humanization of the machine. (SIMONDON, Gilbert. 1958. *Du mode d'existence des objets techniques.*) [Carlos Palombini, "Musique Concrète Revisited"]) <http://www.rem.ufpr.br/REMr4/vol4/arti-palombini.htm>

- **1958** \_\_ **Radio Mercur** (Offshore radio broadcasting did not begin in Denmark. However, the concept of broadcasting popular music programs from international waters directed towards an audience in a country with a state monopoly on radio transmissions came from Radio Mercur, a Danish commercial radio station that started airing its programs on August 2nd, 1958 — now half a century ago. Henrik Nørgaard, author of the book *Pirater i æteren* (2003). From August 2, 1958 until July 31, 1962 a pirate station called Radio Mercur transmitted commercial radio from a ship in the international waters between Denmark and Sweden. It was aimed at youthful listeners. Another pirate, named DCR, or Danmarks Commercielle Radio, was on air from September 15 1961 until January 29 1962 when it combined with Radio Mercur. Eventually, the ship called Cheta II was forced - by the Danish FCC - to stop transmitting. (The law even forbade Danish citizens from recording programs from Radio Mercur!) [http://www.icce.rug.nl/~soundscapes/VOLUME11/When\\_Mercury\\_got\\_wings.shtml](http://www.icce.rug.nl/~soundscapes/VOLUME11/When_Mercury_got_wings.shtml)

- **1958** \_\_ **Rotation Table**, Karlheinz Stockhausen (Stockhausen had been involved with spatial composition since his work, *Gruppen* from 1955, which is written for three orchestras placed to the left, front, and right of the audience. In 1958 he began work on *Carré*, a composition for 4 orchestras and 4 choruses, which are placed around the audience, and in that same year, began experiments for his next electronic work, *Kontakte* (Contacts, 1959/60), which exists in two versions; one for 4 channel tape alone, and one for 4 channel tape and live piano and percussion. For this piece, Stockhausen invented several new forms of spatial movement such as “flood sounds,” which begin in one speaker only and rapidly flood through the other 3 speakers, as well as rotating sounds, which required the construction of the first location device, the rotation table. The rotation table is a large turntable, that could rotate up to about 6 revolutions per second, and had a kind of directional loudspeaker attached to the center of it. The electronic music was played back, in mono, and the music was re-recorded onto 4 track tape with four microphones placed around the table. When this second tape is played back, using 4 speakers placed in the corners of the listening space, the music seems to spin around the room at various changing rates, and with very distinctive phase and doppler shifts. “All spatial chords and spatial melodies of HYMNEN up to circa 4 rotations per second were made using this manually turned rotation table”. Surrounding the audience with four loudspeakers and using a “rotation table,” Stockhausen sent sounds throughout the venue sourced from both live and pre-recorded material. In order to achieve the spatial element in *Gesang* (1955), Stockhausen created a “rotation table” (basically a lazy susan); the sound source was placed on the table, which was rotated by hand to a maximum velocity of six rotations per second. Four microphones were placed around the table to record (on four separate channels) the sounds that each of them “heard”. Four of the five loudspeakers used in the first performance of *Gesang* broadcast what these four microphones recorded; the fifth used a mix of the four, and was intended to hang from the ceiling (not feasible, as it turned out))

## 1959

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- **1959** \_\_ **Vision**, La Monte Young (In 1959 Young composed *Vision* in which the formal concert setting was deflected in a manner not entirely distant from 4'33": a group of musicians performed “eleven sounds . . . whose spacing and timing were to be worked out by consulting a random number table or telephone directory” with “the lights . . . turned off for the duration of the composition so the audience would know when the piece began and ended:” its premiere was received in the same sense of shock as the *Trio for Strings*. This particular piece would be only a hint of what would come in the next year.) (Young écrit *Vision* en novembre 1959 en s'appuyant, comme Brecht pour *Candle Piece for Radios*, sur le tirage au sort. Les sons, prévoit Young, sont émis par des instruments à vent (une flûte à bec, deux bassons, des cuivres, ...) et à cordes (un piano, un violon, un violoncelle, ...). La durée du morceau est fixée à treize minutes, et son principe de base est l'émission de onze sons, chacun d'une durée différente. La partition (en fait, un texte) est accompagnée de cartes à attribuer au hasard pour chaque instrument. Elles indiquent, d'une part, différentes durées, et d'autre part, différentes façons d'interpréter les sons : certaines enjoignent de hurler ou de grogner dans l'instrument, d'autres demandent de frotter le bord d'un cendrier en verre sur la corde d'un piano, ou bien de se servir des bassons de façon à imiter le bruit d'un troupeau d'éléphants (ce qui importe, précise l'auteur, n'est pas tant la fidélité de l'imitation que la sauvagerie avec laquelle le son est émis). “N'importe lequel de ces sons peut être joué avec n'importe laquelle de ces durées, et cela doit être déterminé par le hasard à chaque interprétation. Une façon simple de déterminer quel son doit être joué pendant quelle durée est d'écrire la liste d'un groupe (que ce soient les durées ou les sons) sur un papier, puis de tirer un par un les éléments de l'autre groupe d'un chapeau, ou d'un paquet de cartes, et ainsi de mettre la première carte avec le premier son ou la première durée de la liste.” (extrait de la partition). En ce qui concerne les moments auxquels chacun des onze sons doivent être joués, Young calcule que les treize minutes de la pièce sont égales à 3120 quarts de secondes, qui constituent autant de points d'entrée à déterminer à l'aide d'un livre de nombres aléatoires. Toutes ces opérations de hasard doivent être effectuées avant que les interprètes s'emparent des instruments, et sont à renouveler à chaque interprétation. [Pierre Saurisse, “La Mécanique de l'imprévisible : art et hasard autour de 1960”] <http://www.geocities.com/hstencil/tonyconrad1.html>

- 1959 \_\_ **Sounds of Venice**

- ▶ *John Cage (1912-1992)*
- ▶ *Comment* : Milan, January 1959, For solo television performer (3'). This is a score for a solo television performance, involving 20 items to be used during the performance and 4 single-track tapes, 7½" per second and 3 minutes each. The objects and sounds reflect the city of Venice, including bells of various kinds, boat horns and a toy that meows like a cat. The score consists of a floorplan and three pages of timed events using a notation similar to that of *Water Walk*, but using only linguistic notation, without pictographic symbols. The work was composed using the Fontana Mix. Together with *Water Walk* it was written for and performed in the Italian quiz "Lascia O Raddoppia", where Cage was asked questions (for 5 weeks!) on the subject of mushrooms. After these weeks he won the jackpot of 8000\$ enabling him to buy a van for the Merce Cunningham Dance Company and a grand piano. Every week Cage would perform one of his compositions, including the prepared piano solos from *Amores*, *Water Walk* and *Sounds of Venice*. (*New York Public Library online catalog*; *Paul van Emmerik: Thema's en Variaties*; *William Fetterman: John Cage's theatre pieces: Notations and performances*)
- ▶ *Urls* : <http://www.johncage.info/workscage/soundsvenice.html> [http://emfinstitute.emf.org/cgi-bin/icompositions\\_search.pl?keywords=cage](http://emfinstitute.emf.org/cgi-bin/icompositions_search.pl?keywords=cage)

**1960**

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- 1960 \_\_ **Compositions 1960**, La Monte Young (*It is also in 1960 that Young's landmark "wordpieces," collected under the title Compositions 1960, were conceived. These pieces, which were primarily inspired by George Brecht, are amazing in their displacement of the concert event. Composition 1960 #2's instructions, for instance, are: Build a fire in front of the audience. Preferably, use wood although other combustibles may be used as necessary for starting the fire or controlling the kind of smoke. The fire may be of any size, but it should not be the kind which is associated with another object, such as a candle or a cigarette lighter. The lights may be turned out. After the fire is burning, the builder(s) may sit by and watch it for the duration of the composition; however, he (they) should not sit between the fire and the audience in order that its members will be able to see and enjoy the fire. The composition may be of any duration. In the event that the performance is broadcast, the microphone may be brought up close to the fire. / 5.5.60. Composition 1960 #3 has the following instructions: Announce to the audience when the piece will begin and end, if there is a limit on duration. It may be of any duration. Then announce that everyone may do whatever he wishes for the duration of the composition. / 5.14.60. Composition 1960 #4: Announce to the audience that the lights will be turned off for the duration of the composition (it may be any length) and tell them when the composition will begin and end. Turn off all the lights for the announced duration. When the lights are turned back on, the announcer may tell the audience that their activities have been the composition, although this is not at all necessary. / 6.3.60. Composition 1960 #5: Turn a butterfly (or any number of butterflies) loose in the performance area. When the composition is over, be sure to allow the butterfly to fly away outside. The composition may be any length but if an unlimited amount of time is available, the doors and windows may be opened before the butterfly is turned loose and the composition may be considered finished when the butterfly flies away. / 6.8.60. Composition 1960 #7 denotes a B and F-sharp on a musical scale with the instruction that this fifth is "to be held for a long time." Composition 1960 #15 is dedicated to Richard Huelsenbeck, one of the founders of Dada: This piece is little whirlpools in the middle of the ocean. Piano Piece for David Tudor #1: Bring a bale of hay and a bucket of water onto the stage for the piano to eat and drink. The performer may then feed the piano or leave it to eat by itself. If the former, the piece is over after the piano has been fed. If the latter, it is over after the piano eats or decides not to. / October 1960. Piano Piece for Terry Riley #1 : Push the piano up to a wall and put the flat side flush against it. Then continue pushing into the wall. Push as hard as you can. If the piano goes through the wall, keep pushing in the same direction regardless of new obstacles and continue to push as hard as you can whether the piano is stopped against an obstacle or moving. The piece is over when you are too exhausted to push any longer. / 2:10 A.M. November 8, 1960.) <http://www.geocities.com/hstencil/tonyconrad1.html>*

- 1960 \_\_ **The Fourth of July**, Robert Ashley (*The Fourth of July is a single-channel electronic work first presented in Cohen's Space Theatre. On July 4, 1960, Ashley tested a new parabolic microphone by recording the sounds of a friend's Independence Day party. He combined these party sounds with a previously composed electronic work built from a series of tape loops, creating a dramatic eighteen-minute composition that begins with a jumble of nature and party sounds—background instrumental music, animal noises (birds, cat), talking, laughter, children playing, glasses clinking—that rise in a gradual crescendo until they are overtaken and then superseded by electronic noise. [Leta E. Miller] (En 1960, Robert Ashley réalise The Fourth of July, avec bande et interprétation en temps réel, puis Public opinion descends upon the demonstrators, où le public intervient dans le contrôle d'équipement électroacoustique. [Gilles Malatray]) <http://www.newworldrecords.org/linernotes/80567.pdf>*

- **1960** \_\_ **GRAV - Groupe de Recherche d'Art Visuel** (Group for Visual Art Research) (In Paris, Argentine artists Julio Le Parc and Horacio García Rossi, together with Francisco Sobrino, François Molleret, Joël Stein and Yvaral founded the GRAV (Group for Visual Art Research) in 1960. They were paralleled by other Argentine artists living in Paris, such as Gregorio Vardanega, Martha Boto and Hugo Demarco, whose works also became reference points in the history of kinetic art. GRAV was formed around the idea of abolishing the conception of the artist as individual genius. Adopting multi-production to replace the single, individual work of art, their interest was in collective, anonymous creation. They organized numerous public events that they called Labyrinths. For them the context of exhibition and the place of the audience were fundamental, and this conviction led them to experiment with optical and kinetic effects aimed at the "human eye," while they denounced the elitism of traditional art that appealed to the "cultivated eye". Through the use of technology, GRAV sought a way to erode the limits between art and life. MANIFESTO (1966) : "We are particularly interested in the proliferation of works which permits varied situations, whether they engender a strong visual excitement, or demand a move on the part of the spectator, or contain in themselves a principle of transformation, or whether they call for active participation from the spectator. To the extent that this proliferation allows the calling in question - even diffidently - of the normal relations between art and the spectator, we are its supporters. But this is only the first stage. The second might be, for example, to produce, no longer only the works, but ensembles which would play the part of social incitement, at the same time as liberating the spectator from the obsession with possession. This "multipliable" ensembles could take the form of centres of activation, games rooms, which would be set up and used according to the place and the character of the spectators. From them on, participation would become collective and temporary. The public could express its needs otherwise than through possession and individual enjoyment." [in *Theories and Documents of Contemporary Art* by Kristine Stiles, Peter Howard Selz] (Les membres du Groupe de Recherche d'Art Visuel se passionnent pour l'art construit et le cinétisme, et cherchent à donner à l'art une fonction sociale... à le faire descendre dans la rue... et pourchassés par la maréchaussée, ils l'ont fait descendre dans la rue en 1966 avec leurs dalles mobiles à Montparnasse, leurs structures instables aux Champs Elysées. Le spectateur doit devenir acteur et l'art interactif, et non seulement interactif, mais ludique. Sobrino optait pour le plexiglas, Yvaral pour les fils de nylon et de vinyle tendus, Le Parc pour la lumière et le plexiglas, Stein pour les trièdres et la polarisation, Garcia Rossi pour les boîtes à réflexion lumineuse et Morellet pour la programmation des pulsions de tubes de néon. Ces principes devaient par la suite conduire à quelques oeuvres collectives, telles des labyrinthes, des salles de jeux, des installations dans la rue, allant des structures contrôlables aux structures manipulables. Il est clair que le principe fondamental auquel adhéraient ses différents membres, avec plus ou moins d'enthousiasme, était la dévalorisation de "l'artiste" et du "chef-d'oeuvre", au profit d'une sollicitation du spectateur. Selon les déclarations du Groupe, les propositions esthétiques les plus révolutionnaires qui avaient été faites jusqu'alors n'avaient pas modifié la situation entre l'artiste, le spectateur et l'oeuvre d'art. Par contre, le G.R.A.V. avait pour objectif, à longue échéance, de créer une situation entièrement nouvelle dans laquelle l'oeuvre d'art deviendrait une "proposition plastique" représentant une recherche ouverte. De son côté, le spectateur deviendrait doublement actif : non seulement il serait mis en contact direct avec l'oeuvre mais il participerait de l'activité des autres spectateurs. [Franck Popper] <http://www.artmag.com/galleries/c/frs/mordoch/grav/grav.html>

- **1960** \_\_ **Motor Vehicle Sundown**, George Brecht (George Brecht's Motor Vehicle Sundown (Event) (1960) is a legendary verbal instruction piece scored for any number of motor vehicles arranged outdoors. For each vehicle, 22 auditory and visual events and 22 pauses are written onto randomly shuffled instruction cards. Beside "pause", the events include: Headlights on and off, Parking lights on and off, sound horn, sound siren, sound bell(s), accelerate motor, radio on and off, strike window with knuckles, open or close door (quickly, with moderate speed, slowly), open or close engine hood, operate special equipment (carousels, ladders, fire hoses with truck-contained pumps and water supply), operate special lights (truck-body, safety, signal, warning, signs, displays). At sundown "(relatively dark/open area incident light 2 foot-candles or less)," the performers arrive at the same time, seat themselves in the cars and start their engines at approximately the same time. They follow the instructions, substituting equipment for that which they do not have, and turn off their engines when they are finished. ["Blue" Gene Tyranny])

- **1960** \_\_ **Poem for Chairs, Tables, Benches, etc.**, La Monte Young (1960 marked a year of immense change: one of La Monte Young's earlier pieces exploiting the possibilities of sound-as-music within a neo-Dada, pre-Fluxus aesthetic which he composed earlier in the year, *Poem for Chairs, Tables, Benches, etc.*, in which the performers were to audibly scrape said items across the floor of the performance space, was to be adopted by John Cage and performed frequently by David Tudor throughout that year.) (Le même principe de sons inhabituels émis dans un ordre déterminé au hasard (comme dans *Vision* de 1959), comme leur durée, est suivi avec "Poem for Chairs, Benches, etc. (Or Other Sound Source), composé par Young en janvier 1960, et interprété pour la première fois en 1962 à New-York, au Living Theatre. La partition demande de traîner n'importe quel objet sur un sol de n'importe quelle nature, à n'importe quel endroit de la pièce où se tient le public (ou même en dehors de cette pièce). Young est poussé par un appétit d'inouï, et sa volonté d'échapper à la routine des goûts et des sons familiers est manifeste à le lire : "si nous définissons comme bon, écrit-il en 1960, ce que nous aimons, ce qui est la seule définition du bon qui me semble utile quand on parle d'art, et que nous disons ensuite que nous sommes intéressés par ce qui est bon, il me semble que nous serons toujours intéressés par les mêmes choses (c'est-à-dire, les mêmes choses que nous aimons déjà)." (La Monte Young, Conference 1960) [Pierre Saurisse, "La Mécanique de l'imprévisible : art et hasard autour de 1960"]) <http://www.geocities.com/hstencil/tonyconrad1.html>

- **1960** \_\_ *Public Opinion Descends upon the Demonstrators*, Robert Ashley (A sound controller activated electronic materials in response to audience activities: walking around or leaving the auditorium, speaking, laughing, or whispering. The audience soon caught on and actively participated in the game. Ashley's motivation, as usual, was social commentary: "Rituals in society such as attending church or the opera are rapidly dying," he says. "My interest is the kind of ritual in which audience participation is unpredictable". The largest audience size for Robert Ashley's electronic theater work *Public Opinion Descends Upon The Demonstrators* which at maximum is designed to be experienced by 28,278,466 people.)

- **1960** \_\_ *2 Sounds*, La Monte Young (In April of that year, Young premiered *2 Sounds* in which the primary sound was that of metal can lids scraping on glass.) <http://www.geocities.com/hstencil/tonyconrad1.html>

- **1960** \_\_ *Xanadu*, Ted Nelson (During his first year as a graduate student at Harvard, Nelson began implementing the system which contained the basic outline of what would become Project Xanadu: a word processor capable of storing multiple versions, and displaying the differences between these versions. Though he did not complete this implementation, a mockup of the system proved sufficient to inspire interest in others. On top of this basic idea, Nelson wanted to facilitate nonsequential writing, in which the reader could choose his or her own path through an electronic document. He built upon this idea in a paper to the ACM in 1965, calling the new idea "zippered lists". These zippered lists would allow compound documents to be formed from pieces of other documents, a concept named transclusion. In 1967, while working for Harcourt, Brace he named his project Xanadu, in honour of the poem "Kubla Khan" by Samuel Taylor Coleridge. Ted Nelson published his ideas in his 1974 book *Computer Lib/Dream Machines* and the 1981 *Literary Machines*. In 1972, Cal Daniels completed the first demonstration version of the Xanadu software on a computer Nelson had rented for the purpose, though Nelson soon ran out of money. In 1974, with the advent of computer networking, Nelson refined his thoughts about Xanadu into a centralised source of information, calling it a "docuverse". In 1998, Nelson released the source code to Xanadu as Project Udanax, in the hope that the techniques and algorithms used could help to overturn some software patents. In 2007, Project Xanadu released XanaduSpace 1.0.) <http://xanarama.net> <http://xanadu.com> <http://xanadu.com.au> <http://www.udanax.com> <http://xanadu.meetup.com>

## 1961

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- **1961** \_\_ *Audification* (According to Gregory Kramer (Kramer, Gregoy, "Auditory Display". Santa Fe Institute, 1994; Kramer, G. "Audification: Using Sound to Understand Complex Systems and Navigate Large Data Sets." Proceedings of the Santa Fe Institute Science Board, Santa Fe Institute, 1990; Kramer, G. "Audification: The Use of Sound to Display Multivariate Data." In Proceedings of the International Computer Music Conference, 1991), Sonification is also very often associated with Audification which is not absolutely correct. In comparison to Sonification, Audification is in detail the direct translation of a data waveform into the audible domain for reasons of monitoring and comprehension. Hearing is very different from vision; here are some of the ways these differences are advantages: 1/ Ubiquity. Compared to vision, hearing is non-directional; you don't have to have your head or body pointed toward something in order to hear it. This means that sound has an advantage for perturbations of a signal that appear infrequently: you don't have to be glued to a display, waiting for the thing to appear. 2/ Un-ignore-ability. Even when you're looking right at something, it's possible to miss a feature of it (especially a feature that appears only briefly, while you're looking elsewhere). It's much more difficult to miss a change in a sound. 3/ Frequency response. You can't tell the difference between a light flashing 100 times a second and one flashing 200 or 1000 or 10,000 times a second. But the frequency response of hearing is 20 Hz to 20,000 Hz, and we can hear frequency differences of one percent. 4/ Multiple Time Scales. Aural perception can work on many time scales at once. You can distinguish signals at 5000 Hz, 500 Hz, 50 Hz, 5 Hz, 0.5 Hz -- all at the same time! -- and be aware of small changes in any one. 5/ Harmonic Relationships. When two signals are related by whole-number ratios (e.g, 100 Hz and 200 Hz -- or 1 Hz and 0.5 Hz), they combine to form a single, complex sound (either a complex timbre, or a complex rhythm). Thus, whole-number relationships in data are sometimes easier to notice in an aural presentation. The simplest audification technique is a straight signal-to-sound conversion, like you'd get by sending a signal directly into the input of an audio amplifier. For a lot of signals, this is all you need. For some signals, the data is in the wrong time scale to fit optimally in the 20-20,000 Hz range of human hearing; in such cases, you need to change the time scale of the signal. Now that computer signal processing and A/D conversion are cheap and fast, the most practical approach is usually to record the signal digitally, then play it back at other frequencies. In some cases, the signal is very noisy, and it's useful to filter the signal to hear a certain feature more clearly; typically, with a tunable band-pass filter. [Stephen Malinowski] <http://www.musanim.com/mam/audifica.htm>

- **1961** \_\_ *The Box with the Sound of Its Own Making*, Robert Morris (« *The Box with the Sound of Its Own Making* (1961), a nine-inch walnut cube containing a three-hour tape recording of its actual construction, was the first work by Morris to be fully

involved with process. The Box literally interposed a temporal record into the viewer's experience, a kind of nonverbal version of Duchamp's notes for the Large Glass. John Cage, who had been instrumental in introducing Morris to both the artist Jasper Johns and the influential art dealer Ileana Sonnabend, was the first person in New York whom Morris invited to see the piece. 'When (Cage) came,' Morris recalled, 'I turned it on . . . and he wouldn't listen to me. He sat and listened to it for three hours and that was really impressive to me. He just sat there.' Cage's response was important to Morris, as he recognized the piece as a fully theatrical experience. ») [http://www.lichtensteiger.de/box\\_with.html](http://www.lichtensteiger.de/box_with.html)

- **1961** \_\_ **City Pieces**, Yoko Ono (City Pieces, 1961-63 / Map Piece 1963 / Rope 1969. « Draw an imaginary map. Put a goal mark on the map where you want to go. Go walking on an actual street according to your map. If there is no street where it should be according to the map, make one by putting the obstacles aside. When you reach the goal, ask the name of the city and give flowers to the first person you meet... » (1962))

- **1961** \_\_ **Fluxus** (George Maciunas coins the term fluxus during his three lectures on "Musica antica et nova". The Fluxus investigation of the world is a simple insistence on experience as an interaction between participants and object, performance, poem, or work that seeks to minimize the potential cessation of play. The rejection of categorical distinctions and evaluative hierarchies in Fluxus is entirely related to an awareness of, and emphasis on, the lack of non-context-bound center, that is, medium, whether it be physical or cognitive. This emphasis on the relations between the constituent aspects and a parallel absence of a singular or dominant conceptual medium, is explored in Fluxus as part of an attempt to extend potential conceptual domains and the play of signification infinitely into what can be called cognitive intermedia. The free or open play of meaning dominates the work as a hyperlink in the network of Fluxus ideas and works. The viewer is asked to become a formative participant in the creation of multiple meanings, to act and play by substituting one signifier for another. In this process the physicality of the work or the bounds of its materiality become irrelevant as single aspects and instead become part of a networked whole. Because of these shifts, the play of signification in Fluxus can no longer be called to a halt or grounded, because it is only through the presence of a center, or medium, that the play of substitutions can be arrested. The lesson of this kind of infinite play, as embodied in Fluxus, is that the process of everchanging substitutions is an aspect of network creativity and an act of life. What the modes of critical thinking found in Fluxus offer to art is parallel to what the open-source code movement offers to computer programming : the tools by which a previously exclusionary practice, whether it be the programming of code or the creation of art, and means of production not only become available to all but grow and remain vital through the work and ideas of many varied participants. In many Fluxus works the stress on participation, performance, and interaction is a means of accentuating the connectedness of all human activities, even those labeled as art. All aspects of Fluxus include elements that work against the traditional relationship in art of the passivity of the viewer and the domination of the object. What is modeled in the work, activities, and interactions of the Fluxus group is a communal praxis aimed at the creation of a network based hyper- and intermedia. Even though much of Fluxus existed prior to the age of the computer, the Internet, the World Wide Web, hypermedia, and hypertext, Fluxus's activities and attitudes present many of the most important realizations of network culture, many of which we are now only rediscovering. [Owen F. Smith, Fluxus Praxis : An Exploration of Connections, Creativity, and Community, 2005]. "Fluxus provided a pivotal early model in the establishment of alternative artists' networks throughout the 1960s, and Johnson's utilization of the postal system in the creation of his own network of correspondents would, by the early 1970s, have expanded far beyond him into an independent and self-sustaining network of its own. Noth of these networking models were part of a larger challenge directed at research into the nature and purpose of artistic activity and a ninterrogation into the instrumentality of the art object itself. The deemphasizing of the "objectness" of the artwork and a foregrounding of its conceptual and social process provided a fertile environment for what would come to be known as the "intermedia" or "expanded" arts. Coupled with the democratizing tendencies adopted from the sociopolitical upheavals of the 1960s was a strong desire to construct open and participatory networking structures that could exist independent of, and in opposition to, the hierarchical nature of the traditional art world institutions" [Stephen Perkins, in "At a Distance - Precursors to Art and Activism on the Internet, edited by Annmarie Chandler and Norie Neumark, 2005]) <http://www.artnotart.com/fluxus/index.html> <http://www.4t.fluxus.net> <http://www.fluxus.org/>

- **1961** \_\_ **Originale**, Karlheinz Stockhausen (Germany First presentation of Karl-Heinz Stockhausen's Originale at the Theater am Dom in Cologne. Nam June Paik begins his experiments in the electronic studio at the WDR.)

- **1961** \_ **This Way Brouwn**, Stanley Brouwn (February 25th and 26th 1961 — This Way Brouwn consists of drawings made by passers-by that serve as directions for the artist to get from one place to another.)

- **1961** \_\_ **Three Loops for Performers and Tape Recorders**, Tony Conrad (Premiered at the Harvard-Radcliffe Music Club's "Concert of New Music" on December 18, 1961. Three Loops for Performers and Tape Recorders, which has no specified instrumentation besides tape recorders and "suggestions," is remarkably complex for a piece written by an undergraduate (especially for one who was not a music major). Not only does the score and its appendix pay close attention to the effects of manipulating recorded materials, but it also stipulates that the recording material be that of what is played by the performers in real time. The

recording of the performance as it occurs also re-amplifies the effect of “incidental” noise reintroduced into the context of performance by Cage’s 4’33”. The score certainly appreciates and anticipates this re-amplification: It should be observed that the performances are likely not only to record and endlessly repeat any audience reaction, but are thereby likely to amplify any such reaction or perhaps to encourage audience participation. Aside from the fact that such interferences are not likely to be in accordance with the ‘rules’ for the performance, they may become uncontrollably boistrous [sic] or ostentatious. For this reason, it might be suggested that the microphone be kept as far from the audience as possible, especially during the first two sections. Such audience participation is perhaps more in the spirit of the last section, the din, than of the others; moving the microphone nearer [to] the audience after the ‘Aria’ may provide the piece with a dramatic if not formally legitimate finale. The score makes it quite clear that an exploitation of such an act should only occur during the “din” section. The first section of Three Loops, subtitled “Chant,” begins the piece with an attentive concern with details, most specifically those of just intervals, attack and decay, and volume: Two tape recorders are used (see appendix), with speaker-microphone distance and constant intensity settings so arranged that the relative intensities of the playing recorder and the performers are roughly equal for the audience (preferably at forte level) and the recording tape recorder. Each performer selects a pitched instrument on which to play within a single pitch band 1/3 tone wide centered on one of the following (just) intervals above a given frequency ... The performing order is ruled by changes (on attack times, as in bells), beginning with any order of the performers. Intensities and durations are free, but at least 1/3 change should be performed during each tape loop. The loop length should not be greater than 1/3 minute. Performers continue as long as they wish; they may drop out individually, so long as they indicate by a prearranged silent signal that they are doing this. The piece continues until all drop out. A conductor may be used to direct or call out the changes. “The first composition of mine ever played in concert, Three Loops for Performers and Tape Recorders from 1961, used the same tape delay structure that Terry Riley discovered independently just a bit later. Tape delay was a technological system which had direct rhythmic and metrical implications. Steve Reich saw this during his early apprenticeship with Terry, and appropriated tape delay as the systemic foundation for his own later work. Perhaps it was my own good luck that I have never been very interested in rhythm, and so my piece, Three Loops, is primarily about timbre and process, not rhythm.”) <http://media.hyperreal.org/zines/est/intervs/conrad.html> <http://www.geocities.com/hstencil/tonyconrad2.html> <http://tonyconrad.net>

## 1962

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- **1962** \_\_ *Fluxus concerts/happenings* (The nascent Fluxus group gives fourteen concerts/happenings in Wiesbaden. The professional musicians who refuse to play the music they are given are replaced by artists, who proceed to compose three hours of “antiviolin” music (the famous scene in which Dick Higgins, George Maciunas, Ben Patterson, Wolf Vostell, and Emmett Williams destroy a grand piano))

- **1962** \_\_ *Early Minimalism*, Tony Conrad (In 1962 Tony Conrad’s amplified strings introduced the sustained drone of just-intonation into what came to be known as “minimal” music. Utilizing long durations and precise pitch, he and his collaborators forged an aggressively mesmerizing “Dream Music” -- denying the activity of composition, elaborating shared ideas of performance, and articulating the Big Bang of “minimalism.” However, the many rehearsal and performance recordings from this period were repressed, inaccessibly buried. In 1987 Tony Conrad set out on a ten-year return expedition to the site of these entombed fragments to unearth the losses; from them he reconstituted and regenerated the epic EARLY MINIMALISM. Reaching back through time, Tony Conrad weaves a mobile narrative over and under minimalism: making music out of history, and history out of music. This music is a series of slowly shifting string drones tuned in just intonation—hardly the kind of quick, expressive phrasing one would associate with birds. But if you sped up the tectonic shifting of these drones, it might sound like the kind of modal music that this parrot would normally respond to. If he likes the tonal relations of a given piece, he might not be thrown off by dramatic differences in timescale. I also have a theory that he senses all the different pitches that actually reside in what humans hear as a single tone. When that single note is stretched out across time in a drone, these partials may be perceivable to him as a kind of melody. It may be that we also hear this, but that most music is played far too fast for us to register the perception [Drew Gardner]. “Early Minimalism is a series of seven compositions that do two important things - aside from sounding excellent. First, they are comments on the function of history and a non-recoverable past in the archive of musical culture. I said something earlier about the impact of recording technology on access to musical materials. Recording, as a system for the storage of sounds, has always fascinated me - as in Three Loops. You make a record of a sound, it is “archived” for some period, and then it is reproduced. In notated music, written records might be said to “archive” the sound for “reproduction” by a later performer. In Early Minimalism the time frame of “archiving” is a historical interval - about twenty years. The “recording” was effected by and through the composite cultural processes of music history, and the “reproduction” is my act of composition, enabled by the authority of my participation at the originary site of minimalism. In Early Minimalism I have established a place for the direct participation of history in the cultural process, with history operating through the instrumentality of the composer. The thing that provided me with an unusual opportunity to explore this approach was itself La

Monte Young's closure of our taped archive. That closure insured that the cultural legibility of Dream Music would always be understood as indirect. However, by reason of our own participation in the music, I and the other Dream Music collaborators are singularly empowered with direct access to the music. Early Minimalism invites an interrogation which, for music, has timely and cogent implications: How has "the music" been archived? How is it being reconstituted? What are the cultural processes entailed in storing or recovering musical information? And what reconstitutive processes comprise authenticity? Each of these questions demands attention to the non-congruence of personal memory (or experiential continuity) with cultural memory and influence - that is, attention to the double sites at which music history's power relations are transacted. I have wished for an active intervention of the historical time scale into music before, but not until the popularity of Foucault's writings and the appearance of postmodernism have such ideas been legible as components of a work. The secondary ambition which I have for Early Minimalism is simpler and more accessible. Early Minimalism is my way of taking up the Dream Music where I left it and moving it ahead, without the encumbrance of Young's arch-conservative imprint. More than that, in honesty the exquisite joy and painful energy of our high-voltage music began to slump, for me, under the sodden weight of the singing, just at the moment when my playing with John Cale - the two of us, on violin and viola - was reaching a dizzying azimuth. Early Minimalism picks up from that apex." [Tony Conrad]. Conrad's concept of the group is as a "collective that would exercise itself . . . [as] replacing the composer function." He writes: "We involved ourselves in what happens when people get together and play collaboratively, and that is you have a lot of discussion and hanging out, and if you have people with strong ideas, which we did. Then you get an interplay that's very bracing, and change occurs. Things move. So within our group the distinctive dynamics had to do with where powerful sites of musical initiative occurred." Where for Conrad this collaborative ownership of ideas was directly related to that of a collaborative ownership of the music itself, it is quite clear that La Monte Young felt (and still feels) differently (Dream Music, Theatre of Eternal Music). While Young certainly credits Conrad "with his introduction to the mathematical niceties of the relationships of the harmonic series, which directly inspired Young to explore the creation of musical compositions in just intonation," he has been unable or unwilling to recognize the group's autonomous composition as a whole, insisting that he is the sole "composer" of their works. However, it is quite obvious that the group seemed at the least to have the vestiges of a collective, especially as their practicing became more and more frequent. Conrad characterizes the group as "exist[ing] inside a cult" and as "antisocial," descriptions which manifest themselves in many other ways besides the music the group made. Indeed, Conrad writes, "I am not saying that it was not appropriate -- or even perhaps essential -- that Dream Music was founded by people whose displacement from the temporal urgency of bourgeois music listening, and whose radical denial of the social formulation of composition, emerged also in parallel personal singularities such as a hatred of work, elite religious practices, indulgence in intoxicants, or social disappearance". This aspect is clearly missed in the majority of most "academic" explications of the group's work. However, it is clear that such factors were primary not only in how the music was created and received at the time, but also in the issues that the music still raises.) <http://media.hyperreal.org/zines/est/intervs/conrad.html> <http://www.geocities.com/hstencil/tonyconradintro.html> <http://tonyconrad.net>

- **1962\_\_ Four Violins**, Tony Conrad (In 1962 Tony Conrad's amplified strings introduced the sustained drone of just-intonation into "minimal" music. "The most striking quality of Four Violins is its instant familiarity: the grating sound of the violin parts imparts a vision of a uniquely American distance, the feel of a continent. It's a quality also present in the spaces surrounding John Fahey's or Loren Mazzacane's rattled notes, the early Sun recordings, the compositions of Charles Ives, the righteous soul-breath of Albert Ayler. With Four Violins Conrad moves closer to sound-essence, to ringing out the notes which have always existed in the skies of America. The joy comes from connecting with Conrad's language, from following its own logic -- like railroads roaring out into the Midwest. It's a landmark recording in every sense, and the fact that this is only the first of many forthcoming Conrad installments from Table of the Elements makes me feel like howling with joy." [David Keenan, The Wire]. "In my notes on Four Violins I go into this in greater detail than I can here, but the key elements were social. By improvising, we eliminated the role of composer. But more, this was the turning point from a regime of writing music to a regime of listening. Many things at the time pushed this change, even though there has been very little comment on, or understanding of, the core paradigm shift that this represented for music. The principal convergence was among three forces. In terms of the symbolic cultural order of the West it was John Cage, in the 50s, who turned music composition most forcefully toward listening. And as it happened, the 50s also saw the eruption of rock n roll consumerism. Whatever else it was, rock n'roll elbowed itself to the front of pop music because of its sound - a much simplified, listenable music. In another universe, rock n'roll might have been called "minimal pop." Then, perhaps most important, the technology of recording, and the economics of the music industry, began to make it practical and possible to listen to more sounds, and music, than ever before. It was only in the 1950s that we began to see LP records of music from other times and cultures, weird jazz, and even avant-garde music, all accessible by any consumer with enough appetite. Our "Dream Music" (Theatre of Eternal Music with John Cale, Angus MacLise, Marian Zazeela, and La Monte Young) was an effort to freeze the sound in action, to listen around inside the innermost architecture of the sound itself. It had something to do with composition, since it became a commentary on the temporal site of the composer, in relation to the sound itself. We were announcing that the composer could sit within the sound, so to speak, and work with it as a plastic continuum extended in time along the same course, and at the same pace, as the listener. That is quite different from improvising on a tune, or using improvisational variation to elaborate sound patterns. The message here was not about indeterminacy, nor about immediacy, but about the control of sounds right there in your environment,

and the process of composition as long-term growth of interests within that sound complex.”) <http://media.hyperreal.org/zines/est/intervs/conrad.html> <http://tonyconrad.net>

- **1962** \_\_ **France First Fluxus Festival** (at the American Students and Artists Center in Paris: “Poetry, music, and antimusic, factual and concrete”. The program includes musical works by George Maciunas (In Memoriam to Adriano and Solo for Mouth and Microphone), Nam June Paik (One for Violin Solo, Serenade for Alison), Wolf Vostell (Décollage Musique “Kleenex”), and Robert Filliou (Poi Poi Symphony no. 2 and Père Lachaise no. 10), along with a selection of films by Paik.)
- **1962** \_\_ « **Intergalactic Network** », J.C.R. Licklider (Licklider writes memos about his Intergalactic Network concept, where everyone on the globe is interconnected and can access programs and data at any site from anywhere. He is talking to his own ‘Intergalactic Network’ of researchers across the country. In October, ‘Lick’ becomes the first head of the computer research program at ARPA, which he calls the Information Processing Techniques Office (IPTO).) [http://www.computerhistory.org/internet\\_history/](http://www.computerhistory.org/internet_history/)
- **1962** \_\_ **Mail Art**, Ray Johnson (In 1962, Johnson founded the “New York Correspondance (sic) School,” which is the name he invented for an international network of Mail Art participants he spawned by mailing an enormous amount of material, including fragments of cut-up collages, drawings with instructions, found objects, snake skins, and annotated newspaper clippings. Mail art, simply defined, is art that utilizes the postal service, or, in a secondary manifestation, is art that, takes a form relating to postal products or apparatus—for example, artists’ postage stamps and artists’ rubber stamps. On many occasions, Ray Johnson has been named the father of mail art, and also the grandfather, and even the “sugar dada.” The futurists and dada artists are often dragged in as progenitors for mail art, but until Ray Johnson developed it as a distinct verbal-visual activity, from his early beginnings in the mid-forties, mail art was incidental and does not warrant separate treatment as a distinct form of art. This school, open to all, is international. It has no name and no fixed membership; anyone can play. But schools do need rules. Thus, the principal public manifestation of the school, the mail-art exhibition, is conducted according to standard operating procedures. Although this democratic process operates under the rubric of art, it has much more to do with communication and networking—the latter concept owing its application in the art world principally to Robert Filliou. Even so, the mail-art networks that come into public view through such exhibitions or their documentation are extraordinary phenomena with immense potential. They may presage a new art paradigm by utilizing not only the postal system but also, and increasingly, linked computers. But public mail art of this kind is almost contradictory. The essence of mail art is one-to-one communication, and this is the core, with variations, of Ray Johnson’s art and that of other committed mail artists. When one writes a letter to a friend or relative, one is presenting, or making a present of, one’s thoughts and reports as well as the letter itself. When one receives mail art from Ray Johnson, one is receiving a gift of art. Another concept that Ray Johnson’s procedures call into question is the idea of the original work of visual art. His mailings include originals, copies of originals, and copies of copies, thanks to the photocopier and sometimes the offset press; however, a particular mailing conveys its message, directly or obliquely, regardless of the fact that it contains original drawings or statements, or copies of work, old or new. What is in the envelope (and occasionally on the envelope) is the work.)
- **1962** \_\_ **Panels for the Walls of the World**, Stan van der Beek (Stan van der Beek used channel switching to produce the multiscreen Panels for the Walls of the World, commissioned by CBS in 1962 as one of the first found-footage works to use live editing, a process later taken up by video art pioneer Nam June Paik : the transmission of an artwork from Cambridge to Minneapolis.)
- **1962** \_\_ **Radio Skulptures**, Jean Tinguely (In 1962 at the Alexandre Iolas Gallery in New York, Tinguely exhibited his new Radioskulpturen for the first time. Propelled by small electrical motors, the tuning knob of a partially disassembled radios are moved back and forth. The result is a composition of abstract radio sounds determined by chance.)
- **1962** \_\_ **USCO**, Gerd Stern, Stan VanDerBeek, Steve Durkee, Michael Callahan (In 1962, the USCO formed as a radical collective of artists and engineers dedicated to collective action and anonymity. Some of the artists involved were Gerd Stern, Stan VanDerBeek, and Jud Yalkut. « USCO’s leaders were strongly influenced by McLuhan’s ideas as expressed in his book Understanding Media?. Their environments - performed in galleries, churches, schools, and museums across the United States - increased in complexity with time, culminating in multiscreen audiovisual “worlds” and strobe environments. They saw technology as a means of bringing people together in a new and sophisticated tribalism. In pursuit of that ideal, they lived, worked, and created together in virtual anonymity. » (David Dunn). « I was really turned on to audio-visual, electronic use of words in media. I had made a lot of kind of excerpts out of the McLuhan thing which I took along. We didn’t have copy machines in those days, at least available to us. But I had written it out by hand. Eventually, Understanding Media came out. I don’t remember when that was in this context. (...) (In the auditorium of the museum - San Francisco Tape Music Center, on Divisadero Street), we had transparent isolation booths onstage in which each of them - there were four people all together - you know, Herb Caen, Allen Ginsberg, et cetera, et cetera - we were able to broadcast and switch the signals from the various booths onto a series of speakers. In the meantime, we

*were projecting a series of slides which came from the Verbal American Landscape. We borrowed some closed-circuit television equipment, so there were television images. We were able to switch the whole thing. There were people in costume - it was a very elaborate affair. The technology was not by any means perfect. We had telephones and microphones, and there was a lot of feedback. There was absolute chaos. In the meantime - a little antecedent to this - we had started getting into the psychedelic period, and I had had my first acid trip at Roger Somers' in kind of an orgiastic setting. (...) The acid had kind of given me an even more precise idea of the kind of mixture that I wanted to create. Mixed media. Between that and McLuhan and et cetera. (...) We kept on developing these multimedia performances, and Steve got incredibly involved in making super-eight millimeter movies and developing image banks with us. We did electronic music, mostly meditational in nature, and before long we stopped doing the performances as individuals. Without our names, we decided to call ourselves "USCO", the company of Us, because we were anonymous artists. » [Gerd Stern]]*  
[http://content.cdlib.org/xtf/view?docId=kt409nb28g&brand=oac&doc.view=entire\\_text](http://content.cdlib.org/xtf/view?docId=kt409nb28g&brand=oac&doc.view=entire_text)

## 1963

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- **1963** \_\_ **ASCII** (A joint industry-government committee develops ASCII (American Standard Code for Information Interchange), the first universal standard for computers. It permits machines from different manufacturers to exchange data. 128 unique 7-bit strings stand for either a letter of the English alphabet, one of the Arabic numerals, one of an assortment of punctuation marks and symbols, or a special function, such as the carriage return.)

- **1963** \_\_ **Jean-Christophe Averty** (Jean-Christophe Averty and Max Debrenne experiment with the first graphic effects on television images for the monthly variety shows "Histoire de sourire" (Story of Smiling) and "Les Raisins verts" (Green Grapes) on France's first channel.)

- **1963** \_\_ « **Community without propinquity** », Melvin Webber ("The unique commodity that the metropolitan settlement has to offer is lower communication costs. This is the paramount attraction for establishments and, hence, the dominant reason for high-density agglomeration. The validity of this proposition would be apparent if we were to imagine a mythical world in which people or goods or messages could almost instantaneously be transported between any two establishments. (...) One could then place his home on whichever mountaintop or lakeside he preferred and get to work, school, or shops anywhere in the world. (...) The spatial city, and its high-density concentrations of people and buildings and its clustering of activity places, appears, then, as the derivative of the communications patterns of the individuals and groups that inhabit it. (...) Here, a person is best able to afford the costs of maintaining the web of communications that lies at the heart of complex social systems. (...) The networks of interdependence among various groups are becoming functionally intricate and spatially widespread.")

- **1963** \_\_ **Demolition of Stockhausen's Originale**, Fluxus (Henry Flynt writes, "And I convinced Tony Conrad and Jack Smith to join me in demonstrating for the demolition of museums and symphony halls at MoMA, the Metropolitan Museum, and Philharmonic Hall, on February 27, 1963." One of these demonstrations in particular led to the first major rift within Fluxus, and with what should be expected with such events, the account differs from participant to participant, from historian to historian. The chronology in Fluxus presents the date as August 30, 1964; Henry Flynt in *Ulbi Fluxus ibi Motus: 1990-1962* recalls the date as September 8, 1964. The demonstration was against a performance of Karlheinz Stockhausen's *Originale*, the structure of which is actually quite atypical compared to his other pieces - Interestingly enough, the decision to picket Stockhausen was quite controversial within the Fluxus group as many members were involved in the performance inside the recital hall. Basically, the piece adapted elements of performance events and was quite "circus-like" in its execution. Obviously, this sort of composition deviates from the formal structures prevalent in the majority of Stockhausen's work, and was probably directly influenced by Cage's pieces around the same time (which were, in turn, more than likely influenced by his slight association with Fluxus). The majority of performers in *Originale* were generally associated one way or another with Fluxus, and some (such as Dick Higgins, Jackson MacLow, and Nam June Paik) were major participants. This was the problem: Maciunas, who considered himself the "leader" of Fluxus (although Fluxus certainly had a dedication to collective events and products which denied leadership and authorship), was wholeheartedly in favor of picketing Stockhausen (who, at that time, was still considered "revolutionary") to the extent that he threatened to "banish" those who didn't agree with him. As it turns out, there were two demonstrations that evening: one for Stockhausen, and one against. The demonstrators for Stockhausen (consisting primarily of the concert's performers) were by far in the majority: only the Fluxus artists Ay-O, Ben Vautier, Maciunas, Saito, Marc Schleiffer (a.k.a. Sulayman Abdullah), Conrad and Flynt demonstrated against Stockhausen (although Allen Ginsberg, the famous "beat" poet, was allowed in both pickets). The end result of the demonstration was not an effective show of force against Stockhausen, but rather the dissolution of the original Fluxus group. Higgins left, and formed the *Something Else Press* because of his dissatisfaction with the slowness of Maciunas' publishing. MacLow left as well. By that time, however, La Monte Young had already dissociated himself from Fluxus. The circle of people which developed around

Young, although active in Fluxus-esque word events (such as Tony Conrad's Concept Art from the Summer of 1961 and John Cale's infamous piece in which a piano is thrown down a coalmine shaft), would also continue to distance themselves from Fluxus. Fluxus continued as an art movement of sorts, shifting its emphasis towards objects and events contained within the walls of galleries and museums. However, when George Maciunas died, Fluxus effectively ended. This end was the result of Maciunas' ability to organize a multitude of disparate elements under his own umbrella, and a result of his ability to alienate a number of early Fluxus participants away from his agenda. As its legacy has become more open to debate since Maciunas' death, Fluxus products have also become more "collectible," in stark contradiction to its central aesthetic posture.) <http://www.geocities.com/hstencil/tonyconrad2.html>

- **1963 \_\_ Dry Cell**, Robert Rauschenberg, E.A.T (Rauschenberg produced this work in collaboration with engineers Harold Hodges and Per Biorn. It was shown in 1964 as part of the "For Eyes and Ears" exhibition at the Cordier and Ekstrom Gallery in New York. Billy Klüver made the following comment about the work: "In contrast to the approximately thirty works in the exhibition that generated sound, Dry Cell was a 'sound absorbing piece.' Gallery visitors were invited to speak or make sounds into a microphone situated on the face of the work. The microphone was wired to a toy motor, which, when activated by sound, rotated a small propeller-like piece of metal. It should be noted that the image of the helicopter used in Kite has also been screened onto the plexiglas surface of this work.« The orientation toward sound evinced here would lead to his statement "from the visual to the aural" in reference to the "invisible environment" and would transform the design principle of the Pepsi Pavilion at "Expo '70 Osaka. ») <http://www.ntticc.or.jp/Archive/2003/EAT/Works/dry.html>

- **1963 \_ The Eternal Network**, Robert Filliou (Filliou said « I am not just interested in art, but in society of which art is one aspect. I am interested in the world as a whole, a whole of which society is one part. I am interested in the universe, of which the world is only one fragment. I am interested primarily in the Constant Creation of which the universe is only one product. » For him, the work of art was a means of direct action on the world. Filliou attempted to integrate all the acts in life with artistic duty, "without worrying about whether the works are distributed or not": "When you make , it is art, when you finish, it is non-art, when you exhibit, it is anti-art." In 1960, Robert Filliou designed his first visual work, Le Collage de l'immortelle mort du monde [Collage of the Immortal Death of the World], a transcription of a random theatre play comparable to a chessboard on which all sorts of individual experiences are expressed 3. In 1961, at the Addi Kôpcpe gallery (Copenhagen), his first personal exhibition, Suspens Poems, was organized, made up of poems in the form of postal dispatches. In 1962, determined to remain outside the exhibition circuit, Robert Filliou carried his gallery in his hat. He became his own exhibition space: "La Galerie Légitime" [The Legitimate Gallery]. His works, gathered together in his beret and stamped "Galerie Légitime Couvre Chef d'Oeuvre" [Legitimate Gallery Masterpiece Hat], circulated in the streets with him (the idea is reminiscent of Marcel Duchamp's suitcase). He then met George Maciunas, the centralizer of the activities of Fluxus. "La Galerie Légitime" invited several artists to exhibit in it. This was an art made up of attitudes and gestures, rather than saleable works. In 1963, with the architect Joachim Pfeufer, he created the Poïpöïdrome 4 project, a meeting place and centre for "Permanent Creation" located at the crossroads between two currents: action and reflection. There was nothing to "learn" in order to participate: what the users knew was enough. In 1965, with George Brecht, Robert Filliou founded the gallery "La Cédille qui sourit" 5 [The Smiling Cedilla] in Villefranche-sur-Mer, although it was usually closed because the artists were at the local café: "In my opinion, that's where you get your best ideas". Envisioning a coterie of friends and artists participating in an ongoing open exchange of art and ideas, they then founded "Eternal Network, La Fête Permanente" [Eternal Network, The Constant Festival]: "The artist must be aware that he is part of a larger social network, part of the "Constant Festival" which surrounds him everywhere and elsewhere in the world.") (Avec le principe de « création permanente » et les notions de créativité, d'expérimentation qu'il préfère à celles d'art ou de talents, Robert Filliou souhaite rapprocher l'art et la vie. L'échange est pour lui fondamental. Il crée l'« Eternal Network », réseau qui guide ses coopérations avec des artistes et s'insère dans le vaste réseau des activités humaines. Il côtoie Spoerri, Roth et le mouvement Fluxus. En 1965, il ouvre à Villefranche-sur-Mer avec George Brecht « La cédille qui sourit » où sont proposés jeux, objets, poèmes et actions dans l'esprit Fluxus. Avec le Principe d'équivalence : bien fait - mal fait - pas fait, il réalise à partir de 1968 des oeuvres non finies où sont juxtaposées trois états : le modèle (bien fait), l'erreur qui est le lieu de l'imagination (mal fait) et l'idée non réalisée (pas fait). Il n'y a pas de concurrence entre ces propositions, chacune est à mettre en regard des deux autres dans des variations où l'artiste crée des perturbations. Filliou met en pratique la nécessité de jouer avec les formes plutôt que de les inventer ; l'intuition, le regard poétique sur le monde ont un rôle essentiel. Son oeuvre est constituée d'attitudes, d'assemblages d'objets bricolés, de poèmes, de vidéos. Pour qualifier ce travail inclassable, Jean-Clarence Lambert, poète et critique d'art, lui propose le mot « arteur », que Filliou reprendra en signant sa machine à écrire portable.)

- **1963 \_\_ Exposition of Music – Electronic Television**, Nam June Paik, Galerie Parnass, Wuppertal, March 11 to 20 1963 (Nam June Paik's first major exhibition was held from 11 to 20 March 1963 in a gallery (Galerie Parnass) run by architect Rolf Jährling in his private residence. The title Paik chose indicates his transition from music to the electronic image. Four 'prepared' pianos, mechanical sound objects, several record and tape installations, twelve modified TV sets, and the head of a freshly slaughtered ox above the entrance awaited visitors. The show ran for ten days and opened for two hours daily between 7.30 and 9.30pm. Newspaper reports indicate that visitors to the show, which was distributed over the entire house (and did not stop at the private quarters of the Jährling family), experienced the show and its setting as a 'total event', many guests taking no more than a perfunctory glance at the

room with TV sets. Today, this room is seen as the starting point of the video art that later developed, although Paik, not yet having access to video equipment, was still modifying inexpensive second-hand TV sets to distort the TV programmes as they were being broadcast. Germany had only one TV station up to 1963, and it broadcast for no more than a few hours each evening – possibly explaining the late opening-time of Paik’s show. Unlike the Fluxus actions which took place concurrently, Paik’s project did not attract TV coverage. A leaflet printed for the show included a theoretical text by Paik: « One can say that electronic television is not the mere application and expansion of electronic music in the field of optics but represents a contrast to electronic music (at least in its starting phase), which shows a pre-defined, determined tendency both in its serial compositional method and in its ontological form (tape recordings destined for repetition). (...) I have not only expanded from 20 kHz to 4 MHz the material being treated, but have more pronouncedly used the physical property of the electron (indeterminacy, the dual character of corpuscles (particles) and waves (status)). ») <http://www.medienkunstnetz.de/works/exposition-of-music/>

- **1963** \_\_ « *Intergalactic Computer Network* », Joseph C.R. Licklider (Intergalactic Computer Network can be said to be the first conception of what would eventually become the Internet. The Internet Society has used a short form Galactic Network for the same thing. J.C.R. Licklider used the term at ARPA in 1963, addressing his colleagues as “Members and Affiliates of the Intergalactic Computer Network”.) <http://www.kurzweilai.net/articles/art0366.html?printable=1>

- **1963** \_\_ *Studies in the Bowed Disc*, La Monte Young (In 1963, Young composed/performed *Studies in the Bowed Disc* on a gong designed for him by Robert Morris, while the group of Conrad, MacLise, Young and Zazeela practiced constantly. This dedication to playing was facilitated by Young and Zazeela’s move to a large loftspace on Church Street, where “there were no upstairs neighbors, they could rehearse all night, every night, and they proceeded to do just that.” Practicing became the first priority of the group, as opportunities to perform for audiences were seldom. However, a large number of these practice sessions, as well as performances, were recorded for posterity.) <http://www.geocities.com/hstencil/tonyconrad2.html>

- **1963** \_\_ *Syncom* (the first synchronous communication satellite is launched.)

- **1963** \_\_ *Treatise*, Cornelius Cardew (From 1963 to 1968, Cardew made two such sacrifices: the first was of traditional notation in favour of graphic notation; the second was of notation in favour of improvisation. Two activities tower above all others during this period: his mammoth 193-page graphic composition *Treatise*; and the improvisation group AMM. A diary entry on New Year’s Day 1963 anticipates this radical development: “A good man watches, experiences, the complete devastation of his private world and survives. Then he moves back into the real world and grasps it with his mind. So he recreates it, and it is no longer private. It is everybody’s world.... To do something constructive you have to look beyond yourself. Humanity in general is your sphere (not people). Self-expression lapses too easily into mere documentation.” Having rejected both tonality and serialism, it was not surprising that a radically minded young composer should have felt attracted to the American avant garde. But in fact Cardew’s admiration for Cage had little to do with Cage’s compositional techniques (though he once described the notation for Cage’s *Variations I* as a ‘giant step forward’);[6] what he admired was Cage’s rejection of the commodity fetishism that had invaded musical composition, for which the super-objectivity of serialism and its corollary, the preoccupation with the perfection of the ideal object, was largely to blame. What also impressed him was Cage’s liberation of the performer from the constraints of oppressive notational complexities, and perhaps most of all the ‘democracy’ inherent (at least in theory) in Cage’s scores. And here is the crux, because this concern for freedom and democracy, displayed in a number of highly sophisticated indeterminate compositions from the early sixties, though in an abstract and intellectualised fashion, informs Cardew’s entire musical career. With him ‘indeterminacy’ was not simply another compositional technique, displacing a previously discredited one, it was a logical musical expression of his humanism: humanism is the vital thread that runs through all his musical activities, making for a continuity that overrides even the most radical stylistic changes in his work. His rejection of total serialism freed him as a composer; with his espousal of indeterminacy, creative freedom was also extended to the performer. Cage’s notational systems presuppose a denial of the influence of musical background (that is, history), whether Cage’s own or the performers’, and moreover generally allow for no spontaneous expression during performance. The thrust of Cardew’s musical development, already evident in the indeterminate scores of the early sixties, was in precisely the opposite direction - towards an ethnic, spontaneous music making, which found its ideal expression between the years 1966 and 1971 when Cardew was a member of the improvisation group AMM. *Treatise* finally appeared complete in 1967. It is a continuous weaving and combining of a host of graphic elements (of which only a few are recognisably related to musical symbols) into a long visual composition, the meaning of which in terms of sounds is not specified in any way. Any number of musicians, using any media, are free to participate in a reading of the score, and each is free to interpret it in his own way. The graphic subject matter appears in various guises: triangles, circles, circle derivations, squares, square derivations, irregular shapes, etc. [John Tilbury, *Contact* n°6, 1983]) <http://www.users.waitrose.com/~chobbs/tilburycardew.html>

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- **1964** \_\_ *Dream Music*, Theatre of Eternal Music ( Sonically, the Theatre of Eternal Music (as the group was named by Young) utilized an interesting range of “instruments” in order to facilitate the drone. Indeed, the inspiration for the Tortoise music came from Young and Zazeela’s tortoise aquarium, whose drone they amplified with the use of contact microphones. Young’s desire for a “Wall of Sound” was realized by Conrad’s ingenious idea to use contact microphones, which he most certainly had learned about through his interest in the music and activities of John Cage (who, in 1960, had recorded Cartridge Music, a piece which exclusively used contact mikes and phonograph cartridges as “found” objects for its instrumentation). Also, Marian Zazeela contributed to the visual aspect of performance by fashioning light-boxes and slide projections which “serve[d] as an uncanny complement. . . predicated upon the extended duration necessary to experience the nuances which are its essence.” Performances of the music were not singular events, but employed “the theatre of mixed means,” a term coined by and used as title for a 1968 book by the critic Richard Kostelanetz. In line with Young’s conception of the music as “Eternal,” oftentimes at concert halls the electronic drones were started well before the audience and performers arrived, and were left on until the last audience member left. The first performance of the so-called Tortoise music was entitled *The Tortoise Droning Selected Pitches for the Holy Numbers for the Two Black Tigers, the Green Tiger and the Hermit* by Young, and occurred in six performances on the weekends of October 30–November 1, and November 20–22, 1964 at the Pocket Theater on Third Avenue and Thirteenth Street. The title alludes to the four performers: Young, Zazeela, Conrad, and Cale. Striking in its imagery, the title reflects Young’s rejection of the “minimalist” earlier titles of his works, such as *Compositions 1960*, although the Tortoise music is considered by many to be his first full-fledged minimalist work. The Theatre of Eternal Music also performed at the same venue on December 12–13 *The Tortoise Recalling the Drone of the Holy Numbers as they were Revealed in the Dreams of the Whirlwind and the Obsidian Gong and Illuminated by the Sawmill, the Green Sawtooth Ocelot and the High-Tension Line Stepdown Transformer*. Other performances through 1964 and 1965 were entitled *The Obsidian Ocelot, the Sawmill, and the Blue Sawtooth High Tension Line Stepdown Transformer Refracting the Legend of the Dream of the Tortoise Traversing the 189/98 Lost Ancestral Lake Region Illuminating Quotients from the Black Tiger Tapestries of the Drone of the Holy Numbers, Ballad of the Tortoise or Pierced Earring/Drone Ratios Transmitting the Manifestation of the Tortoise Center Drifting Obsidian Time Mists through the Synaptic Stepdown Barrier, The Day of the Antler etc., and Map of 49’s Dream the Two Systems of Eleven Sets of Galactic Intervals Ornamental Light-Years Tracery*. These titles assuredly reflect the increasingly esoteric nature of the group characterized by Conrad as “in an almost Pythagorean degree.” By February, 1965 Young had finally christened the group the Theatre of Eternal Music, establishing his preoccupation with “timeless” music (although the electronics used to make such music could not have been anything else but modern) which was in some way connected to the “spiritual” or “mystical.” This title change removed the immediacy of “Dream Music,” as it was known, into a particular Youngian agenda. Much to his chagrin, Cale and Conrad playfully dubbed the group the Dream Syndicate. Throughout 1965, the Theatre of Eternal Music continued their constant practice and occasional performance schedules. Occasionally, they even played outside of New York: they performed in Pittsburgh, Pennsylvania on October 16, 1965, and at the rural Pennsylvanian “Sundance Festival” on August 20, 1966 (which was their last performance.) <http://www.geocities.com/hstencil/tonyconrad2.html>

- **1964** \_\_ *Livelihood*, Steve Reich (Reich drove a taxi and constructed a piece out of the tape-recorded conversations of his passengers which he named “Livelihood”. He did music for an experimental movie called “Plastic Haircut” using stitched-together fragments from a recording of “The Greatest Moments in Sports” and hung out at the San Francisco Tape Music Center. As his commitment to tape grew, Reich acquired a Sony 770 in 1964, then a state-of-the-art stereo machine, and a Uher portable -- both on installment with co-signer Phil Lesh, who had been a fellow student at Mills, was then a postal worker, and would soon be the bassist for the Grateful Dead. Reich ran a mike from the Uher, half the size of an attache case, tucked under his driver’s seat, up to the dome-light of his cab. He took the results of his bugging the cab and crafted them into a three-minute quick-cut collage of door-slams and the daily crises of his fares entitled *Livelihood*.) <http://www.o-art.org/history/50s&60s/Minimalism/Reich/>

- **1964** \_\_ *MIT* (Simultaneous work on secure packet switching networks is taking place at MIT, the RAND Corporation, and the National Physical Laboratory in Great Britain. Paul Baran, Donald Davies, Leonard Kleinrock, and others proceed in parallel research. Baran is one of the first to publish, *On Data Communications Networks*. Kleinrock’s thesis is also published as a seminal text on queuing theory. Licklider leaves ARPA to return to MIT, and Ivan Sutherland moves to IPTO. With IPTO funding, MIT’s Project MAC acquires a GE-635 computer and begins the development of the Multics timesharing operating system.)

- **1964** \_\_ *Parangolé*, Helio Oiticica (Helio Oiticica is a major figure of the Brazilian avantgarde in the sixties and seventies.(...) His generation shared the basic assumption that cultural change was necessary for social transformation. He participated in the neoconcrete movement, which rejected the easel painting and attempted to move the experience of color into space and time, as in the work of Mondrian. Oiticica rapidly sought to broaden his conceptions to embrace a »general constructive will«. Melding an original interpretation of artistic modernity with contributions from Brazil’s highly pluralistic society he developed his art as a kind of ordered delirium, an organized trance. [Paul Stulzman]. In November 1964, Oiticica wrote: »The discovery of that which I call ‘parangolé’ (slang for a situation of sudden confusion or excitement among people), marks a decisive point and defines a specific

position in the theoretical development of my entire experience with the question of three-dimensional color construction. This especially relates to a new definition of what »the object« or better, »the artwork«, is seen as. One could see the phenomenon of 'parangolé' as an art-form related to Body Art, Happening, or Performance. One of the most well-known examples were the 'parangolé'-capes, worn by friends of the artist. A wide variety of other objects - such as banners and tents - add to the 'parangolé' experience as a whole. Central to the 'parangolé' are interaction, movement, and altering of peoples' sense of reality. Like the word parangole, a slang term from Rio de Janeiro that refers to a range of events or states including idleness, a sudden agitation, an unexpected situation, or a dance party, the more than thirty objects so titled by Brazilian artist Helio Oiticica have an indeterminate status. Produced mainly between 1964 and 1968, these flags, tents, and capes made out of jute and plastic bags, painted or printed fabrics, and sometimes including painted or stenciled texts, are meant to be used by the viewer. A Parangole cape on a hanger is not a Parangole: its complex textures can only be revealed through the gestures and movements of the person who wears it. As the artist explained in a 1965 text, the spectator of these works becomes a participant or "participator" (participador). Oiticica's discovery of Mangueira was also singled out at the time in Brazilian critic Mario Pedrosa's 1966 article, "Arte ambiental, arte pos-moderna, Helio Oiticica." In this important theorization, Pedrosa described the new "post-modern" phase in twentieth-century art as a move away from "the hermetic individual subjectivism" (o subjetivismo individual hermetico) of modern art, dealing exclusively with "purely plastic values" (valores propriamente plasticos), and toward the increasing prominence of social and political concerns. According to Pedrosa, Oiticica's "post-modern" turn corresponded precisely to the moment when the artist abandoned the "ivory tower" (torre de marfim) and discovered Mangueira, an "initiation" that would forever transform his conception of the role of art and artists.) [http://findarticles.com/p/articles/mi\\_m0425/is\\_2\\_63/ai\\_n6155498/pg\\_12?tag=artBody:col1](http://findarticles.com/p/articles/mi_m0425/is_2_63/ai_n6155498/pg_12?tag=artBody:col1)

- **1964** \_\_ **Radio Caroline** (Radio Caroline is a European radio station that started transmissions on Easter Saturday 1964 from a ship anchored in international waters off the coast of Felixstowe, Suffolk, England. It was unlicensed by any government for most of its life and it was labelled a pirate radio station. Although one of a number of unlicensed radio stations based on ships anchored off Britain, Radio Caroline was the first such station to broadcast all day using the English language. Radio Caroline was founded by Irish music industry businessman Ronan O'Rahilly. The station, Radio Caroline, began broadcasting on 28 March 1964 from the ex-passenger ferry MV Fredericia, anchored in international waters three miles (5 km) off the coast of Felixstowe, Suffolk, England. The station took its name from Caroline Kennedy, daughter of U.S. President John F. Kennedy: O'Rahilly has said in interviews that when he flew to Dallas, Texas to buy the transmitters for the radio station, he was reading a copy of Look magazine. This, together with the station's tenacity in surviving for some 40 years, has established Radio Caroline as a household name for offshore radio. A legal, onshore version of Radio Caroline continues to broadcast from Maidstone, Kent via several methods, predominantly via satellite and over the Internet.) [http://en.wikipedia.org/wiki/Radio\\_caroline](http://en.wikipedia.org/wiki/Radio_caroline) <http://www.radiocaroline.co.uk> <http://www.radio-caroline.eu/>

- **1964** \_\_ **Shepard's Tones** (In 1964, the psychologist Roger N. Shepard published a paper entitled *Circularity in Judgements of Relative Pitch* in the *Journal of the Acoustical Society of America* [Shepard-64]. It described the set of tones reproduced here. These tones were crafted by Shepard to eliminate all relative pitch discrimination information. As a result, when played in sequence, each tone sounds higher than all tones preceding it and lower than all tones following it (and vice versa when the sequence is played in the opposite order). Since there are only twelve tones in the sequence, played in a continuous loop, every tone sounds both higher and lower than every other at some point in the sequence. This phenomenon was used as early as the late nineteenth century in orchestral works. Other variations have also been produced. For example, Jean Claude Risset has produced a rhythmic variant in which tempo appears to increase (or decrease) continuously.) <http://www.cs.ubc.ca/nest/imager/contributions/flinn/Illusions/ST/st.html>

- **1964** \_\_ « **Understanding Media: The Extensions of Man** », Marshall McLuhan (In Part One, McLuhan discusses the differences between hot and cool media and the ways that one medium translates the content of another medium. Briefly, "the content of a medium is always another medium." In Part Two, McLuhan analyzes each medium (circa 1964) in a manner that exposes the form, rather than the content of each medium. In order, McLuhan covers *The Spoken Word*, *The Written Word* (as in a manuscript or incunabulum), *Roads and Paper Routes*, *Numbers*, *Clothing*, *Housing*, *Money*, *Clocks*, *The Print* (as in pictorial lithograph or woodcut), *Comics*, *The Printed Word* (as in *Typography*), *Wheel*, *Bicycle and Airplane*, *The Photograph*, *The Press*, *Motorcar*, *Ads*, *Games*, *Telegraph*, *The Typewriter*, *The Telephone*, *The Phonograph*, *Movies*, *Radio*, *Television*, *Weapons*, and *Automation*. Throughout *Understanding Media: The Extensions of Man*, McLuhan uses historical quotes and anecdotes to explain the ways in which new forms of media change the perceptions of societies, with specific focus on the form of each medium as opposed to the information that is transmitted by each medium. McLuhan identified two types of media: "hot" media and "cool" media. This terminology does not refer to the temperature or emotional intensity, but to the degree of participation. Hot media are those that require low participation from users, since they foster detachment. Conversely, cool media are those that require strong user participation, since they urge users to engage themselves completely in their use. Radio, for example, is defined as a hot medium, since listening does not require complete involvement from the user. In contrast, television is a cool medium, since it requires more user participation. McLuhan uses interchangeably the words *medium* and *media*. For McLuhan a medium is "any extension of

ourselves", or more broadly, "any new technology". In addition to forms such as newspapers, television and radio, McLuhan includes the light bulb, cars, speech and language in his definition of "media": all of these, as technologies, mediate our communication; their forms or structures affect how we perceive and understand the world around us. McLuhan says that the conventional pronouncements fail in studying media because they pay attention to and focus on the content, which blinds them to see its actual character, the psychic and social effects. Significantly, the electric light is usually not even regarded as a media because it has no content. Instead, McLuhan observes that any medium "amplifies or accelerates existing processes", introduces a "change of scale or pace or shape or pattern into human association, affairs, and action", resulting in "psychic, and social consequences"; this is the real "meaning or message" brought by a medium, a social and psychic message, and it depends solely on the medium itself, regardless of the 'content' emitted by it. This is basically the meaning of "the medium is the message".) [http://cultofjim.com/scripture/understanding\\_media/](http://cultofjim.com/scripture/understanding_media/)

- **1964** \_\_ **The Wolfman**, Robert Ashley, ONCE Festival (On September 1, at the Second Annual New York Avant-Garde Festival, Ashley presented the premiere of *The Wolfman*, a tape collage excerpted from radio and television broadcasts overlaid with live amplified vocal sounds whose timbre evolved through slow changes in pitch, volume, vowels, and mouth formation. The resemblance of the sustained vowel sounds to a howling wolf gave the work its title. Critics attacked *The Wolfman's* ear-battering roar, but the piece cemented Ashley's national reputation. "Mr. Ashley, a most harmless-looking man. . . stood stolidly motionless for twenty solid minutes whistling, shouting, screaming, humming, blowing and blasting away at a microphone which, naturally, veered off into its own realm of harmonics, squeaks and piercing rasps," wrote Faubion Bowers in *The Nation*. When the piece ended, one audience member cried, "Assassino!"; others shouted, "Encore!")

- **1964** \_\_ **Yper-Sound**, Pierre Henry (In 1964 Henry produced his *Jerks Electronique* with a 'song' called *Psyche Rock* under the pseudonym *Yper Sound*. It sold some 150,000 copies. It made Henry instantly famous, not only with connoisseurs of avant garde art but also with the man in the street. A few years ago its echo was to be heard in the background of a house music record. Anyway, it enabled Henry to make a good deal with the Philips label. Although always following his own path, Henry has never been a solitary closed man. His friendship with dancer Maurice Bejart has taken him all over the world. Henry has produced music for films and advertisements. Another difference between Schaeffer (and the disciples of his theories) and Henry was that Henry did not follow the Husserlian ideas about music. To Henry sound has never been interesting as a phenomenon as such. That's why he denies the existence of noise; there is only sound. The sound that is there for music. To Henry, emotion, he calls it nature, is to be captured in music. That's a fundamental step over the line that Schaeffer had drawn. [Ios Smolders]) <http://media.hyperreal.org/zines/est/intervs/henry.html>

## 1965

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- **1965** \_ **AMM - The Ethic of Improvisation**, Cornelius Cardew, Keith Rowe, Eddie Prévoist, Lou Gare, Lawrence Sheaff (In AMM Cardew encountered, perhaps for the first time, musicians as uncompromising as himself, who had already entered the uncharted territory of improvisation and who would risk all in the making of each performance. A short entry in Cardew's diary for 1965 reads like a prophetic description of AMM music: "Music is a vagrant; it has no fixed abode. It's a menace to society. It needs cleaning up. The impossibility of abolishing music. Its omnipresence. Its uncatchability. Perhaps after all we have to step down and let music pursue its own course." In an essay entitled 'Towards an Ethic of Improvisation' Cardew wrote: "It is not the exclusive privilege of music to have a history - sound has history too. Industry and modern technology have added machine sounds and electronic sounds to the primeval sounds of thunderstorm, volcanic eruption, avalanche and tidal wave. It is to the 'history of sound' that AMM tries to contribute something. 'Informal' sound has a power over our emotional responses that 'formal' music does not, in that it acts subliminally rather than on a cultural level. This is a possible definition of the area in which AMM is experimental. We are searching for sounds and for responses that attach to them, rather than thinking them up, preparing them and producing them. The search is conducted in the medium of sound and the musician himself is at the heart of the experiment." [John Tilbury, *Contact n* °6, 1983]. "In 1965 I joined a group of four musicians in London who were giving weekly performances of what they called 'AMM Music', a very pure form of improvisation operating without any formal system or limitation. The four original members of AMM came from a jazz background; when I joined in I had no jazz experience whatever, yet there was no language problem. Sessions generally lasted about two hours with no formal breaks or interruptions, although there would sometimes occur extended periods of close to silence. AMM music is supposed to admit all sounds but the members of AMM have marked preferences. An open-ness to the totality of sounds implies a tendency away from traditional musical structures towards informality. Governing this tendency - reining it in- are various thoroughly traditional musical structures such as saxophone, piano, violin, guitar, etc., in each of which reposes a portion of the history of music. Further echoes of the history of music enter through the medium of the transistor radio (the use of which as a musical instrument was pioneered by John Cage). However, it is not the exclusive privilege of music to have a

history -sound has history too. Industry and modern technology have added machine sounds and electronic sounds to the primeval sounds of thunderstorm, volcanic eruption, avalanche and tidal wave. Informal 'sound' has a power over our emotional responses that formal 'music' does not, in that it acts subliminally rather than on a cultural level. This is a possible definition of the area in which AMM is experimental. We are searching for sounds and for the responses that attach to them, rather than thinking them up, preparing them and producing them. The search is conducted in the medium of sound and the musician himself is at the heart of the experiment. In 1966, I and another member of the group invested the proceeds of a recording in a second amplifier system to balance the volume of sound produced by the electric guitar. At that period we were playing every week in the music room of the London School of Economics -a very small room barely able to accommodate [sic] our equipment. With the new equipment we began to explore the range of small sounds made available by using contact microphones on all kinds of materials -glass, metal, wood, etc. -and a variety of gadgets from drumsticks to battery-operated cocktail mixers. At the same time the percussionist was expanding in the direction of pitched instruments such as xylophone and concertina, and the saxophonist began to double on violin and flute as well as a stringed instrument of his own design. In addition, two cellos were wired to the new equipment and the guitarist was developing a predilection for coffee tins and cans of all kinds. This proliferation of sound sources in such a confined space produced a situation where it was often impossible to tell who was producing which sounds -or rather which portions of the single roomfilling deluge of sound. In this phase the playing changed: as individuals we were absorbed into a composite activity in which solo-playing and any kind of virtuosity were relatively insignificant. It also struck me at that time that it is impossible to record with any fidelity a kind of music that is actually derived in some sense from the room in which it is taking place -its shape, acoustical properties, even the view from the windows. What a recording produces is a separate phenomenon, something really much stranger than the playing itself, since what you hear on tape or disc is indeed the same playing, but divorced from its natural context. What is the importance of this natural context? The natural context provides a score which the players are unconsciously interpreting in their playing. Not a score that is explicitly articulated in the music and hence of no further interest to the listener as is generally the case in traditional music, but one that coexists inseparably with the music, standing side by side with it and sustaining it. (...) [Improvised] Music is not ideal for home listening. It is not a suitable background for social intercourse. Besides, this music does not occur in a home environment, it occurs in a public environment, and its force depends to some extent on public response. For this reason too it cannot happen fully in a recording studio; if there is hope for a recording it must be a recording of a public performance. Improvisation is a language spontaneously developed amongst the players and between players and listeners. [Cornelius Cardew, *Towards an Ethic of Improvisation*, 1971] [http://www.ubu.com/papers/cardew\\_ethics.html](http://www.ubu.com/papers/cardew_ethics.html) <http://www.users.waitrose.com/~chobbs/tilburycardew.html>

- **1965** \_\_ **ARPA** (With ARPA funding, Larry Roberts and Thomas Marill create the first wide-area network connection. They connect the TX-2 at MIT to the Q-32 in Santa Monica via a dedicated telephone line with acoustic couplers. The system confirms the suspicions of the Intergalactic Network researchers (1962) that telephone lines work for data, but are inefficient, wasteful of bandwidth, and expensive. As Kleinrock predicts, packet switching offers the most promising model for communication between computers.)

- **1965**\_\_ **Fontana Mix : Feed**, Max Neuhaus (Feed is my title of the score I made with the chance operations specified in John Cage's Fontana Mix, thus the complete title: Fontana Mix - Feed. In 1963, while exploring ways of changing the timbre of percussion instruments through amplification, I had discovered a means of generating sound which I found fascinating - the creation of an acoustic feedback loop with a percussion instrument inserted inside it. Instead of the usual single screeching tones of acoustic feedback, this created a complex multi-timbred system of oscillation. Here, beginning with the pickup of room sound by a contact microphone touching a percussion instrument, a loop is quickly created when the loudspeaker projects the amplified result back on the percussion instrument causing it to vibrate anew. I decided to create a realization with the mixture and interaction of four channels of these loops. The loops were created by resting contact microphones on various percussion instruments standing in front of loudspeakers. Using four loops multiplied the level of complexity enormously as each loop would, of course, interact with each of the others. It created an oscillating system which encompassed the whole room and everything in it including the audience. The score I made from the Fontana Mix materials controls gradual changes in the amount of amplification of each of the channels. Although the execution of the score is identical in each of these performances, the actual sounds that make up each realization are completely different as they are determined by which percussion instruments are used, the acoustics of the room and the position of the mikes in relation to the loudspeakers and the instruments at each specific moment (the vibrations sometimes cause the mikes to move around). In spite of this, one might still expect the overall structure of these realizations to be similar as the score determines the amplification contour of each feedback channel over time. This is also not the case. The loudness of the work at any specific moment is determined by which channels are oscillating and how. As the amplification controls are gradually changed, the feedback channels suddenly break into different modes of oscillation; sound seems to swing through the room. The factors here are so complex that even if the piece were to be performed twice in the same room with the same audience, the same instruments, and the same loudspeakers, it would have completely different sound and structures each time. It seems something alive. These realizations end not with gradual fadeouts, but by switching off the power amplifier directly, causing the feedback loops to collapse, disintegrate and die out. [Max Neuhaus] (FONTANA MIX : FEED de Max Neuhaus, conçue en 1965-1966, d'après la partition de Fontana Mix de John Cage consistait en la

mise en place de l'effet de "feedback" dans une chaîne électroacoustique incluant microphones, haut-parleurs, résonateurs, et une console/matrice de mixage que contrôle l'interprète. L'incidence sur l'effet Larsen (autre nom du "feedback") de toutes les caractéristiques de l'environnement (depuis la longueur des câbles utilisés jusqu'à la température de l'espace physique), empêche la reproduction exacte d'une performance. Elle induit aussi une grande attention aux événements sonores, l'écoute étant primordiale pour la régulation des ondes sonores émergentes. Alors, qu'à priori la mise en place de processus génératif, implique une situation quasi-contemplative, ici est mise en place une attention, une tension extrême de l'écoute. Cette attitude est un aller-retour permanent entre le faire et l'entendre (ce principe est caractéristique de l'improvisation et de la musique concrète). L'artiste se retrouve emporté par le flux qu'il a créé. [Yannick Dauby] <http://www.ubu.com/aspern/aspern5and6/audio5C.html> <http://www.ubu.com/aspern/aspern5and6/fontana.html> [http://www.max-neuhaus.info/soundworks/vectors/performance/fontanamix-feed/Fontana\\_Mix-Feed.pdf](http://www.max-neuhaus.info/soundworks/vectors/performance/fontanamix-feed/Fontana_Mix-Feed.pdf) <http://www.max-neuhaus.info/soundworks/vectors/performance/fontanamix-feed/fontanamix-feed.htm>

- **1965** \_\_ **Intelsat** (Intelsat establishes the first commercial global satellite communications system. 6 April: Early Bird (Intelsat I) is launched into synchronous orbit. This is the world's first commercial communications satellite and "live via satellite" is born. 28 June: Early Bird begins providing television and voice services. Officials in the United States and Europe exchange greetings in a transatlantic ceremony introducing the new service.) <http://www.intelsat.com/about-us/history/intelsat-1960s.asp>

- **1965** \_\_ **JOSS** (The ARPA-funded JOSS (Johnniac Open Shop System) at the RAND Corporation goes on line. The JOSS system permits online computational problem solving at a number of remote electric typewriter consoles. The standard IBM Model 868 electric typewriters are modified with a small box with indicator lights and activating switches. The user input appears in green, and JOSS responds with the output in black.)

- **1965** \_\_ **Music for Solo Performer**, Alvin Lucier (If we accept that the perception of an act as art is what makes it art, then the first instance of the use of brainwaves to generate music did not occur until 1965. Alvin Lucier had begun working with physicist Edmond Dewan in 1964, performing experiments that used brainwaves to create sound. The next year, he was inspired to compose a piece of music using brainwaves as the sole generative source. Music for Solo Performer was presented, with encouragement from John Cage, at the Rose Art Museum of Brandeis University in 1965. Lucier performed this piece several more times over the next few years, but did not continue to use EEG in his own compositions. [Andrew Brouse, A Young Person's Guide to Brainwave Music]) <http://www.mindmodulations.com/mindmods/general/a-young-persons-guide-to-brainwave-music.html>

- **1965** \_\_ **PDP-8** (DEC unveils the PDP-8, the first commercially successful minicomputer. Small enough to sit on a desktop, it sells for \$18,000 — one-fifth the cost of a low-end IBM/360 mainframe. The combination of speed, size, and cost enables the establishment of the minicomputer in thousands of manufacturing plants, offices, and scientific laboratories.)

- **1965** \_\_ **Radio Hauraki**, Oakland (NZ) (The idea for a Private radio station in New Zealand in the form Of Radio Hauraki crystallised in a pub in Wellington. David Gapes, a Newspaper journalist, moves to Auckland to start the radio station. Mid-March 1966: 1480kHz-AM was the decided frequency to broadcast on because it was well away from and frequency currently being used by the New Zealand Broadcasting Corporation (NZBC) and any Australian broadcasters. Saturday April 9th, 1966 (Easter Saturday): The Hauraki idea came to light in the public eye through an article in the Auckland based New Zealand Herald - "PIRATE RADIO STATION IN GULF PLANNED". April 1966: "GOT YOUR SEASICK PILLS?" 2 Ex-NZBC employees, Derek Lowe & Chris Parkinson join David Gapes & technician Denis "Doc" O'Callahan in putting Radio Hauraki together. Hauraki tried to get a private broadcasting licence by the book but the NZBC & the NZ Government turned their application down. May 1966: An on air target date was set - 11am 1ST October 1966. Mid-July 1966: Radio Hauraki hears of pirate radio rivals through an advertisement in an evening edition of The Auckland Star - the rival, Radio Maverick then renamed Radio Ventura. August 1966: Radio Hauraki chooses their transmission vessel The M.V. TIRI – she needed a lot of work on her though before she would be ready for the rough International waters just beyond New Zealand's 3 mile limit. Friday September 16TH, 1966: One day before setting sail the TIRI was detained. Radio Hauraki is prevented in taking the TIRI to sea - by the Government. 11am, October 1ST 1966: This was the date set for Hauraki to be on the air but the TIRI is still berthed at the Western Viaduct in Auckland. Sunday October 23RD, 1966: THE BATTLE OF THE TIRI. The Hauraki crew decide to set sail. The TIRI gets stuck up against the drawbridge but with a little help from a 200 strong crowd who were lined up along the wharf to see what was happening. The TIRI is set free and starts sailing but eventually the police stopped to the TIRI going any further by pulling the fuel line, which shut down the main engine. The Hauraki crew were arrested and the TIRI put back to its berth all to the disappointment of the Hauraki fans but were later set free on bail in the early hours of Monday October 24th 1966. Wednesday, October 26TH, 1966: A public meeting in the Auckland Town Hall set up by Hauraki with the Government Spokespersons invited to speak. Over 2,000 Hauraki supporters jammed the Auckland Town Hall with banners reading: "LICENCE RADIO HAURAKI"; "WE WANT PIRATES"; "SURFIES SUPPORT HAURAKI"; "FLAT EARTH SOCIETY SUPPORTS RADIO HAURAKI"; "DOWN WITH THE NZBC". Wednesday, 2ND November - Monday, 7TH November, 1966: Radio Hauraki directors in court over the detaining orders of the TIRI. Hauraki wins. The

Government had detained the TIRI to stop it being used as a pirate radio station NOT because the TIRI was to be surveyed before being allowed to be put to sea. 6:30am, Friday, 11TH November 1996: The TIRI anchors at what would be her home, or the closest to it, for the next 31/2 years. Monday, 21ST November, 1966: Hauraki starts test transmission on 1480AM – although a bit weak and distorted Hauraki was on the air for the first time. They had technical difficulties and began to improve the signal. 1ST December 1966: Radio Hauraki began transmissions in earnest at sea aboard the TIRI in the Hauraki Gulf on 1480AM just after 8pm. The station jingle rang out loud and clear. “Radio Hauraki, Top Of The Dial”. And then Hauraki DJ Bob Lahey’s voice came over the air: “You’re listening to Radio Hauraki, Top of the Dial, and we’re broadcasting a test transmission on 1480. ...We’ve done some modifications to the transmitter and we’ve erected our full antenna, so we’re expecting to be putting out quite a good signal tonight. We’d like to know how well you are receiving us. So, drop us a line: Radio Hauraki, Post Office Box 2964 in Auckland - 2964, and let us know how you’re picking up Radio Hauraki. (Pause) Twelve minutes past eight now, Top of the Dial...” A while later trouble for Hauraki: 30 - 35 knot winds knock the huge transmitter mast off the TIRI and Hauraki off the air. 9am, Sunday, December 4TH, 1966: On air tests started up again. 11am, Sunday, December 4th, 1966: Listeners who were tuned in to 1480AM heard the sound of seagulls at the start of the documentary, that was produced weeks before, all about Radio Hauraki. That was the programme that reintroduced commercial private broadcasting to New Zealand after a gap of almost 30 years. The dream was now complete - Radio Hauraki was officially on air. The first song played on Radio Hauraki - “Born Free” by Matt Munro.) <http://www.oldradio.com/archives/international/nzp.html>

- **1965** \_\_ **Konstantin Raudive** (The Latvian Konstantin Raudive, impressed with Jurgenson’s voices, decided perform his own experiments. The results of his exhaustive work were carefully recorded in his book “Breakthrough: An Amazing Experiment in Electronic Communication with the Dead”, where he noted down about 72,000 paranormal contacts. In this beginning of the “Second Phase” of EVP, specific characteristics were used by the communicators to identify themselves - such as the “polyglot sentences - that is, many sentences were recorded, being composed of words of different languages. Example: -“Tack, Raudive. Gratulation tev Konci! Pekainis. Tev nav ko eilt, Konsta”. This was a mix of Swedish/English/Latvian and German. It means: -“Thanks Raudive. Congratulations to you Konst. You don’t have to hurry up”. To have an idea of these first record, we will listen to some samples of Dr. Raudive’s voices: AUDIO: 1. GERMAN: (...) Ich bin / translation: -“Imagine! I am!” 2. Raudive’s wife name: -“Zenta” 3. SPANISH: -“Resuelta muchas questiones” / translation: -“You will solve many questions. 4. Raudive’s friend’s name: -“Frei”. [“BRIEF HISTORY OF ITC”, Sonia Rinaldi in the Psychotronics Congress, in Ohio, USA]. In 1968, Raudive published his book “Unhoerbare wird hoerbar” (The Inaudible Becomes Audible), based on 72,000 voices he recorded. [Mark H. Macy, The Phenomenal History and Future of ITC Research])

- **1965** \_\_ **Sony Portapak** (With a Rockefeller Foundation grant, Nam June Paik buys one of the first Sony Portapaks on the American market. On 4 October he shows a tape accompanied by a text entitled “Electronic Video Recorder” at the Café Au Go-Go in New York, a gathering place where performances often take place. Les Levine, one of the early Portapak users, makes his first videotape, Bum. In 1966 he makes one of the first closed-circuit installations using a time lag, so that viewers see themselves with a five-second delay. The installation is presented at the Toronto Art Gallery.)

## 1966

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- **1966** \_\_ **Ailandu Glandolusa**, AMM (Rowe sometimes incorporates live radio broadcasts into his performances, including shortwave radio and number stations (the guitar’s pickups will also pick up radio signals, and broadcast them through the amplifier) AMM percussionist Eddie Prévost reports that Rowe has “an uncanny touch on the wireless switch”, able to find radio broadcasts which seem to blend ideally with, or offer startling commentary on, the music. On AMMMusic, towards the end of the cacophonous “Ailantus Glandolusa,” a speaker announces via radio that “We cannot preserve the normal music.”) (Surtout, ce que cet événement nous révèle, c’est que la situation est renversée : la radio n’est plus un médium, le moyen de la diffusion d’un matériau sonore qui lui est étranger. Elle est source d’une nouvelle signification musicale, et c’est la musique elle-même, qu’elle est destinée à diffuser, qui devient parasite. La performance de Keith Rowe et de ses amis est ainsi une tentative pour réhabiliter ces bruits que l’amateur de radio cherche constamment à éliminer. Et c’est une réussite : la richesse du matériau sonore est indescriptible. Il couvre tous les registres, du plus grave au plus aigu, du plus sourd au plus strident. Les timbres et les textures rivalisent avec ceux d’un véritable orchestre. De leur superposition surgissent parfois des bribes de mélodies et de discours, comme si la radio en tant que médium cherchait à reprendre ses droits. Mais il est trop tard. Ces mélodies et ces discours sont désormais anodins. Alors que la masse sonore s’amplifie, que sa texture se complexifie, l’un des improvisateurs lève les mains, hésite un moment, puis commence à modeler par des mouvements rapides et précis les ondes sonores qui planent autour des antennes hérissant la table. La performance, qui avait été jusqu’ici singulièrement statique, se fait alors autant visuelle que sonore : les spectateurs, fascinés, suivent avidement les évolutions de ces mains dans l’air, cherchant à voir la musique autant qu’à l’entendre. Ils se sont à peine rendu compte que les autres musiciens

*se sont tus, laissant la masse sonore patiemment élaborée pendant près d'une heure s'apaiser, puis s'éteindre. (article [N:Q] Keith Rowe, Julien Ottavi, Will Guthrie et Manu Leduc) [Sophie Pécaud])*

- **1966** \_\_ **The Artist Placement Group**, John Latham (*The Artist Placement Group (APG) was founded in 1966 as an artist-run organisation seeking to refocus art outside the gallery, predominantly through attaching an artist in a business or governmental context for a period of time. As well as these placements, the organisation exhibited in galleries - for example in INN70 at the Hayward gallery in London, 1970 and other venues including a retrospective review at Whitechapel Art Gallery in 1977 and at documenta 6 in the same year. Among the participants were Barbara Steveni, John Latham, Barry Flanagan, Jeffrey Shaw, Stuart Brisley, Hugh Davies, Andrew Dipper, David Toop and Ian Breakwell. After 1989 the organisation became known as Organisation and Imagination (O+I). John Latham died in 2006 just after the Tate gallery in London purchased the APG archives. The idea of Artist Placement stemmed from a group of UK artists, and was guided by John Latham and initiated by Barbara Steveni, who were experimenting with radical new forms of art. Directed by Steveni, the APG pioneered the concept of art in the social context. From the outset their notion of 'placement' acknowledged the marginalised position of the artist and sought to improve the situation. By enabling artists to engage actively in non-art environments, the APG shifted the function of art towards 'decision-making'. Acting outside the conventional art gallery system, the APG attempted, through negotiation and agreement, to place artists within industry and government departments. The artist would become involved in the day-to-day work of the organisation and be paid a salary equal to that of other employees by the host organization, while being given the new role of maintaining sufficient autonomy to acting on an open brief. An artist and musician, Hughes Davies undertook an APG placement with the Department of Health and Social Security and acted as an APG director. A sound artist and director of Audio Arts and Furlong, Bill Furlong undertook an APG placement with the Department of Health and Social Security. Paul and Helene Panhuysen: An artist and one of the directors of Het Apollonhuis in Eindhoven, Holland. An artist, musician and a writer, David Toop undertook APG placements with the Department of Health and Social Security, the London Zoo, and he was a director of the APG. Etc.) <http://www.tate.org.uk/learning/artistsinfocus/apg/default.htm>*

- **1966** \_\_ « **Babel 17** », Samuel Delany (*Babel-17 is a 1966 science fiction novel by Samuel R. Delany in which the Sapir-Whorf Hypothesis (that language strongly influences thought and perceived reality) plays an important part. It was joint winner of the Nebula Award for Best Novel in 1966. During an interstellar war one side develops a language, Babel 17, that can be used as a weapon. Learning it turns one into an unwilling traitor as it alters perception and thought. The change is made more dangerous by the language's seductive enhancement of other abilities. This is discovered by the beautiful starship captain, linguist, poet, and telepath Rydra Wong. She is recruited by her government to discover how the enemy are infiltrating and sabotaging strategic sites. Initially Babel-17 is thought to be a code used by enemy agents and sent by radio transmission. Rydra Wong realises it is a language, and finds herself becoming a traitor as she learns it. She is rescued by her dedicated crew, figures out the danger, and neutralizes its effects.*)

- **1966** \_\_ **The Coupigny synthesiser and Studio 54 mixing desk**, Groupe de Recherche de Musique Concrète (*The console of Studio 54, which later became the console of Studio 116 C at the Maison de la Radio, was used for the composition of some 600 works between 1966 and 1992, in ideal technical conditions. There were 24 signal input control channels and 4 outputs, associated with a remote control assignment panel and a plugboard. A synthesiser completed the console; its originality lay in its ergonomics and in the variety of synthesis modules it used [Daniel Teruggi]. The Coupigny synthesiser and Studio 54 mixing desk had a major influence on the evolution of GRM and from the point of their introduction on they brought a new quality to the music. The mixing desk and synthesiser were combined in one unit and were created specifically for the creation of musique concrete. The design of the desk was influenced by trade union rules at French National Radio that required technicians and production staff to have clearly defined duties. The solitary practice of musique concrete composition did not suit a system that involved three operators: one in charge of the machines, a second controlling the mixing desk, and third to provide guidance to the others. Because of this the synthesiser and desk were combined and organised in a manner that allowed it to be used easily by a composer. Independently of the mixing tracks (twenty-four in total), it had a coupled connection patch that permitted the organisation of the machines within the studio. It also had a number of remote controls for operating tape recorders. The system was easily adaptable to any context, particularly that of interfacing with external equipment. Before the late 1960s the musique concrete produced at GRM had largely been based on the recording and manipulation of sounds, but synthesised sounds had featured in a number of works prior to the introduction of the Coupigny. Pierre Henry had used oscillators to produce sounds as early as 1955. But a synthesiser with parametrical control was something Pierre Schaeffer was against, since it favoured the preconception of music and therefore deviated from Schaeffer's principal of 'making through listening'. Because of Schaeffer's concerns the Coupigny synthesiser was conceived as a sound event generator with parameters controlled globally, without a means to define values as precisely as some other synthesisers of the day. A number of requirements constrained the development of the machine. It needed to be modular and easy to interconnect (this meant that there would be more modules than slots in the synthesiser and that it would have an easy-to-use patch). It also needed to include all the major functions of a modular synthesiser including oscillators, noise-generators, filters, ring-modulators, but an intermodulation facility was viewed as the primary requirement; to enable complex synthesis processes such as frequency*

modulation, amplitude modulation, and modulation via an external source. No keyboard was attached to the synthesiser and instead a specific and somewhat complex envelope generator was used to shape sound. The synthesiser was extremely practical for producing continuous and complex sounds using intermodulation techniques such as cross synthesis and frequency modulation but was less effective in generating precisely defined frequencies and triggering specific sounds. Built in 66, it has been used by Parmegiani (La Roue Ferris), Bayle, Berio, Schaeffer...) [http://electroscopie.blogspot.com/2006\\_11\\_01\\_archive.html](http://electroscopie.blogspot.com/2006_11_01_archive.html)

- **1966** \_\_ **E.A.T. (Experiments in Art and Technology)** (Experiments in Art and Technology was founded in 1966 by engineers Billy Klüver and Fred Waldhauer and artists Robert Rauschenberg and Robert Whitman. The non-profit organization developed from the experience of 9 Evenings: Theatre and Engineering. This event, which was held in October 1966 at the 69th Regiment Armory in New York City (U.S.), brought together 40 engineers and 10 contemporary artists who worked together on performances that incorporated new technology. It became clear that achieving ongoing artist-engineer relationships would require a concerted effort to develop the necessary physical and social conditions. E.A.T. saw itself as a catalyst for stimulating the involvement of industry and technology with the arts. The organization worked to forge effective collaborations between artists and engineers through industrial cooperation and sponsorship. Membership was opened to all artists and engineers, and an office set up in a loft at 9 East 16th Street in New York. 1968 was the first time they could stage a major exhibition, «Some More Beginnings», which presented a large number of innovative technical, electronic and other media projects. The Museum of Modern Art included prize-winning installations in their parallel show «The Machine as Seen at the End of the Mechanical Age», which was curated by Pontus Hultén. Artists and the art community responded enthusiastically to E.A.T. By 1969, given early efforts to attract engineers, the group had over 2,000 artist members as well as 2,000 engineer members willing to work with artists. Expressions of interest and requests for technical assistance came from all over the United States and Canada and from Europe, Japan, South America and elsewhere. People were encouraged to start local E.A.T. groups and about 15 to 20 were formed. 1969: The Anand Project, which developed methods to produce instructional programming for India's educational television through a pilot project at Anand Dairy Cooperative in Baroda (India). 1970: the pavilion at the World Expo '70, Osaka, was another milestone of E.A.T. activities. 1971: Telex: Q&A, which linked public spaces in New York (U.S.), Ahmadabad (India), Tokyo (Japan) and Stockholm (Sweden) by telex, allowing people from different countries to question one another about the future. 1972: Children and Communication, a pilot project enabling children in different parts of New York City to converse using telephone, telex and fax equipment. 1973: a pilot program to devise methods for recording indigenous culture in El Salvador. 1976-1977: and finally a large-screen outdoor television display system for the Centre Georges Pompidou in Paris. In 1980, to detail its activities and projects, E.A.T. put together an archive of more than 300 of its own documents: reports, catalogues, newsletters, information bulletins, proposals, lectures, announcements, and reprints of major articles. A selection of newspaper and magazine articles by others has also been included. Complete sets of this archive were distributed to major libraries in New York (U.S.), Washington (U.S.), Paris (France), Stockholm (Sweden), Moscow (Russia), Ahmadabad (India) and London (England). The archive material reflects the great geographic, technical and artistic diversity of E.A.T.'s activities. Furthermore, the collection uniquely documents a vital and important moment in the history of post-war art, as well as artists' continuing involvement with new technology in the 20th century.) <http://www.fondation-langlois.org/html/e/page.php?NumPage=306>

- **1966** \_\_ **Graphic System** (Max Mathews and Rosler developed a "Graphic System" in 1966, which probably inspired Iannis Xenakis.) (Les environnements virtuels ont pu stimuler la création d'outils spécialisés de création sonore. Ainsi le "Graphic System" démontré par Mathews et Rosler en 1966 pour synthétiser le son à partir de partitions graphiques (qui permet de spécifier des enveloppes et des courbes de fréquence par le dessin) a-t-il précédé et probablement inspiré l'UIPIC de Xenakis, machine à "dessiner les sons musicaux". [Jean-Claude Risset]) <http://trf.education.gouv.fr/pub/educnet/musique/neo/04infos/formations/concours/baccalaureat/bac2002/sud/6sud.htm>

- **1966** \_\_ **IPTO** (Taylor succeeds Sutherland to become the third director of IPTO. In his own office, he has three different terminals, which he can connect by telephone to three different computer systems research sites around the nation. Why can't they all talk together? His problem is a metaphor for that facing the ARPA computer research community.)

- **1966** \_\_ **Listen**, Max Neuhaus (« 'Lecture Demonstrations' : the rubber stamp (LISTEN on each person's hand) was the lecture and the walk the demonstration. I would ask the audience at a concert or lecture to collect outside the hall, stamp their hands and lead them through their everyday environment. Saying nothing, I would simply concentrate on listening, and start walking ». Some of these environments were the Consolidated Edison Power Station, 14th Street and Avenue D, New York City; the Hudson Tubes (PATH subway), 9th Street Station to Pavonia; and the New Jersey Power and Light Power Plant in South Amboy, New Jersey. [Max Neuhaus]. A description by "Blue" Gene Tyranny : Max Neuhaus's Listen (1966) was one of the composer's "sound-oriented pieces for situations other than that of the concert hall." Listen was in the form of a field trip for an audience. They were put on a bus, their palms stamped with the one word "listen", and then they were taken to "an existing sound environment".) <http://www.max-neuhaus.info/soundworks/vectors/walks/LISTEN/>

- **1966** \_\_ *Magnafax Telecopier* (The Xerox Corporation introduces the Magnafax Telecopier. It a small, 46-pound (17 kg) facsimile machine that is easier to use than the earlier models and which can be connected to any telephone line. The Magnafax Telecopier takes about six minutes to transmit a letter-sized document (Vaunt Design Group 2002).)

- **1966** \_\_ **Open Score**, Robert Rauschenberg, E.A.T. Nine Evenings NYC (“Open Score” began with a tennis game at the 69th Regiment Armory in New York City on Oct. 14, 1966. Bill Kaminski of Bell Labs designed a miniature FM transmitter that fit in the handle of the tennis racket, and a contact microphone was attached to the handle with the antenna wound around the frame of the head. Each time Frank Stella (a prominent American painter) and his tennis partner Mimi Kanarek hit the ball, the vibrations of the racquet strings were transmitted to the speakers around the Armory, and a loud “bong” was heard. At the same time, the reverberations of the balls hitting the racquet strings triggered an automatic mechanism that shut off the 36 lights on the Armory ceiling one by one. At each bong, one of the 48 lights illuminating the arena went out, and the game ended when the Armory was in complete darkness. Five hundred people descended onto the tennis court in the dark, and their images were recorded using infrared light and infrared television cameras and projected onto three large screens suspended in front of the audience. In the third part of the film, Simone Forti sang an Italian folk song as Rauschenberg picked her up and put her down at several places on the Armory floor.) <http://www.fondation-langlois.org/html/e/page.php?NumPage=655> <http://www.fondation-langlois.org/html/e/page.php?NumPage=642>

- **1966** \_\_ **Public Supply**, Max Neuhaus (By mixing calls - listeners’ sounds and noises, feedbacks - coming in to ten telephones, Max Neuhaus combined a radio station with the telephone network and created a two-way public aural space twenty miles in diameter encompassing New York City where any inhabitant could join a live dialogue with sound by making a phone call. Using technology he had constructed himself, he was able to mix calls coming in to ten telephones in the studios of the WBAI radio station in New York in different ways, and then broadcast this melange of listeners’ sounds and noises. Once the listeners who called in had switched their radios on, he played with the feedback this produced and bundled sounds from introverted and extroverted callers together. « With a friend, I built this wonderful pre-answering-machine ten-line answering machine. Each phone sat on a small platform and had a solenoid-controlled lever which fit under its receiver. A plastic cup with a microphone inside was fitted over the ear piece. The mikes and solenoids were connected to a box with switches controlling the solenoids, and with pots for the mike gains. The output went to an amp and a speaker. The studio engineer looked in a few minutes before air time expecting hopeless chaos. It was a bit strange but not chaos - ten telephones on the floor with their handsets popping up and down and voices coming out of a speaker in front of his microphone. There wasn’t much he could do; he flipped the switch and put us on the air. I had told people they could phone in any sounds they wanted and asked them to leave their radio on while calling so that I would have some different feedbacks to work with. I saw myself as a sort of moderator; I tried to form interesting combinations of callers on the air and counterbalance the extroverted with the introverted. The first thing I realized after “Public Supply I” was that with a conventional hand mixer it was impossible to control ten lines at the same time. I felt I had to find a way to use the skill that I had in my hands from being a musician to make it a more fluid situation. I built what I called a finger mixer; it was a flat plate with four photocells for each finger arranged in the shape of my hand. Each caller was assigned two of these photocells with which I could control his gain and stereo position; this meant that just by moving my hand very slightly and letting more or less light fall on different photocells I could shape gain and position of all ten callers simultaneously. I had a very fine control, and it allowed me to move the mixing and grouping into something which was fast-moving and dynamic. I first used it in Toronto in 1968. » The potential of a shift to many-to-many distribution networks was recognized much earlier and artists had started to expand the possibilities of the one-to-many broadcasting media at a time when the concept of many-to-many distribution systems was hardly recognized by the public in general. In the 1960s, Max Neuhaus defined new arenas for music performance by staging sound works in public arenas and experimenting with networked sound as a form of “virtual architecture.” In the first installment of his project Public Supply (1966), he established a connection between the WBAI radio station in New York and the telephone network, implementing a 20-mile aural space around New York City, where participants could intervene in the performance by making a phone call. [Christiane Paul]) <http://www.medienkunstnetz.de/works/public-supply-i/> <http://www.max-neuhaus.info/>

- **1966** \_\_ **Simultaneity in Simultaneity - Three Country Happenings** (Using existing telecommunication structures as a link, many of these works or practices typically claimed to connect remote live performances that were bridging continents, for instance the 1966 “Three Country Happenings” by artists Marta Minujin, Allan Kaprow, Wolf Vostell, in Buenos Aires, Berlin, and New York, respectively [Miya Yoshida]. Minujin settled in New York, where she started a series of works clearly influenced by McLuhan’s theories. These works combine the ideas, concepts and structures of telecommunications art, and include “Simultaneidad en Simultaneidad” (Simultaneity in Simultaneity) (1966), a joint project with Allan Kaprow and Wolf Vostell in which she uses different media to create kind of instant media invasion. In 1966, after absorbing the hippie culture and the theories of Marshall McLuhan in United States, Marta Minujin began a series of works that highlighted the mediatization of everyday life, submerging the audience in the visual, hyper-fragmented universe of the mass media. The first of these works, “Simultaneity in Simultaneity”, was produced that year at Buenos Aires’ Instituto Di Tella. Minujin invited 60 media stars to be filmed, photographed and interviewed before taking their positions in front of a television, which they had to look at while listening to a radio. Eleven days later, the same

people at the same positions saw the photographs and films taken the first day projected onto the walls, heard their interviews at the room's loudspeakers, saw the first day's images on television and heard a special radio program about the event. In this way, the protagonists of the event were invaded by themselves, translated into the multi-languages of media. The work privileged the physical aspects of media rather than their information content, their bare presence rather than their communication value. [Rodrigo Alonso] (*Simultaneidad en Simultaneidad* (1966), formaba parte del *Three Country Happening*, un happening simultáneo planeado junto a Allan Kaprow y Wolf Vostell, y que consistía en la realización de tres happenings en tres países diferentes en el mismo día y horario. Para *Simultaneidad en Simultaneidad*, Minujin convocó a sesenta invitados al auditorio del Instituto Di Tella, donde fueron filmados, fotografiados y entrevistados antes de ocupar el lugar que cada uno tenía reservado frente a un televisor, que debían mirar al mismo tiempo que escuchaban un receptor radial. Once días más tarde, las mismas personas distribuidas en los mismos lugares, vieron proyectadas en las paredes las fotografías y films tomados el primer día y escucharon sus entrevistas en los altoparlantes de la sala, al tiempo que los televisores les devolvían las imágenes de la primera jornada y los receptores radiales transmitían un programa especial referido al suceso.) <http://webs.advance.com.ar/martaminujin/obras/simulteneidad.htm>

- **1966** \_\_ **Sonic Arts Union** (*The Sonic Arts Union formed in 1966 when Robert Ashley, David Behrman, Alvin Lucier, and Gordon Mumma decided to pool their resources and help one another with the performance and staging of their music. Since that time the group has performed extensively in the United States and has completed three tours of Europe. More a musical collective than a proper quartet, the Sonic Arts Union presented works by each of its members, sharing equipment and assisting when necessary. Performing and touring together for a decade, the Sonic Arts Union became inactive in 1976. "It started because each of us individually were getting letters inviting us to perform some place. We decided to work together because we could pool our equipment and make a concert that would be very difficult to make by yourself (there was no money of course). It wasn't so much an ensemble like the ONCE group or the things that I've been working with since. It was more just three or four people getting together to give a concert and pool the equipment and resources. You could make a piece where you needed two more performers and I knew that David and Alvin could do those performances. We gave a lot of concerts here in the States and in Europe with this co-operative. It wasn't a band, it was a co-operation between composers to make a good concert."* [Robert Ashley])

- **1966** \_\_ « **Sound Installation** » (*The term was first used by Max Neuhaus before using another terme "Place Works". Sound installation (related to sound art and sound sculpture) is an intermedia and time based artform. It is an expansion of an art installation in the sense that it includes the sound element and therefore the time element. The main difference with a sound sculpture is that a sound installation has a three dimensional space and that the axes with which the different sound objects are being organized are not exclusively internal to the work, but also external. A work of art is an installation only if it makes a dialog with the surrounding space. A sound installation is usually a site-specific but sometimes it can be re adapted to other spaces. It can be made either in close or open spaces, and context is fundamental to determine how a sound installation will be aesthetically perceived. The difference between a regular art installation and a sound installation is that the later one has the time element, which gives the visiting public the possibility to stay a longer time due possible curiosity over the development of sound. This temporal factor also gives the audience the excuse to explore the space thoroughly due to the dispositions of the different sounds in space. Sound installations sometimes use interactive art technology (computers, sensors, mechanical and kinetic devices, etc) but we also find this type of art form using only sound sources placed in different space points (like speakers), or acoustic music instruments materials like piano strings that are played by a performer or by the public. /1. The simpler sound form is a repeating sound loop. This is mostly used in ambient art, and in this case the sound is not the determinant factor of the art work. /2. The most used sound structure is the open form, since the public can decide to experience a sound installation for just a few minutes or for a longer period of time. This obliges the artist to construct a sound organization that is capable of working well in both of the two cases. /3. There is also the possibility to have a linear sound structure, where sound develops in the same way as in a musical composition. In this case, the artist might risk not having the audience staying for the whole length of the sound. /4. An emergent form of location sensitive mobile and immersive sound work enabled by GPS devices and ubiquitous computing is developing non-linear navigable sound art works soniclandscapes and audionomad. Max Neuhaus went on to pioneer artistic activities outside conventional cultural contexts and began to realize sound works anonymously in public places, developing art forms of his own. Utilizing his sense of sound and people's reactions to it gained after fourteen years as a musician, he began to make sound works which were neither music nor events and coined the term 'sound installation' to describe them and to describe his practice based on the creation of unique sounds for specific locations. In these works without beginning or end, the sounds were placed in space rather than in time. Starting from the premise that our sense of place depends on what we hear, as well as on what we see, he utilized a given social and aural context as a foundation to build a new perception of place with sound.)*

- **1966** \_\_ **Telemusik**, Karlheinz Stockhausen (*Composed in Tokyo in the electronic studio of Japanese Radio NHK. Stockhausen used shortwave radio transmissions to compose a work with which he wanted, "to take a step further in the direction of composing not 'my' music but a music of the whole Earth, of all countries and races." When Stockhausen lay awake at night he had a vision that recurred over and over, of "technical processes, formal relationships, pictures of the notation, of human relationships etc. – all at once and in a network too tangled up to be unraveled into one process". This awoke and old dream of Stockhausen's, in which he wanted to*

compose a music for the whole Earth, for all cultures. That's why he incorporated sounds from as wildly dispersed places as Japan, Sahara, Bali, Vietnam, China, the Amazons, Spain, Hungary. Stockhausen stresses, though, that "Telemusik" is not a collage: "Rather – through the process of intermodulation between old 'found' objects and new sound events which I made using modern electronic means – a higher unity is reached: a universality of past, present and future, of distant places and spaces: TELE-MUSIK". Telemusik consists of 32 structures (moments) incorporating shortwave radio transmissions. Additional equipment used for the realization of the electronic music was 2 beat frequency oscillators, 3 sine-wave generators, 1 delta generator, 1 function generator, 1 transposing tape recorder with a pilot frequency generator, 2 tape recorders, 1 amplitude modulator, 2 ring modulators, 3 high-pass and low-pass filters, 1 third-octave filter, 1 six-track tape recorder.)

- 1966 \_\_ **Three Country Happenings**, Marta Minujin, Allan Kaprow, Wolf Vostell (in Buenos Aires, Berlin, and New York.)

- 1966 \_\_ « **Time-Sharing on Computers** », Fernando Corbato & Robert Fano, MIT ("The time-sharing computer system can unite a group of investigators in a cooperative search for the solution to a common problem, or it can serve as a community pool of knowledge and skill on which anyone can draw according to his needs. Projecting the concept on a large scale, one can conceive of such a facility as an extraordinarily powerful library serving an entire community in short, an intellectual public utility.") <http://www.columbia.edu/~rh120/>

- 1966 \_\_ « **Toward A Cooperative Network Of Time-Shared Computers** », Thomas Marill ("Incompatible machines represent an old problem in the computer field. Very often, because of computer incompatibility, programs developed at one installation are not available to users of other installations. The same program may therefore have to be rewritten dozens of times. (...) Within a computer network, a user of any cooperating installation would have access to programs running at other cooperating installations, even though the programs were written in different languages for different computers. This forms the principal motivation for considering the implementation of a network. (...) Since the motivation for the network is to overcome the problems of computer incompatibility without enforcing standardization, it would not do to require adherence to a standard protocol as a prerequisite of membership in the network. Instead, the network should be designed for maximum flexibility. If a protocol which is good enough to be put forward as a standard is designed, adherence to this standard should be encouraged but not required.) <http://www.packet.cc/files/toward-coop-net.html>

- 1966 \_\_ « **Traité des objets musicaux** » (Treatise on musical objects), Pierre Schaeffer (In 1966 Schaeffer published the book *Traité des Objets Musicaux* (Treatise on musical objects) which represented the culmination of some 20 years of research in the field of musique concrète. In conjunction with this publication, a set of sound recordings was produced, entitled *Le Solfège de l'Objet Sonore* (Music Theory of the Acoustic Object), to provide examples of concepts dealt with in the treatise. Schaeffer developed an aesthetic practice that was centered upon the use of sound as a primary compositional resource and emphasized the importance of play (jeu) in the creation of music. Schaeffer's use of jeu, from the verb jouer, carries the same double meaning as the English verb play: 'to enjoy oneself by interacting with one's surroundings', as well as 'to operate a musical instrument'. This notion is central to the musique concrète aesthetic. Schaeffer delivered "Traité des objets musicaux: essai interdisciplines" in 1966 after fifteen years of labour. The work was dedicated to the memory of his father, whose precept — 'practise your instrument' — the author passed on. *Traité* follows a zigzag course in seven jumps named books. 'Book One' links the genesis of music to the birth of the musical instrument, defined as the causal permanence that engenders an organization of sound characters (and hence timbre), out of which variations of musical values (paradigmatically, pitch) appear. 'Book Two' postulates four functions of listening. *Oùir* (to hear) is to posit iconic (i.e. similarity based) relations between representamen and object (or signifier and signified): on the verge of semiosis, creaks lay dormant in the background noise. *Écouter* (to listen) is to posit indexical (i.e. causal) relations between representamen and object: creaks stand for ungreased hinges. *Comprendre* (to comprehend) is to establish symbolic (i.e. consensual) relations between representamen and object: creaks stand for tempered pitches agreeable to a metrics of successive divisional operations. And because hearing, listening, understanding, and comprehending all are lexicalized acceptations of *entendre* — by semantic derivation from the etymological sense, 'to turn one's attention' — the French language allows Schaeffer to construe *entendre* as to hear, listen, understand, and comprehend in mindfulness of one's intention. [Schaeffer exhumes the oppositions *oùir/écouter*, where *oùir* signifies the physiological phenomenon, *écouter* the psychological act; *entendre/écouter*, where *entendre* signifies the physiological phenomenon, *écouter* the psychological act; and *oùir/entendre*, where *oùir* signifies the physiological phenomenon, *entendre* the psychological act]. Thus sounds open themselves up to iconism, indexicality, and symbolism with intent. Reduced listening follows thence as a bracketing of symbolic and indexical relationships such as references to the traditional solfège and to source or causality might afford, whereby the sonic object unveils itself as an aggregate of shape and matter qualities. As *oùir* ebbs *entendre* flows, as *entendre* ebbs *oùir* flows, and as such movements alternate, sonic things disclose themselves as sonic objects whose intrinsic qualities bespeak details of the sound-producing event and novel abstractive possibilities. [Notwithstanding this, Schafer (1977) notes that, unlike Schaeffer's sonic object, the soundscape cannot dispense with causality and meaning.]. 'Book Three' shows the distinct natures of, on the one side, the physical measurements of frequency, time, amplitude, and spectrum, and, on the other, the subjective perceptions of pitch, duration, intensity, and timbre, thus highlighting the perceptual frailty of the soundest parametric construction. 'Book Four' appropriates

Husserl, Gestalt, Jakobson, Lévi-Strauss, Merleau-Ponty, and Saussure in the interest of musical research. 'Book Five' sets forward criteria to single out sound units from sound continua (identificatory typology) and to select sonic objects where musicalness dwells in posse (classificatory typology). 'Book Six' expounds the method of musical research and outlines seven criteria of the morphology of the potentially musical object that are likely to emerge as musical values in the context of structurations: mass, dynamics, harmonic timbre, melodic profile, mass profile, grain, and allure. Enlarged for the 1977 reprint, 'Book Seven' comes to the conclusion that no universal polymorphous musicalness has arisen from the systematic analysis of sonic objects. The *Solfège of the Sonic Object* purports to take, from the practice of sound-producing bodies, to a universal musicalness through a technique of hearing. It comprises a preliminary stage, four operations and an epilogue. In the preliminary stage, heterogeneous sound-producing bodies are put into vibration by various processes and the resulting sounds are recorded. In the first operation — Typology — sonic objects are singled out from sound continua and selected or discarded according to a musicianly penchant. [Typology establishes that the level of complexity of a sonic object is contingent upon the listener's dissective or integrative intention. Nonetheless, Schafer (1977) picks out Schaeffer's term for the smallest autonomous component of a soundscape (but see note 4 above) and Cadoz (1984) 'broadens' the concept by applying the term to complex sounds: 'in Schaeffer's book, the notion of an object is associated with elementary sounds.']. In the second operation — Morphology — the objects selected are compared, perceptual criteria that make them up are named, and the objects are classed as tokens of such criteria. [Smalley (1986) slices typo-morphology into pieces, splices them into 'spectro-morphology' — 'a preferable term' — and pronounces spectro-morphological thinking 'the rightful heir of Western musical tradition'.]. In the third operation — Characterology — interactions of criteria within a given object are identified and referred to a sound-producing event. [Risset's 1966 discovery — by digital analysis and synthesis — that the brassy character of trumpet tones ensues from a linkage between amplitude increase and upper partials boost fits into the Characterology project.]. In the fourth operation — Analysis — objects evincing a particular criterion are set against the perceptual fields of pitch, duration, and intensity so as to establish cardinal (absolute) or ordinal (relative) scales of criteria. In the epilogue — or Synthesis — new musics are expected to arise, based on reference structures that should play, for each of the seven morphological criteria, a role similar to that played by interval relations and the games of tonality and modality. [Lerdahl (1987) purports to lay the foundations of 'an authentic syntax of timbre', likewise modelled on tonality.]. The nexus of Schaeffer's research becomes transparent when some avatars of the question concerning the instrument speak their names: 'relay-arts' (Schafer SCHAEFFER, Pierre. 1941. *Esthétique et technique des arts-relais*. / SCHAEFFER, Pierre. 1946. *Notes sur l'expression radiophonique. Machines à communiquer I: genèse des simulacres.*), or analogue techniques of sound and image reproduction as instruments of new art-forms; 'noise piano' (SCHAEFFER, Pierre. 1950. *Introduction à la musique concrète. La musique mécanisée: Polyphonie 6*), or organizing heterogeneous sound-producing bodies into new musical instruments; 'turntable piano' (Schaeffer 1950), or analogue techniques of sound reproduction as applied to the conception of a most generic musical instrument; 'cut bell' and 'locked groove' (Schaeffer 1950), or analogue sound manipulations as instrumental in the disclosure of the sonic reality; 'pseudo-instrument' (SCHAEFFER, Pierre. 1952. *À la recherche d'une musique concrète.*), or organizing sonic objects into virtual musical instruments; 'piano law' (SCHAEFFER, Pierre. 1960. *Note on Time Relationships. Gravesaner Blätter* / SCHAEFFER, Pierre. 1966. *Traité des objets musicaux: essai interdisciplines.* / SCHAEFFER, Pierre and REIBEL, Guy. 1967. *Solfège de l'objet sonore.*), or the inverse relation between spectral richness of resonance and incisiveness of attack across the piano tessitura (i.e. the lower the tone, the richer the spectrum and the less incisive the attack; the higher the tone, the poorer the spectrum and the more incisive the attack); 'characterology' (Schaeffer 1952, 1966), or the systematic investigation of such laws as a means to retrieve the sound-producing event in sonic matters and shapes; 'translation (from symbols) into sound' and 'translation from sound (into a simulacrum on the analogue medium' (Schaeffer 1966, Schaeffer and Reibel 1967), or the traditional composer's and the sound recordist's divergent technologies of listening; 'acousmatic listening' (Schaeffer 1966), or sound recording as an instrument to resurrect the poiesis of presocratic techne. (...) Schaeffer's relay-arts instrument pertains to the history of technical reproducibility, and there is a close resemblance between the two manifestations of technical reproduction as expounded by Benjamin — 'artwork reproduction and the art of film' — and the double role of the relay-arts instrument as expounded by Schaeffer: 'to retransmit in a certain manner what we used to see or hear directly and to express in a certain manner what we used not to see or hear'. In the history of technical reproducibility, the relay-arts instrument materializes the shift from 'older handwork technology' to that technology which, in the words of Heidegger, 'unlocks, transforms, stores up, distributes, and switches about' the energies of nature, and whose essence Heidegger terms *Ge-stell*. The 'decline of the aura' — a feat of technical reproducibility — is intersected by 'the sinking of the object into the objectlessness of the standing reserve' — a feat of *Ge-stell* — but while the former paves the way for art as political praxis, the latter elicits from Heidegger an invitation to a return to the golden age of Greek techne. Is this not praxis? (...) For Schaeffer (1966), music had not sprung from the numeric proportions of intervals. Larousse presented the Acousmatics as disciples of Pythagoras who, for five years, listened to the master speak from behind a veil, observing the strictest silence. Schaeffer metaphorized the analogue medium into that veil to unveil a hearing to which we have grown accustomed today: listening — on the telephone, tape, the radio — to sounds whose original source remains unseen. "Freedom is that which conceals in a way that opens to light" (Heidegger 1954). [Carlos Palombini, "Musique Concrète Revisited"] <http://www.rem.ufpr.br/REMV4/vol4/arti-palombini.htm>

- 1966 \_\_ Variations VII, John Cage, E.A.T. Nine Evenings NYC (One part of this work was to use sounds available at the time of the performance, with telephone lines open in various places in NYC, to pick up ambient noises as sound sources. « My project is

simple to describe. It is a piece of music, indeterminate in form and detail (...) using as sound sources only those sounds which are in the air at the moment of performance, picked up via the communication bands, telephone lines, microphones together with, instead of musical instruments, a variety of household appliances and frequency generators (...) they produce a situation different than anyone could have pre-imagined ». For "Variations VII" John Cage wanted to « use sounds available at the time of the performance ». 10 telephone lines were installed in the Armory by New York Telephone Company. He had lines open in various places in New York City including Luchow's, the Aviary, the 14th Street Con Edison electric power station, the ASPCA lost dog kennel, The New York Times press room, and Merce Cunningham's studio. Magnetic pickups on the telephone receivers fed these sound sources into the sound manipulation system. Cage also had 6 contact microphones on the performing platform itself and 12 contact microphones on household appliances such as a blender, a juicer, a toaster, a fan, etc. He also had 20 radio bands, 2 television bands, and 2 Geiger counters. Oscillators and a pulse generator completed the sound sources. Thirty photocells and lights were mounted at ankle level around the performance area, which activated the different sound sources as the performers moved around. Cage invited the audience to move around freely and many stood near the performance area. [Clarisse Bardiot]. "We spent most of Saturday, 15 October setting up for the first performance of John Cage's Variations VII that evening. As usual, John Cage relied a great deal upon David Tudor for equipment interconnections. John Cage planned to use "as sound sources only those sounds which are in the air at the moment of performance, picked up via [...] telephone lines, microphones," etc. (9 Evenings program notes). One collection of sounds that was supposed to come over telephone lines was the activity in the kitchen of Luchow's Restaurant in New York City. David Tudor had not yet connected those lines into the sound system by late afternoon, and John Cage was beginning to become a bit frantic. He came over to me and said in a pleading voice, "Lowell, David likes you. Would you please get him to connect up those phone lines to Luchow's so we can test them?" I talked to David Tudor, who agreed to do so - a bit later. He was preoccupied with his own setup for John Cage's piece. When the lines were finally interconnected and working properly, John Cage said to me, "David has no concept of time." By that he meant clock time, of course, not musical time. John Cage's piece was less ambitious than David Tudor's, but it had its share of performance glitches on both evenings, 15 and 16 October. Two years later, in Oakland, California, he told me that he was dissatisfied with the performances of Variations VII." [Lowell Cross] <http://www.fondation-langlois.org/html/e/selection.php?Selection=9EVI> <http://www.fondation-langlois.org/html/f/page.php?NumPage=611>

- **1966** \_\_ **Whole Earth**, Stewart Brand (He organized The Trips Festival in January 1966 and created the Whole Earth button in March 1966 (it read: "Why Haven't We Seen a Photograph of the Whole Earth Yet?"). Inspired by EIES (Electronic Information Exchange System - piece of conferencing software called the Onion in 1983), in 1984 Stewart cofounded The Well (Whole Earth 'Lectronic Link), a computer teleconference system for the San Francisco Bay Area, considered a bellwether of the genre. "(Internet) keeps changing, partly because the technology is moving and partly because it is basically a grassroots phenomenon where the users are constantly reinventing the technology, constantly reinventing what would be fun to do on it, what would be useful to do on it. Each time you begin to think you have an idea what the Net is, it turns into something else. This was not the case with broadcast television or broadcast radio, which settled down within a couple of decades and then remained the same for twenty, thirty, forty years. The Net can't hold still for even ten months.").

## 1967

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- **1967** \_\_ **ARPANET** (Larry Roberts convenes a conference in Ann Arbor, Michigan, to bring the ARPA researchers together. At the conclusion, Wesley Clark suggests that the network be managed by interconnected 'Interface Message Processors' in front of the major computers. Called IMPs, they evolve into today's routers. Roberts puts together his plan for the ARPANET. The separate strands of investigation begin to converge. Donald Davies, Paul Baran, and Larry Roberts become aware of each other's work at an ACM conference where they all meet. From Davies, the word 'packet' is adopted and the proposed line speed in ARPANET is increased from 2.4 Kbps to 50 Kbps. The acoustically coupled modem, invented in the early sixties, is vastly improved by John van Geen of the Stanford Research Institute (SRI). He introduces a receiver that can reliably detect bits of data amid the hiss heard over long-distance telephone connections.)

- **1967** \_\_ **Circuit**, Marta Minujin (Minujin carried out an experiment at Montreal's Expo '67, Circuit, a more complex environment that continued to privilege the sensorial aspects of media. However, there were a number of significant variations. This time, participants with similar characteristics were selected by a computer on the basis of a newspaper questionnaire. The setting incorporated information about the participants projected on the walls, while closed-circuit television enabled certain groups to observe the behavior of others. [Rodrigo Alonso])

- **1967** \_\_ **City Links : Buffalo**, Maryanne Amacher (This work was to bring up remote sounds from real-time telelinks and remote mikes : a 28 hour piece using 5 microphones in different parts of the city, broadcast live by radio station. Her pieces are almost

exclusively site specific, generally performed in large architectural spaces, and create psychoacoustic illusions determined by the acoustics of the spaces. [LABELLE, B. *Background Noise – Perspectives on Sound Art*, Continuum Publishing, 2006, p. 170-174]. "My first work was doing more or less pure installation work with these City Links pieces in which I brought in remote sounds. I had microphones in different remote environments and brought up those sounds in the gallery or museum or wherever. It also involved performance. The sound was alive and it came through high quality telephone lines—people always thought I was playing a cassette. It was just hard for them to realize at that time that this was actually live sound. It was also very interesting to have more than one location and the kind of simultaneous synchronic things that would happen. You know, there are no laws." [Maryanne Amacher]. Soundscape artist Maryanne Amacher uses a combination of psychoacoustics and ambient sounds to create sonic environments. Live mixing and speaker placement play an integral part in her soundscapes. Amacher sometimes adds slides and other visual elements to enhance the space. Visitors often find themselves embarking on an "adventure" as they explore one area and then another. Her works are considered "site-specific" because the installation conforms to the physical space it occupies. Amacher often uses the room's individual features to enhance the overall sound experience. Amacher's site-specific installations investigate the individual properties of each space and use this information to create an ever-changing soundscape. Amacher filtered the outside sounds of the city into the exhibition space in *City Links #1-22* (1967). Each room envelopes the listener in a wash of ambient noise that changes from room to room. *Music for Sound* (1980) further explores the visual and spatial features of each room. She develops a "stage" for each room, changing the sonic experience as the participant travels from room to room. In 1985 Amacher began the *MiniSound Series*, an installation spanning over a month-long time period of fluctuating found sounds. Amacher compared the process to a miniseries where elements continue to evolve. [Sabrina Pena Young]. Maryanne Amacher has been exploring musical language and environmental sound in terms of acoustical and architectural space. Like the world of science and science fiction, where she draws much inspiration, Amacher's work is focused on the future, on exploring situations of boundary and perception. She was an early pioneer in using audio telemetry (the wiring together of different sites, generally for concert purposes) and created several "long-distance music" works utilizing what she has referred to as the City-Links format. This involved placing microphones at distant locations and transmitting the "live" sound to mixing facilities, either at her studio or at installations or at performance sites. [Judy Malloy, Pat Bentson] [http://en.wikipedia.org/wiki/Maryanne\\_Amacher](http://en.wikipedia.org/wiki/Maryanne_Amacher)

- **1967** \_\_ **Drive in Music**, Max Neuhaus ("An environment for people in automobiles" - Neuhaus installed 20 low-powered radio transmitters in the trees along a stretch of just under 600 metres on a broad avenue, Lincoln Parkway in Buffalo, New York, spaced out along this mile of straight road, broadcast electronic sounds that changed according to weather conditions and were audible only over car radios. They pointed in different directions and produced different sounds, thus producing seven overlapping zones with various sound components. The sounds were synthesized by home-made equipment on the spot, and changed according to what was going on around them (The sound generators were weather-sensitive and responded to minute changes in temperature, light, and humidity). As the transmitters were all tuned to be received on the same frequency, people driving by heard different sets of sounds according to speed, direction of travel, time of day and weather conditions. In fact Neuhaus did not just work with the synthetic sounds generated by his equipment for his installations in public spaces, but also used them as a counterpoint for the random noises produced in a particular place, placing them in an aesthetic context by setting them alongside sound with tonal quality. "It grew out of Drive-in Music. There I was thinking of placing sound in spatial configurations and letting people put it in their own time, building a work where there were different sounds broadcast in different areas, and letting people pass through it. But at the start of it I thought of it as music – that in fact the car going along the road in either direction 'played' the piece, the driver played the piece, a succession of sounds for each car according to its direction of passage and speed. The reason that it's not a place work is that there is only one path, so it becomes a passage for me. There it is a fixed succession." [Max Neuhaus]) <http://www.medienkunstnetz.de/works/drive-in-music/> <http://www.max-neuhaus.info/>

- **1967** \_\_ « **Heterotopia** », Michel Foucault (The concept is used to shed light on the dialogue between centres and peripheries that is related with the two types of locality. In neither type do the centre and the periphery, or the global and the local, appear as mutually exclusive. Instead, present and absent locality together bring about a new kind of locality which helps the reader to position and define herself in the postmodern world by giving her a point of reference on which to anchor. The idea is developed by Foucault in a text presented as a conference at the Circle of Architectural Studies, on March 14th 1967. Foucault starts with the idea that the present epoch is one of space, rather than of time, and as such he tries to explore the space and its metamorphosis across cultures. "There are, probably, in any culture, in any civilisation, real places, effective places, places designed in the very process of institutionalising a society, places that are a kind of counter-placements, a kind of utopias realised effectively in which the real placements, all the other real placements that can be found inside a culture, are at once represented, contested, and inversed, some kind of places outside any place, even if in fact localisable". These are the heterotopias, as opposed to utopias. Among other characteristics, the heterotopy has the power of "juxtaposing in one single place several spaces, several placements which are in themselves incompatibles". The oldest example of these heterotopias as contradictory placements is the garden. "The garden is a carpet on which the entire world comes to fulfil the symbolic perfection. [...] The Garden is the smallest parcel of the world and then the totality of the world. Since Antiquity, the garden has been a type of blissful and universalising heterotopy". More than often, heterotopias are related to "a certain decoupage of time, which means that they open up towards what we might call heterochrony;

heterotopias work fully when people find themselves in a kind of absolute disjuncture with their traditional time” . Another characteristic is that heterotopies always imply a system of closing/opening that at the same time isolates them and makes them penetrable. It is especially the case with illusory heterotopies; everybody can enter, but “you think you’re in and you’re excluded by the very fact of having entered”. [Petruta Mindrut]. In this short text entitled “Of Other Spaces” Michel Foucault presents his concept of “heterotopy”(heteros-topos, other place/space). Heterotopy for Foucault is a social site designed for human activity, well demarcated, both spatially and temporally. It is characterized by a double logic of social space and the simultaneous coexistence of two or more spatial settings. Foucault mentions a few examples: the museum, the cemetery, the holiday village. These examples prevent one from fully realizing the power of the heterotopic idea. For in the heterotopic site, spaces may be multiplied, not only doubled, and the simultaneous presence of the individual in these different spaces may be multiplied as well -e.g. the individual as a citizen in civic space, an address in virtual space, an outlet in a network, a body in a physical environment, etc. Heterotopy concerns the users of a site, not only its spatial organization. Moreover, today heterotopy is not just a matter of well-demarcated sites. The whole world, or at least large portions of it, have become heterotopic. If the world is heterotopic, or if being-in-space means being-in-heterotopic-space, going into and out of “other” spaces is a matter of making and unmaking contacts, hooking or unhooking appliances, being in touch with someone, being exposed to the gaze of someone, being in reach of something. When this is the nature of our most basic spatial condition, the spatial inscription of socio-political demarcations, boundaries and borders cannot be presented any longer in terms of territory and territorialization, at the very least not only in these terms. The individual too cannot be “contained” within the space occupied by his or her body. The limited space of ones body is multiplied in these “other spaces,” it is represented or has correlates in those spaces. But all these spaces are always somehow “out of joint” - there is no exact overlapping, there is no one set of spatial coordinates that contains them all. All these other spaces are populated with persons, bodies, objects, instruments and appliances, they are interwoven in different, partly intersecting and partly unrelated networks of speech, vision, and interaction. And in the constant shifts and transitions among these spaces the hand provides the ticket, the license, the right of passage; it serves as a gatekeeper and a bridge, it crosses and builds distances; in short, it allows space to become spatialized. This hand, however, belongs neither to the sovereign citizen nor to the instrument that is supposed to serve him or her. This is the hand of the neturalized citizen, the one who becomes a citizen of liminal zones, of intermediate spaces, a citizen of passages, a citizen in passing, i.e., one who is always in the process of becoming a citizen. The examples provided by Foucault in order to illuminate the concept of heterotopy restrict the concept to the point of view of sovereign subjects who define the rules of the game in heterotopic sites [Ariella Azoulay]. Contrary to a fictional utopia, a heterotopy has a concrete existence. It is an actual place, a temporary or permanent built-environment. Seasonal fairgrounds are examples of temporary heterotopies; leisure resorts such as gambling cities, monumental public baths, or labyrinths are implementations of permanent ones. Circus offers a case in point: its essential nomadic mode of existence is experienced by its audience as the ephemeral staking out of a territory within an urban spatial fabric. It imposes its own topology based on the distinction between zones of admission and zones of exclusion, each one being structured into specialized spaces. The presence of a circus, or a traveling fairground in a city means the irruption of a counter-space that displaces usual activities and imposes a heterotopy, a particular spatial logic to which one has to submit. Time is a necessary component of any portion of structured space. It takes time to walk, or drive from one point to another, or to proceed within a constructed space. Only rarely can two points be joined by moving along a straight line.) (La notion d’hétérotopie apparaît chez Michel Foucault dans une conférence, « Des espaces autres », donnée en mars 1967 au Cercle d’Études Architecturales et publiée en 1984. Cette notion désigne des emplacements ouverts sur d’autres emplacements, des espaces dont la mission est de faire communiquer entre eux des emplacements. Là où les utopies désignent des lieux sans implantation réelle, les hétérotopies sont des lieux effectifs, souligne Foucault, des lieux bien réels qui transcendent les clivages culturels. Ils ont le pouvoir de juxtaposer en un seul lieu réel plusieurs espaces, plusieurs emplacements qui sont eux-mêmes incompatibles.)

- **1967 \_\_ HiFi / LoFi - Ear Cleaning**, Robert Murray Schafer (R. Murray Schaffer introduced the concept of a hi-fi and lo-fi soundscape. In a hi-fi soundscape, we can clearly perceive sounds and their orientation (location and distance) within the acoustic space. In a lo-fi soundscape, the sonic space is confused, individual sounds lose their identity, and masking (for example by constant traffic noise) is common.)

- **1967 \_\_ How to Discover Music in the Sounds of Your Daily Life**, Blue Gene Tyranny (In realizations of my procedural score *How to Discover Music in the Sounds of Your Daily Life* (1967), any number of persons, following certain movement strategies based on attraction, record (or transmit in real-time) sounds of their immediate daily environments. A rich variety of orchestral, electronic and natural sounds describe the interaction between mental events and the daily environment: the “inside” -- intuitive decision, spontaneous mental activity, feeling -- and the “outside” that make up reality. The score sets up an ecological chain in which natural sounds and voices are recorded and analyzed electronically (for hidden rhythmic codes, continuous melodic streams, harmonic attractions). These sounds are changed electronically into rhythmic (amplitude following), melodic (frequency following), and harmonic transformations, which are played back into the same environment (possibly by hand-held devices) and/or used to compose electro-acoustic works (such as *Country Boy Country Dog*, the *CBCD Variations for Improvisor and Orchestra*, the *CBCD Transforms*, *The White Night Riot*, etc.). This procedure serves as a kind of immediate reality check comparing “inside” feeling and thought with “outside” circumstantial events. The five parts form an “audio-storyboard” (a movie soundtrack independent of a film):

"A Dream Without Images" (before dawn, inside), "The CBCD Intro" (sunrise, outside), "Country Boy Country Dog" (midday, inside and out), "X Marks The Spot (Daydream)" (afternoon, inside), and "The CBCD Variations for Soloist and Orchestra" (twilight, outside).

- **1967** \_\_ **Maxfeed**, Max Neuhaus (Maxfeed resembles a transistor radio; however, it produces the screeching and hissing sounds itself. The audience consists of only one person, who determines the sound sequences using the dial settings he is already familiar with from his own radio.) <http://www.medienkunstnetz.de/works/maxfeed/>

- **1967** \_\_ **Minuphone**, Marta Minujin (a telephone booth reacts to the dialling of numbers. The Minuphone is what she calls an "environment." The viewer is invited to step inside and dial a number. The phone really works (its number is 581-4570)—but it also sets off a sequence of experiences that suggest the giddy effect of a short trip on LSD. During a conversation, the transparent walls of the booth may slowly turn green or black as panels of colored water rise inside them. A television screen set in the floor may go on, showing the viewer's face grinning nervously up at him. His voice may be recorded on a tape and played back to him. Sirens may blow and a wind blast up from a screen beneath the telephone; a ghostly echo of his words may resound in the booth, or a screen descend (the idea is to make shadow pictures on it with one's free hand). Finally, a Polaroid Land camera has been hooked into the circuit; when the occupant emerges from the booth, bemused, he may be presented by the gallery attendant with a memento of the occasion: a picture of himself in foggy black and white.)

- **1967** \_\_ **Music V** (MUSIC 1, which was quickly replaced by MUSIC II running on an IBM 704 and written in assembler code was the first real computer synthesis programme, developed by Max Mathews of Bell Laboratories in 1957. MUSIC III was written in 1959 for the new generation of IBM transistorised 7094 machines which were much faster and easier to use than the older models. The MUSIC series software went through a stage of evolution following the development of the IBM computer which ended in 1968 with MUSIC V written in FORTRAN and running on the IBM 360 machines. MUSIC V was picked up and developed by various other programmers such as Barry Vercoe at MIT who designed MUSIC 360 and MUSIC 10 by John Chowning and James Moorer at Stanford University [Simon Crab]. The direct synthesis of sound by computer was first described in 1961 by Max Mathews and coworkers at the Bell Telephone Laboratories, Murray Hill, N.J., U.S. Computer sound synthesis involves the description of a sound waveform as a sequence of numbers representing the instantaneous amplitudes of the wave over very small successive intervals of time. The waveform itself is then generated by the process of digital-to-analog conversion, in which first the numbers are converted to voltage steps in sequence and then the steps are smoothed to produce the final waveform. (...) A great variety of sound-synthesis and music-composition algorithms have been developed at research institutions around the world. Music V, created in 1967–68, is the most widely used sound-synthesis program to have been developed at Bell Laboratories. Music V consists of computer models of oscillator and amplifier modules, plus procedures for establishing interactions among the modules. Another widely used synthesis algorithm is Frequency Modulation (FM) Synthesis. Described by John Chowning of Stanford University (Palo Alto, Calif., U.S.) in 1973, FM produces a wide variety of complex timbres by rapidly varying the frequency of one waveform in proportion to the amplitude of another waveform. (...) As computer technology developed and computers became more powerful and less expensive during the 1970s and '80s, the flexibility and sound-production capability of computer-based music systems attracted an increasing proportion of experimental music composers. By the end of the 1980s, computer music systems surpassed tape studio techniques and analog synthesizers as the electronic composition medium of choice among modern and experimental music composers. [Encyclopædia Britannica]) (Max Mathews, le pionnier de la synthèse des sons par ordinateur, a marqué le domaine de son talent de concepteur. A partir de Music III (1959), ses programmes de synthèse - Music IV, 1961; Music V, 1967 - sont en fait des compilateurs, c'est-à-dire des programmes susceptibles d'engendrer une variété de programmes différents. L'utilisateur y est laissé libre de décider du type de synthèse sonore qu'il veut mettre en œuvre : il choisit des modules dont chacun correspond à une production ou une transformation sonore (oscillateur, filtre; additionneur), et il les assemble à loisir, comme s'il "patchait" un synthétiseur modulaire - possibilité qui rappelle le fonctionnement du Meccano ou du Lego. Contrairement à ce que pensent beaucoup, la conception de Mathews ne copie pas celle des synthétiseurs : elle a au contraire inspiré les dispositifs de Moog et Buchla, réalisés analogiquement en tirant parti de la commande par tension ... mais seulement à partir de 1964, alors que Music III a été écrit en 1959. En fait la conception modulaire de Mathews a marqué la plupart des programmes de synthèse - comme Music 360, Music 11, Cmusic, Csound - et des synthétiseurs analogiques ou numériques - comme Arp, DX7, 4A, 4B, 4C, 4X, SYTER - aussi bien que des langages de simulation de circuits électroniques, et plus tard un langage de création d'interactions temps réel comme Max. Jusqu'à il y a peu, la vitesse des ordinateurs ne permettait pas l'usage en temps réel de programmes comme Music III, IV ou V. Ces programmes peuvent être vus comme des boîtes à outil purement logicielles : les "modules" que l'utilisateur choisit et assemble sont virtuels, ils correspondent à des segments de programme. L'assemblage est stipulé par une déclaration textuelle suivant des conventions propres au programme. Un assemblage de modules correspond à un modèle particulier de synthèse : par analogie, on lui donne le nom d'instrument, un instrument pouvant jouer diverses "notes" - correspondant à des "instanciations" de cet instrument précisant les paramètres restés indéfinis (par exemple un instrument donnant des sons à hauteur déterminée pourra en général jouer plusieurs fréquences, voire un continuum de fréquences, correspondant à différentes notes possibles). Dans le cadre du programme, les notes seront donc définies par des instructions donnant leur instant de début, leur durée et la valeur des paramètres qu'on peut

faire varier pour l'instrument. Pour utiliser un programme de synthèse comme Music V, il faut donc définir des "instruments" et donner une liste de notes activant ces instruments. On peut représenter un assemblage de modules sur un diagramme. Certaines mises en œuvre permettent de définir un instrument graphiquement, de même qu'on définit un "patch" dans le langage Max : c'est aujourd'hui chose facile avec les outils graphiques dont on dispose. Il faut donner aussi quelques spécifications additionnelles, par exemple stipuler certaines fonctions utilisées comme forme d'onde, enveloppe, schéma d'évolution d'un autre paramètres comme le tempo métronomique ... Jusqu'en 1977 environ, ces spécifications étaient faites le plus souvent à l'aide de cartes perforées. Et les ordinateurs dédiés à un seul utilisateur étaient exceptionnels jusqu'au milieu des années 70 : il fallait passer par la file d'attente du "traitement par lots" ("batch processing") des centres de calcul - on pouvait attendre plusieurs heures le résultat du calcul des échantillons sonores, et il fallait alors avoir accès à un dispositif capable de convertir les nombres en son. [Jean-Claude Risset]) <http://trf.education.gouv.fr/pub/educnet/musique/neo/04infos/formations/concours/baccalaureat/bac2002/sud/6sud.htm>

- **1967 \_\_ Piano Tester & Piano Pedal Graphing Device**, Leon Theremin (Lev Termen). Theremin's later inventions included many interesting music-related devices such as the rhythmicon, which can play any spacing of beats against any other at the press of a button; a piano tester, which can measure the evenness of a piano's scale electronically; a pedal graph, which measured and recorded the pedaling used by professional pianists as they perform. "This," he said "is a piano tester. It measures the evenness of a piano's scale. We tested many fine European pianos against the Steinways here. The Steinway was best. Here is some work I have been doing on the pedals of the piano. With this you can see by colored lines the pianist's pedaling. Very important. We have compared and graphed the pedaling of many great pianists in the same piece. Very interesting." He put on a tape of Sviatoslav Richter playing Chopin's C Sharp Minor Scherzo, and the listnere stood transfixed as two colored lines, one for each pedal, arched out, retreated and intersected. "Richter uses more left pedal than most pianists," Mr. Theremin said. (New York Times, 25 April 1967, Harold C. Schonberg) (Glinsky, Albert (2000). *Theremin: Ether Music and Espionage*. Urbana, Illinois: University of Illinois Press. ISBN 0-252-02582-2.) [http://www.theremin.info/info-30-1967\\_Music:\\_Leon\\_Theremin.html](http://www.theremin.info/info-30-1967_Music:_Leon_Theremin.html)

- **1967 \_\_ Franz Seidel** (In 1967, Franz Seidel, Vienna, developed the "psychophone". Theodore Rudolph developed a goniometer for Raudivoe's experiments. Thomas Edison spoke through West German clairvoyant Sigrun Seuterman, in trance, about his earlier efforts in 1928 to develop equipment for recording voices from the beyond. Edison also made suggestions as to how to modify TV sets and tune them to 740 megahertz to get paranormal effects. (Session recorded on tape by Paul Affolter, Liestal, Switzerland). [Mark H. Macy, *The Phenomenal History and Future of ITC Research*])

- **1967 \_\_ Spacecraft**, Richard Teitelbaum (In the late 1960s, Richard Teitelbaum was a member of the innovative Rome-based live electronic music group Musica Elettronica Viva (MEV). In performances of Spacecraft (1967) he used various biological signals including brain (EEG) and cardiac (EKG) signals as control sources for electronic synthesizers. Over the next few years, Teitelbaum continued to use EEG and other biological signals in his compositions and experiments as triggers for nascent Moog electronic synthesizers. [Andrew Brouse, *A Young Person's Guide to Brainwave Music*]) <http://www.mindmodulations.com/mindmods/general/a-young-persons-guide-to-brainwave-music.html>

- **1967 \_\_ SuperSlicer** (En 1967, Sandra Pruzhansky (Sandra Pruzansky & Steve Johnson) a écrit aux Bell Laboratories un programme simple de montage et de traitement sonore, SuperSlicer (le "slicer" est un outil pour réaliser les collants de bande magnétique), à l'intention de Vladimir Ussachevsky, qui a composé en résidence Computer Piece n° 1 (1968), comportant à la fois des sons concrets traités par ce programme et un mixage de sons de synthèse obtenus avec Music V. [Jean-Claude Risset]) <http://trf.education.gouv.fr/pub/educnet/musique/neo/04infos/formations/concours/baccalaureat/bac2002/sud/6sud.htm>

- **1967 \_\_ Tapeloopswing**, Michel Waisvisz (Michel Waisvisz invented this instrument to be able to perform the tape music that he created in the studio live on stage (1967-1969). The sounds were first recorded on two tapeloops. These loops were stretched between two stands and pulled back and forth by his hands. The stand in front of him (not visible on the photograph) contains two reading heads. By using two loops with identical sounds he was able to produce prolonged stretches of sound by synchronizing movements by the left and right loop and controlling the fades of the separate loops with the volume pedals on the ground. Live recordings were made with the taperecorders on the ground by temporarily leading the loops through the recorders Waisvisz composed several works for this instrument. The magnetophonic opera "Gullivers Travels" was the first work to employ all the possibilities of the instrument.) <http://crackle.org/photopage%20tapeloopswing.htm>

- 1968 \_\_ **Air Art Event** (The "Air Art Event" was continuously organized by another group of artists consisting of Liza Bear, Keith Sonnier, and Willough Sharp, in Philadelphia.)

- 1968 \_\_ « **All Watched Over by Machines of Loving Grace** », Richard Brautigan ("I'd like to think (and / the sooner the better!) / of a cybernetic meadow / where mammals and computers / live together in mutually / programming harmony / like pure water / touching clear sky. // I like to think / (right now, please!) / of a cybernetic forest / filled with pines and electronics / where deer stroll peacefully / past computers / as if they were flowers / with spinning blossoms. // I like to think / (it has to be!) / of a cybernetic ecology / where we are free of our labors / and joined back to nature, / returned to our mammal brothers and sisters, / and all watched over / by machines of loving grace.") <http://brautigian.cybernetic-meadows.net/tiki-index.php?page=Loving%20Grace%20Cybernetics>

- 1968 \_\_ **Apollo 8** (The Apollo 8 crew communicate by radio over a distance of some 239,000 mi (approx 394,000 km) with their control center in Houston, Texas, while orbiting the Moon (Shepard and Slayton 1995:259).)

- 1968 \_\_ **Birthday Celebration**, 24 day workshop, Ann Halprin, Norma Jeistibo, Charles Amerkhanian, San Francisco Tape Center (This score for a twenty-four-day workshop was used to establish a sequence of activities, and pre-program the major actions of forty student participators in the San Francisco Bay area within a geographical radius of one hundred miles during the summer of 1968. As the sequence of events was linear (that is, the events were sequential and progressive), not overlapping, and all forty people were always engaged in the same basic activities (interactions were confined to those within the group itself), the score has a calendar like appearance. The major controlling devices within the score, here, are length of time for each event and its location. Each actual event itself admits for great latitude within the time sequence, and the procedures for each event are not significant to the form of the total score (although they had their own internal meanings). This process enabled the workshop leaders to pre-plan an intricate sequence of events in various locations before the fact, and analyze them before, during, and then after the events with an understanding of their interrelatedness. It also made possible adjustments to the program based on feedbacks during the period, with a full understanding of how these adjustments would affect the events to follow. Within the major calendarlike score, other more detailed scores controlled the specific daily events. These varied from happenings to precise theatre pieces and environmental events.) [http://www.o-art.org/history/50s&\\_60s/TapeCenter/AnnHalprin/24day.html](http://www.o-art.org/history/50s&_60s/TapeCenter/AnnHalprin/24day.html)

- 1968 \_\_ **CIRM** (Centre International de Recherche Musicale), Nice (Jean-Etienne Marie se consacre à la musique au lendemain du dernier conflit mondial. Elève de Messiaen et Milhaud, il devint metteur en ondes à la Radiodiffusion Française, spécialiste des retransmissions et sonorisations des Festivals de Musique Contemporaine (Royan, SMIP...). Musique micro-tonale, musique pour instruments (ou orchestres) et bande magnétique, recherches audio-visuelles, caractérisaient ses premières œuvres. A partir de 1965 le compositeur s'orientera vers une formalisation mathématique de ces trois champs d'investigation. Sa technique d'écriture découle d'une réflexion sur le "temps musical" perçu, non comme un temps linéaire de nature spatiale, mais un temps tissé de temps autonomes, lacunaires, dont l'étagement organisé produira la profondeur de l'œuvre. Fondateur du CIRM en 1968 à Paris, Jean-Étienne Marie l'implante à Nice en 1978/79. Il crée le Festival MANCA (Musiques actuelles Nice Côte-d'Azur) en 1979. En 1986, Michel Redolfi en prend la direction jusqu'en 1998, suppléé par Luc Martinez jusqu'en 2000. Depuis François Paris dirige le CIRM.) <http://www.ars-sonora.org/html/numeros/numero04/04a.htm> <http://www.cirm-manca.org>

- 1968 \_\_ **Communications**, Jean-Luc Godard (Canada In Québec, Jean-Luc Godard develops the project for a broadcast entitled "Communications" for Radio-Nord. Several programs, recorded in video, are to be transferred to film for the broadcast; the quality of the result is deemed inadequate and the project is abandoned.)

- 1968 \_\_ « **The Computer as a communication device** », Joseph C.R. Licklider & Robert Taylor ("The concept of computers connected to computers is not new. (...) Although more interactive multi-access computer systems are being delivered now, and although more groups plan to be using these systems within the next year, there are at present perhaps only as few as half a dozen interactive multiaccess computer communities. These communities are socio-technical pioneers (...) . What will on-line interactive communities be like? In most fields they will consist of geographically separated members, sometimes grouped in small clusters and sometimes working individually. They will be communities not of common location, but of common interest. In each field, the overall community of interest will be large enough to support a comprehensive system of field-oriented programs and data. (...) All of these will be interconnected by telecommunications channels. The whole will constitute a labile network of networks—ever-changing in both content and configuration. (...) Today the on-line communities are separated from one another functionally as well as geographically. Each member can look only to the processing, storage and software capability of the facility upon which his community is centered. But now the move is on to interconnect the separate communities and thereby transform them into, let us call it, a supercommunity. The hope is that interconnection will make available to all the members of all the communities the programs and data resources of the entire supercommunity. First, let us indicate how these communities can be interconnected; then we shall describe one hypothetical person's interaction with this network, of interconnected computers. When people do their informational

work "at the console" and "through the network," telecommunication will be as natural an extension of individual work as face-to-face communication is now. The impact of that fact, and of the marked facilitation of the communicative process, will be very great—both on the individual and on society. First, life will be happier for the on-line individual because the people with whom one interacts most strongly will be selected more by commonality of interests and goals than by accidents of proximity. Second, communication will be more effective and productive, and therefore more enjoyable. (...) For the society, the impact will be good or bad, depending mainly on the question: Will "to be on line" be a privilege or a right? If only a favored segment of the population gets a chance to enjoy the advantage of "intelligence amplification," the network may exaggerate the discontinuity in the spectrum of intellectual opportunity.") <http://gatekeeper.dec.com/pub/DEC/SRC/publications/taylor/licklider-taylor.pdf>

- **1968** — « *The Counterfeiters : An Historical Comedy* », Hugh Kenner (Kenner's book, originally published in 1968, covers : mechanization and automation, closed systems, computers, the role of the artist, and of course counterfeiting and the related theme of authenticity. *The Counterfeiters: An Historical Comedy* is a collection of five interrelated essays which address a profound change which began in English literature and culture shortly before 1700 and whose effects continue well into the twentieth century. Wide-ranging enough to encompass Buster Keaton, Charles Babbage, horses and a man riding a bicycle while wearing a gas mask, *The Counterfeiters* is one of Kenner's greatest achievements. In this fascinating work of literary criticism, Kenner seeks the causes and outcomes of man's ability to stimulate himself and his world. This intertangling of art and science, of man and machine, of machine and art is at the heart of this book. Kenner here locates the personal in what is an increasingly counterfeit world.)

- **1968** — *Computer Suite pour Little Boy*, Jean-Claude Risset. pour sons de synthèse réalisés par ordinateur fixés sur support 2 pistes, (Little Boy was realized at Bell Laboratories. All its sounds have been produced with the MUSIC V program. The Computer Suite is excerpted from music composed for the play Little Boy by Pierre Halet. The theme of the play is the revival of the Hiroshima bombing in the form of a nightmare of the pilot of the reconnaissance plane, who later developed guilts jeopardizing his mental health. The Suite attempts to roughly sum-up the movement of the play; it comprises three parts. The first section, Flight and Countdown, follows the pilot's dream, which takes him through a musically stylized plane flight, with inharmonic textures, episodes of synthetic jazz and japanese-like tunes. The flight is terminated by a count-down preceding the release of the bomb. The following section is the Fall. The pilot thinks that Little Boy, the bomb with which he identifies himself, is falling - in fact this is a psychological collapse that never reaches any bottom, hence the endless descending spiral. The last part is called Contra-Apotheosis like the anti-climactic end of the play. Here various time fragments are recalled or evoked in a deliberately desintegrated way, as the obsessions of the central character and his entire world mentally rotate. Thus the jazz band gets mixed up and ends as a gun-like beat; the Japanese instruments turn into sirens; a siren glides upwards yet becomes lower and lower; a pandemonium of sounds builds up above a rotating glissando, to be quieted down and dissolved into memories. Jean-Claude Risset was born 1938 in Le Puy, France. At an early age he began playing the piano which later led to broad musical studies including composition with Andre Jolivet. Following completion of a doctorate in physics, Risset worked with Max Mathews at Bell Telephone Laboratories to develop computer sound synthesis. In 1975 Pierre Boulez asked Risset to direct the computer department at IRCAM the new music/acoustics research institute at the Centre Pompidou. Since 1979 he has been the Director of Research in computer music at the National Scientific Research Center in Marseille. Risset has performed and presented his compositions in many countries. His many prizes and awards include the Grand Prix National de la Musique in 1990. As one of the pioneers in the field, he has had a long association with Stanford's Center for Computer Research in Music and Acoustics (CCRMA). [CCRMA Stanford]) (Jean-Claude Risset a posé un des grands principes de ce qui caractérise une "recherche musicale" : le chercheur s'intéresse à des sons "vivants", potentiellement musicaux, et tient compte du son tel qu'il est identifié, perçu par l'auditeur. Quand Pierre Schaeffer insiste sur l'écoute des sons et appelle, à partir d'un nouvel entendre, à un nouveau faire musical, Jean-Claude Risset pose de son côté que la pertinence de l'analyse d'un son se teste à l'écoute de sa synthèse. Il combine ainsi analyse et synthèse d'un son sans rechercher la vaine exactitude de sa description physique. (...) Ces premiers travaux, menés en 1964 et 1965 avec un programme informatique nommé Music IV, ne permettent pas encore la composition d'œuvres musicales, seulement des démonstrations et une petite pièce. (...) À l'aide du nouveau programme Music V dont il participe à la mise au point, Jean-Claude Risset peut vraiment explorer de nombreuses possibilités sonores et cela avec en point d'horizon la musique. En 1968, ol compose la Suite pour Little Boy, une pièce de théâtre de Pierre Halet. Avec cette œuvre, la preuve est faite de la finesse de l'ordinateur comme outil de composition des sons. Jean-Claude Risset parvient, par exemple, à synthétiser des "sons schizophréniques qui montaient et descendaient à la fois", ou "une glissade infinie" afin d'exprimer une chute intérieure mentale [Anne Veit], Politiques de la musique contemporaine]. Dans cette pièce, une des premières que Jean-Claude Risset ait entièrement produite par ordinateur diverses méthodes de synthèse sont utilisées. Plusieurs simulations d'instruments sont réalisées par synthèse dont des sons de cloches et des sons cuivrés. Des sons entièrement synthétiques sont également construits selon des techniques spectrales, en structurant le timbre par une construction harmonique ou inharmonique. La synthèse est réalisée en composant des spectres auxquels un rôle fonctionnel est attribué. D'autres timbres synthétiques - qui resteront toujours fortement associés à l'œuvre de Jean-Claude Risset - sont utilisés dans cette pièce. Il s'agit de sons paradoxaux, que l'on retrouvera sous différentes formes dans "Fall", "Mutations", "Moments Newtoniens" ou "Contre Nature" [Laurent Pottier]. Cette pièce, réalisée en 1968 aux Laboratoires Bell, est une des premières œuvres substantielles produites entièrement par ordinateur: tous les sons de la pièce ont été synthétisés à l'aide du programme MUSIC V (CF. Mathews et al., 1969). La pièce

exploite diverses expériences sur la synthèse des sons que j'ai réalisées entre 1964 et 1968, travaillant avec Max Mathews aux Bell Laboratories. Ces expériences sont décrites notamment dans mon catalogue de sons de 1969, qui présente un enregistrement de divers sons synthétisés avec les "partitions" de synthèse de ces sons : ces partitions sont à la fois des recettes de production et des descriptions exhaustives de la microstructure des sons, de même qu'une partition décrit la combinaison de divers sons. Dans la Suite pour ordinateur Little Boy, plusieurs instruments de musique sont simulés par ordinateur, exploitant les résultats d'expériences imitatives, notamment mon étude sur les sons cuivrés. Mais l'ordinateur a servi aussi à façonner des sons différents des sons instrumentaux. J'ai introduit dans cette pièce deux concepts importants. Tout d'abord, la structuration (in)harmonique du timbre. La synthèse permet de composer les spectres, à l'instar des accords, et de leur conférer un rôle fonctionnel et pas seulement coloriste. Une harmonie peut se prolonger dans des timbres synthétiques, et elle peut former le noyau de textures mélodiques, à travers les "analyses spectrales d'un accord" qui ouvrent la pièce. En second lieu, les sons paradoxaux, allant au-delà de la gamme chromatique indéfinie de Shepard : sons descendant indéfiniment, ou montant la gamme mais finissant plus bas que le point de départ. La synthèse permet de faire surgir des illusions en construisant des structures sonores spécialement conçues pour faire jouer certains mécanismes perceptifs. La Suite fait partie d'une musique composée pour la pièce Little Boy de Pierre Halet (Editions du Seuil, Paris 1968), musique qui comporte aussi des sections vocales et instrumentales. Le thème de la pièce est le bombardement d'Hiroshima, revécu à travers les fantasmes du pilote Eatherly. Dans la pièce, certains aspects sont très réalistes, mais d'autres indices de la mise en scène ou de la musique indiquent que l'action n'est que rêvée. Ainsi avions ou sirènes sont évoqués par la musique, mais leur simulation par synthèse sonore leur confère un caractère irréel et permet de les relier harmoniquement avec les structures musicales présentées dans les sections instrumentales et vocales. Dans la Suite, l'action est condensée en trois volets. Au cours du premier, Vol et compte à rebours, le rêve du vol vers Hiroshima s'accompagne de textures mouvantes, que transpercent deux épisodes fugitifs (jazz, gong) puis le compte à rebours du lâcher de la bombe, scandé avec la rigueur d'un métronome. Dans le second volet, Chute, le son parcourt parmi diverses fusées les grands cercles d'une descente indéfinie : en effet le pilote s'identifie à la bombe, dont le nom de code est Little Boy, et la chute est imaginaire, dans un espace psychique sans fond. Dans le troisième volet, Contre-apothéose, des éléments antérieurs réapparaissent pour se désintégrer : le jazz-band devient rafale de mitrailleuse, la flûte et le gong se mutant en sirènes qui s'accumulent en tournoyant, puis s'effilochent en souvenir. Les recettes de synthèse de nombre de sons de la pièce se trouvent dans mon *Introductory Catalog of computer-synthesized sounds* (Bell Laboratories, 1968). La seconde section de la pièce, la Chute, est commentée et visualisée à partir de l'analyse du son dans l'ouvrage de Robert Cogan, *New images of musical sound*, Harvard University Press, 1984, pp. 108-112. Sur les paradoxes de hauteur, cf. J.C. Risset, *Paradoxes de hauteur*, 7th International Congress of Acoustics, Budapest 1972, pp. 20S10 to 20S14, et *Pitch and rhythm paradoxes : comments on "Auditory paradox based on fractal waveform"*, *Journal of the Acoustical Society of America* 890 (1986) pp. 961-962 Caroline Torra-Mattenklott. *Illusionisme musical : Jean-Claude Risset et l'esthétique de la musique électroacoustique*. *Dissonance* 64 (mai 2000), p. 7-9. Le son de la bande originale a été accidentellement entaché de bruit : pour réaliser cet enregistrement, la bande a été "débruitée" par des traitements numériques réalisés par Sonic Solutions, San Francisco. "Ses impératifs dramatiques et musicaux ont dirigé ma recherche vers les paradoxes et illusions acoustiques. Little Boy était le nom de code de la bombe d'Hiroshima : dans la pièce, le héros, Eatherly, pilote de l'avion de reconnaissance, a des problèmes liés à ses remords. Traité dans un hôpital psychiatrique, il regarde une émission de télévision et revit le raid à travers ses fantasmes ; il s'identifie à la bombe Little Boy - régression infantile, disent les psychiatres - et la chute de la bombe est purement mentale, comme un collapsus sans fond. J'ai voulu illustrer cet effondrement psychique par une spirale indéfinie. Roger Shepard - psychologue éminent - avait réalisé quelques années auparavant une gamme de douze sons donnant l'impression de monter sans fin lorsqu'ils sont répétés, utilisant le processus des reprises connu des facteurs d'orgue et repris dans diverses compositions, de Bach à Berg : mais il ne pensait pas le phénomène réalisable en continu. J'y parvins par un contrôle soigneux de la synthèse. Je voulus approfondir ce domaine. Je parvins à faire varier en sens contraire hauteur "spectrale" et "tonale", produisant l'effet d'une gamme qui descend pour aboutir à un point plus haut - à la façon d'une célèbre gravure d'Escher. Je soumis à de nombreux auditeurs mes sons artificiels "truqués". Parmi ces auditeurs, Leopold Stokowski, impressionné par le potentiel de profondeur des sons numériques, Luciano Berio, Iannis Xenakis. Je m'aperçus que des auditeurs pouvaient être en désaccord sur un intervalle, montant pour les uns, descendant pour les autres, et que cela peut s'expliquer. Je n'en dirai pas plus dans ce texte, réservant aux auditeurs l'écoute de ces sons "paradoxaux" : mais je citerai deux exemples montrant que les relations perçues entre les sons ne sont pas un simple décalage des relations de leurs paramètres physiques. J'ai produit un son qui paraît descendre un peu lorsqu'on double ses fréquences - physiquement une octave ascendante, perceptiblement une descente de moins d'un demi-ton (Je publiai ces expériences en français, conformément à une recommandation gouvernementale. Au Congrès International d'Acoustique en 1971, plusieurs acousticiens connus mais non francophones quittèrent la salle dès qu'ils m'entendirent parler français, sans avoir entendu le moindre exemple sonore, et ces travaux restèrent longtemps ignorés dans la littérature scientifique anglophone.) - et plus tard une suite de battements rythmés qui paraissent ralentir si l'on double la vitesse du magnétophone sur lequel on le joue - Ces sons ont une structure fractale, donnant lieu à des effets similaires à une stroboscopie - battement entre l'intervalle d'autosimilarité et l'intervalle d'octave, très prégnant pour l'auditeur. De la même famille que Benoît Mandelbrot, Jacques Mandelbrojt, qui vit à Marseille, physicien théoricien et peintre, observe que les belles images fractales relèvent moins de l'art que de l'objet trouvé. Ce ne sont pas là que curiosités : selon Purkinje, physiologiste du siècle dernier, les illusions, erreurs des sens, sont des vérités de la perception. Nombre d'illusions d'optique sont connues depuis longtemps. C'est grâce à la possibilité de calculer directement des structures sonores complexes bien calibrées, avec une précision et une reproductibilité sans précédent, qu'on peut mettre en scène des

*illusions auditives. Ces illusions éclairent certains aspects de l'organisation perceptive et permettent de nouveaux effets musicaux. Un compositeur comme Ligeti s'y intéresse vivement : son attention aux démarches de la musique pour ordinateur est stimulante comme le fut celle de Varèse. Mes pièces Little Boy et Mutations, et peu après Turenas de John Chowning, furent appréciées aux Etats-Unis et en Europe : il fallait compter désormais avec la musique numérique." [Jean-Claude Risset]] <http://www.olats.org/pionniers/pp/risset/musicElectronRisset.php> <http://brahms.ircam.fr/works/work/21268/> <http://www.cnrs.fr/cw/fr/pres/compress/risset2.htm>*

- **1968** \_\_ **Dial-a-Poem**, John Giorno (John Giorno created DIAL-A-POEM in 1968. Millions of people called and listened to poetry. Dial-A-Poem was the first time that the telephone was used to communicate to large audiences, beginning a new era in telecommunications. DIAL-A-POEM discovered that the telephone coupled with publicity enables one to communicate instantly to large numbers of people. The technology developed spectacularly, and now you can communicate with one million people on one line at one time. DIAL-A-POEM inspired a Dial-A-something industry: Dial-A-Joke, Dial-A-Horoscope, Dial-A-Recipe, Dial-A-Santa Claus, Dial-A-Soap, Dial Sports, Suicide Hotline, Off Track Betting, Lotto, and Phone Sex, among others, and the 900 number.)

- **1968** \_\_ **Duration Piece #9 & 42e Parallel**, Douglas Huebler (Duration Piece #9 is especially relevant to a consideration of contemporary locative art. This work consisted of the mailing of a box to six locations across the USA. On being returned as undeliverable the package was left altogether intact, enclosed in a slightly larger container then sent to another destination. When it was returned again, Huebler continued the same process, selecting addresses which formed a straight line joining the east and west coasts of the United States (This involved 14 locations-A through N-exactly or approximately on the 42°). In 1968 Douglas Huebler created his documentation system called "Site Sculpture Project: 42° Parallel Piece": he drew a line on a map along the 42nd degree of longitude. Then he mailed cards, without giving the street names, to chambers of commerce in cities on or near that line. From the post office he received 11 mailing receipts and 10 cards were returned to the sender. All this was then displayed together with the map and a text telling how it all came about. Douglas Huebler's multiple work documents a process. The difference between the postal system, which produced these documents, and the documentation system as a work of art is kept as small as possible. The documentation system becomes an extension of the postal system [Tom Dreher]. The fundamental idea appears to be that of transposing the abstract artistic/mathematical concept of a line into geographical terms. Huebler's delineation of a line across the middle of the USA resonates with the imaginary lines of latitude and longitude that we have projected onto our planet: lines that exist in an extraordinary space in between the imaginary and the pragmatic. Huebler's work is significant to this discussion because it is not simply a representation; it is also interactive, in the sense of interacting with systems of information in the everyday world, in this case the postal system. It is also visualization because it produces a meaningful articulation of its interaction via its reference to the abstract lines of latitude that are so important to global commerce and defense. Huebler's work also brings us to one of the key technologies informing contemporary locative art the Global Positioning System. [Elizabeth Coulter-Smith]) (« Le monde est rempli d'objets, plus ou moins intéressants; je ne désire pas en ajouter. » Cette phrase, écrite en 1969 par l'artiste américain Douglas Huebler (1924-1997), est emblématique du discours sur la dématérialisation de l'art de la fin des années 1960. On oublie toutefois souvent de citer son corollaire: « Je préfère simplement constater l'existence de choses en termes de temps et/ou de lieux. Plus spécifiquement, je m'intéresse à des choses dont l'interrelation se situe au-delà de la perception immédiate. En ce sens, mon travail dépend d'un système de documentation. Cette documentation peut prendre la forme de photographies, de cartes, de dessins ou de descriptions ». En 1968, Huebler abandonne peinture et sculpture et organise son travail selon trois axiomes : le temps (Duration Piece), le lieu (Location Piece) et les deux à la fois (Variable Piece). Ses œuvres prennent alors la forme de cartes, de diagrammes, de notations et de collages photographiques, accompagnés par des textes empreints d'un ton scientifique sans toutefois être dénués de poésie et d'humour.) <http://stephan.barron.free.fr/technoromantisme/conceptuels.html> <http://www.units.muohio.edu/codeconference/papers/papers/Locative5a.pdf>

- **1968** \_\_ **Douglas C. Engelbart** (Douglas C. Engelbart, of the Stanford Research Institute (Augment Research Center), demonstrates his system of keyboard, keypad, mouse, and windows at the Joint Computer Conference in San Francisco's Civic Center. He demonstrates use of a word processor, a hypertext system, and remote collaborative work with colleagues (Polsson 1998). By 1968 Engelbart and a group of young computer scientists and electrical engineers he assembled in the Augmentation Research Center at SRI were able to stage a 90-minute public multimedia demonstration of a networked computer system. This was the world debut of the computer mouse, 2-dimensional display editing, hypermedia -- including in-file object addressing and linking, multiple windows with flexible view control, and on-screen video teleconferencing. On December 9, 1968, Douglas C. Engelbart and the group of 17 researchers working with him in the Augmentation Research Center at Stanford Research Institute in Menlo Park, CA, presented a 90-minute live public demonstration of the online system, NLS, they had been working on since 1962. The public presentation was a session of the Fall Joint Computer Conference held at the Convention Center in San Francisco, and it was attended by about 1,000 computer professionals. This was the public debut of the computer mouse. But the mouse was only one of many innovations demonstrated that day, including hypertext, object addressing and dynamic file linking, as well as shared-screen collaboration involving two persons at different sites communicating over a network with audio and video interface. "I don't know why we call it a mouse. It started that way and we never changed it." Doug Engelbart described the goals of NLS (online system).

NLS is an instrument for helping humans operate within the domain of complex information structures. By "operate" Doug Engelbart meant compose, study and modify. By "complex information structures" Doug Engelbart said that content represents concepts, but there is also a relation between the content of concepts, their structure, and the structure of other domains of human thought that is too complex to investigate in linear text. The computer is a tool for navigating through those structures and examining them in ways that would be too complex otherwise. Doug Engelbart illustrated how NLS can be used to construct, collaboratively modify, and ultimately publish reports and papers. He showed how to examine and modify the paper he and his colleagues wrote for the conference, set formatting for printing, hypertext linking and viewing of document. He explained joint usage and modification of a file by a group. Also in this segment was a discussion of messaging techniques for working collaboratively on a file. A content analyzer is described which can be used to retrieve messages composed by a specific individual, between two individuals, or further specified by specific content strings. In another segment of the conference Doug Engelbart shifted to two-person collaboration. He initiated a "collaborative mode" in which he shared the same text-display with Bill Paxton in Menlo Park and at the same time a live audio-video window inset with Bill Paxton in Menlo Park. Doug Engelbart outlined the participation of ARC in the planned ARPA computer network to be established within the next year (1969), in which 20 different computer sites across the country will be connected in a network. He mused that with the planned band width of 20KB per second and delay times with less than one-tenth of a second, he might be able to show the present demo again next year from Boston. He explained how NLS will be used as the infrastructure for ARPA networks experiment in creating the Network Information Center. Individuals and groups in the Network can query "Who's got what services?" NLS provides the tools to connect different users to appropriate technology. This was an example of enhancing group productivity and augmenting human intellect.) <http://www.stanford.edu/dept/SUL/library/extra4/sloan/MouseSite/1968Demo.html> <http://sloan.stanford.edu/MouseSite>

- **1968 \_\_ Fan Music**, Max Neuhaus ( "Fan Music [1968] was that. It was also one of my first steps in the discovery that I could use audio circuitry as a material to make an artwork out of sound. I found that if I put a photocell across two speaker terminals and covered up the photocell I would get one voltage and if I uncovered it I would get another, a change in voltage, that would move the speaker's cone and produce a sound. I was starting at the very source of electronic sound with this speaker and moving back and saying, OK, how do I make a work out of this. I had a fan next to me, and I realized that if I put the photocell behind it, the fan blade would create shadows on the photocell as it turned, and then realized that the shape of the shadow determined the timbre – the angle of the fan blade changed the timbre because that shaped the shadow which then became the waveform. And then realizing that it was light that was making the sound; therefore this whole thing could grow and change with light, appearing in the morning and disappearing in the evening. Then placing these fan-speaker photocell systems in various locations on the roofs to form a sound topography. I think I called it a concert, but it was an installation. It went on for three days; it arrived each day when the sun arrived and disappeared when the sun went down. People came and went when they wanted; there was no specific time when it started or ended." [Max Neuhaus])

- **1968 \_\_ The Great Learning**, Cornelius Cardew (For Cardew each composition was a matrix to draw out the interpreters' feelings about certain topics or materials. Here the different matrices grew around such things as words, melody, vocal sounds, triangles, pleasure, noise, working to rule, will/desire, keyboard. Some of the matrices serve as a measure of virtuosity, others of courage, tenacity, alertness, and so on. They point to the heart of some real matter, mental or material. The score tells the interpreter the general area of his potential action - he may wish or have the talent to play, or sing, or construct, or illumine, or take exercise of one sort or another, and can draw out his interpretation in that direction. For Cardew there were no two ways about it: people could be encouraged, inspired, or even cajoled, but ultimately they had to be trusted to make their own music on the basis of their own background, experience, and attitudes. In these new compositions he subtly defines the areas - emotional, physical, psychological, and historical - in which the performer operates, but there is no question of controlling the interpretation, either directly or by some back-door method involving 'chance operations'. At the same time, however, he was still grappling with the idea of involving musically educated people (people trained in musical establishments) in his compositions. In 1967 he wrote: "I see no possibility of turning to account the tremendous musical potential that musically educated people evidently represent, except by providing them with what they want: traditionally notated scores of maximum complexity. The most hopeful fields are those of choral and orchestral writing since there the individual personality (which a musical education seems so often to thwart) is absorbed into a larger organism, which speaks through its individual members as if from some higher sphere". The Great Learning, a large-scale choral work in seven movements (the duration of the whole is around seven hours), based on one of the Confucian scriptures, is the magnificent realisation of this projection. As Michael Nyman points out: 'The ethical purity is mirrored by Cardew's use of sound resources. The Great Learning appears to come to rest at a point of redefinition of the natural, concrete, real physical properties of (sounding) things'. The 'sounding things' are of every sort: stone struck against stone, metal against metal, wood on skin, bow on string, whistles, drums, voices, reciting, shouting, singing, chanting, howling, laughing, güiros, rattles, jingles, musical boxes, toy pianos, jew's harps, water drops. The Great Learning includes games, improvisation rites, dumb shows; there are single-line extended melodies (odes) written in conventional notation, and graphic notation as the basis for improvisations. But each of the seven paragraphs has a clear-cut image, such that it would be impossible to mistake one for another. This unpredictable music naturally produces unpredictable responses. [John Tilbury, Contact n°6, 1983]) <http://www.users.waitrose.com/~chobbs/tilburycardew.html>

- **1968** \_\_ **GRI, Groupe de Recherche Image** (Creation of the GRI (Groupe de Recherche Image) at the ORTF under the direction of Pierre Schaeffer. François Coupigny develops the "truqueur universel" (universal special effects device), which is used by Martial Rayssé, Peter Foldès, and Jean-Paul Cassagnac for attempts at coloring the video image from black-and-white images.") <http://newmedia-arts.net/english/reperes-h/60.htm> <http://traumwerk.stanford.edu:3455/MichaelShanks/624>

- **1968** \_\_ **Kurzwellen** (Shortwaves), Karlheinz Stockhausen (Karlheinz Stockhausen's Kurzwellen (Shortwaves, 1968) in which 6 instrumental performers react to the quasi-random sounds received by 4 shortwave radios. "KURZWELLEN, like PROZESSION, was created for the ensemble with which I tour since 1964. The instruments are piano, electronium, large tam-tam with microphone, viola with contact microphone, 2 filters with 4 faders, 4 short-wave receivers. The work may also be interpreted by a different combination of instruments which corresponds to the one mentioned. In TELEMUSIC I composed various processes of intermodulation, combining "found" (folklore) music of different countries and epochs with electronic music. These experiences were expanded in HYMNEN (ANTHEMS), through integrating national anthems into electronic music. In PROCESSION, the musicians transform events taken from my earlier compositions. And now, in KURZWELLEN, each player has – in addition to his instrument – a short-wave receiver with which he receives the musical "material" to which he reacts: he imitates it, transposes it, and modulates it, playing together with the others in reciprocal reactions and intermodulations. What could be more general, more supra-personal, inclusive, universal, instantaneous, than the broadcasts that become musical material in KURZWELLEN? How can we break out of the sealed world of radio waves that enclose our globe like a musical retina? Does not a great deal of what we receive via short-wave radio already sound as if it came from completely different spaces, beyond speech, reportage, music, Morse code? KURZWELLEN is the culmination of a long development and at the same time the beginning of a new consciousness. Whatever happens consists only of world-wide broadcasts NOW; it is structured by the human spirit, but also forms and constantly transforms itself because of the interference of all broadcasts with one another; it is brought to a higher unity by the players during a performance. The former opposites of the old and the new, the far and the near, the familiar and the unfamiliar are dissolved. EVERYTHING is the WHOLE and SIMULTANEOUS. Tenses disappear, as will preconsciousness. And now? Into the world of extreme attainability, extreme unforeseeability, to whose limits we have trust, something extra-terrestrial must penetrate, something which cannot yet be found on any radio on earth. Let us take up the search! I composed the process of transformation: HOW the players react to what they hear on the radio; HOW they imitate and then modulate it, transpose it in time (longer or shorter, more or less rhythmically articulated) and in space (higher or lower, louder or softer); WHEN and HOW and HOW OFTEN they play synchronously or alternatingly, in duets, trios or quartets; HOW they call and invite each other to hear together an event which wanders among them for a prolonged period of time, letting it shrink and grow, compressing and expanding it, darkening and lightening it, concentrating or playfully decorating it." [Karlheinz Stockhausen]) <http://home.earthlink.net/~almoritz/kurzwellen.htm>

- **1968** \_\_ **The Machine as Seen at the End of the Mechanical Age** (Intending to document the centuries-old development of Machine Art, Pontus Hulten curated the committed project "The Machine as Seen at the End of the Mechanical Age" at the Museum of Modern Art, New York in 1968. Already the title of the exhibition delineates both the departure into the electronic age and the necessity of summing up the past. Having arrived in the digital age, we are only seldom thrown off balance by technological innovations. Nevertheless, visions and harbingers heralding fusions of biological and artificial organisms evoke ethical objections and controversial debates. "MoMA had asked me to put together an exhibition on kinetic art. I told Alfred Barr that the subject was too vast, and instead proposed a more critical and thematic exhibit on the machine. The machine was central to much of the art of the '60s, and at the same time, it was obvious that the mechanical age was coming to an end, that the world was about to enter a new phase. My exhibition began with Leonardo da Vinci's sketches of flying machines and ended with pieces by Nam June Paik and Tinguely. It included over 200 sculptures, constructions, paintings, and collages. We also put together a film program. Tinguely was really in love with machines, with mechanisms of any kind. He had his breakthrough on 17 March 1960 with Hommage a New York - a self-destroying artwork. Richard Huelsenbeck, Duchamp, and myself had written for the catalogue at the time and Tinguely wanted to bring his friends Yves Klein and Raymond Hains with him to New York in 1960, but somehow it never happened." [Pontus Hulten]. Published announce in NY Times in dec. 1967 : "EXPERIMENTS IN ART AND TECHNOLOGY ANNOUNCES A COMPETITION FOR ENGINEERS AND ARTISTS AND REQUESTS SUBMISSION OF WORKS OF ART MADE IN COLLABORATION TO BE SELECTED FOR AN EXHIBITION AT THE MUSEUM OF MODERN ART, NEW YORK CITY".) [http://findarticles.com/p/articles/mi\\_m0268/is\\_n8\\_v35/ai\\_19416259/pg\\_6](http://findarticles.com/p/articles/mi_m0268/is_n8_v35/ai_19416259/pg_6)

- **1968**\_\_ **ORCUS**, Manfred Eaton (Manfred Eaton was also building electronic circuits to experiment with biological signals at Orcus Research in Kansas City. He initially published an article titled Biopotentials as Control Data for Spontaneous Music (Orcus) in 1968. Then, in 1971, Eaton first published his manifesto Bio-Music: Biological Feedback Experiential Music Systems (Orcus; republished in 1974 by Something Else Press), arguing for completely new biologically generated forms of music and experience. [Andrew Brouse, A Young Person's Guide to Brainwave Music]) <http://www.mindmodulations.com/mindmods/general/a-young-persons-guide-to-brainwave-music.html>

- **1968** \_\_ **Sound-Activated Mobile (SAM)**, Edward Ihnatowicz (Working in England in the 1960s outside the art school context, the sculptor and photographer Edward Ihnatowicz produced two of the most important (and unjustly neglected) works of cybernetic sculpture of the period, *Sound-Activated Mobile (SAM)* (1968), which was featured at *Cybernetic Serendipity*, the exhibition curated by Jasja Reichardt at the ICA in London in 1968, and *Senster* (1972), commissioned by the Philips Corporation and displayed in their *Evoluon Pavilion* in Eindhoven in Holland in 1972. [Charlie Gere]. SAM was the first moving sculpture which moved directly and recognisably in response to what was going on around it. SAM consisted of an assembly of aluminium castings somewhat reminiscent of vertebrae, surmounted by a flower-like fibreglass reflector with an array of four small microphones mounted immediately in front of it. The vertebrae contained miniature hydraulic pistons which enabled them to move in relation to each other so that the whole column could twist from side to side and lean forwards and backwards. A simple electronic circuit used the signals from the four microphones to determine the direction which any sound in the vicinity was coming from and two electro-hydraulic servo-valves moved the column in the direction of the sound until the microphones faced it. The resultant behaviour, that of following the movement of people as they walked around its plinth, fascinated many observers. Also, since the sculpture was sensitive to quiet but sustained noise, rather than shrieks, a great many people spent hours in front of SAM trying to produce the right level of sound to attract its attention.) <http://www.senster.com/ihnatowicz/SAM/sam.htm>

- **1968** \_\_ **Terrain Instruments**, Leif Brush (Since 1968, Leif Brush has created many sound installations as well as performances in galleries, public, and outdoor spaces which use his Terrain Instruments. These are electronic and mechanical devices (microprocessors, solar-powered sensor amplifiers, digital synthesis devices, and sound control via telephone, transducers, etc.) for amplifying and converting into sound the actions of natural flora and fauna: the movement of leaves, the wind, snow, rain, grasses (struck or stroked by a participant), pine cones, the movement of rubber-coated rocks over the suspended, epoxy-coated magnesium surface of the Signal Disc. [“Blue” Gene Tyranny])

- **1968** \_\_ **3-Way Communication**, Juan Downey (Three performers sit at the corners of a large triangle formed by three voice-transmission laser beams. The performers exchange faces by means of super-8 movie projections while talking through the laser beams. Conversations and transfigurations are video-taped and play-d back one the three performers leave. Conceived as a project for the Juan Downey exhibition at the Corcoran Gallery of Art in Washington, D.C.)

- **1968** \_\_ **RainForest**, David Tudor (Sounds electronically derived from the resonant characteristics of physical materials. First version (1968), a sound-score for Merce Cunningham’s dance work of the same name, established a means of sound transformations without the use of electronic modulation: the source sounds, when transmitted through the physical materials, will be modified by the resonant nodes of those materials. Fourth version (1973): A collaborative environmental work, spatially mixing the live sounds of suspended sculptures and found objects, with their transformed reflections in an audio system. In this performed installation, each composer designs and constructs up to five sculptures, which function as instrumental loudspeakers under his or her control, and each independently produces sound material to display the sculptures’ resonant characteristics. The appreciation of Rainforest IV depends upon individual exploration, and the audience was invited to move freely among the sculptures. “In the first version, I made objects which I could travel with. The objects were so small, however, that they didn’t have any sounding presence in the space, so I then amplified the outputs with the use of contact microphones. Then for the second version, I wanted to have a different kind of input... because for the first I had used oscillators that made animal and bird-like sounds. In the second version I wanted to use a vocal input to the system, the natural resonance of the object and its subsequent amplification. It’s a kind of mechanical filter. The third version had to deal with the ability to have any input go to any transducer. I made that system for a simultaneous performance with John Cage (Mureau). It was one of those pieces that changes all the time so I needed to have a sort of continuous thing, so I used tape sources, but having the ability to mix them or separate them into different output channels. So the next step was “Rainforest IV”... the object was to make the sculptures sound in the space themselves. Part of that process is that you are actually creating an environment. The contact mikes on the objects pick up the resonant frequencies which one hears when very close to the object, and then are amplified through a loudspeaker as an enhancement.” (David Tudor, from interview by John Fullemann 10/12/85). “My piece, “Rainforest IV”, was developed from ideas I had as early as 1965. The basic notion, which is a technical one, was the idea that the loudspeaker should have a voice which was unique and not just an instrument of reproduction, but as an instrument unto itself. An offer came, which didn’t get realized, but I was asked to make a proposal for a park in Washington. The idea was to have a sounding outdoor sculpture, so my mind began turning around. I thought, ‘wouldn’t it be wonderful if each sculpture sounded completely different from the other and the whole could be run by one machine which could be like a commutator.’ I eventually acquired some devices called audio transducers. (...) I took these transducers and attached them to very small objects and then programmed them with signals from sound generators. The sound they produced was then picked up by phono cartridges and then sent to a large speaker system. Several different versions of this piece were produced. In 1973 I made “Rainforest IV” where the objects that the sounds are sent through are very large so that they have their own presence in space. I mean, they actually sound locally in the space where they are hanging as well as being supplemented by a loudspeaker system. The idea is that if you send sound through materials, the resonant nodes of the materials are released and those can be picked up by contact microphones or phono

cartridges and those have a different kind of sound than the object does when you listen to it very close where it's hanging. It becomes like a reflection and it makes, I thought, quite a harmonious and beautiful atmosphere, because wherever you move in the room, you have reminiscences of something you have heard at some other point in the space. It's (can be) a large group piece actually, any number of people can participate in it. It's important that each person makes their own sculpture, decides how to program it, and performs it themselves. Very little instruction is necessary for the piece. I've found it to be almost self-teaching because you discover how to program the devices by seeing what they like to accept. Its been a very rewarding type of activity for me. It's been done by as large a group as 14 people. So that was how our Rainforest was done." (David Tudor, from *An Interview with David Tudor* by Teddy Hultberg in Dusseldorf, May 17-18, 1988)) (Expanding on Cage's discovery of alternative musical forms implicit in the "found" technology of radios and record players, Tudor embarked on the arduous process of acquiring enough knowledge of circuit design and soldering to construct his own new instruments. He believed that new, object-specific, intrinsically electronic musical material and forms would emerge as each instrument took shape: "I try to find out what's there---not to make it do what I want, but to release what's there. The object should teach you what it wants to hear" (David Tudor and Victor Schonfeld, "From Piano to Electronics," *Music and Musicians* 20 (August 1972) pp. 24--26). This was a profound shift in the aesthetics of electronic music. It was implicit perhaps in Cage's earlier work, but Tudor made it tangible and audible to a new generation: John Bischoff, in his interview with Douglas Kahn, describes how listening to Tudor "completely turned my musical world around." Inspired by Tudor (and fellow visionaries such as David Behrman and Gordon Mumma), and aided by the proliferation of the integrated circuit, which combined transistors into functional, Lego™-like modules that could be wired up with a bare minimum of engineering skill, a number of composers adopted a working method based on seat-of-the-pants electronic engineering. The circuit---whether built from scratch, a customized commercial device, or store-bought and scrutinized to death---became the score. In 1973 Tudor held an extended workshop in Chocorua, New Hampshire. The focus was on creating a collaborative realization of his composition *Rainforest*, but---as John Driscoll, Matthew Rogalsky and Bill Viola describe---the event served as a catalyst for a handful of emerging electronic artists, who banded around Tudor to form a loosely collective ensemble called *Composers Inside Electronics*. Over the years this group served as a laboratory for artist-designed circuitry and experimental electronic performance, presenting dozens of installations of *Rainforest IV* worldwide, as well as performances of works by individual members of the ensemble (such as Ralph Jones's *Star Networks* at the Singing Point (1978). [Nicolas Collins]) (When *Rainforest* became a wandering installation, the absent body became even more central to it. During the infamous 1973 performance in New Hampshire, Tudor and his collaborators specifically selected objects with bodily associations, which they hooked up to transducers and transformed into loudspeakers, whose sound sources they controlled. The first critics were keenly aware of the corporeal connections of all the objects in view, and especially of "a pair of new and gleaming toilet bowl floats." (seen here in a later performance in Paris 1976, and also on Getty flyer) "What we're after," John Driscoll said at the time, "is to tune...(the coupled floats) to give us special resonant frequencies." "You should hear the mattress," he added, "it makes the most beautiful tone." In *Rainforest IV*, Tudor also invited the human body back into his music by using interactive sculptures of found objects to encourage audience participation. Rather than frighten listeners with a visual display of aggressive physicality as he had earlier done with Cage, Tudor now engaged their bodies directly in experiencing sound by offering them the possibility of "touching" and sensing objects acting as loudspeakers. Audience members could invent their experiences of the sound by moving around and exploring the shapes presented to them, interacting in this manner as the listeners at the first happening in Black Mountain College had, when they had projected their imagined displays onto the vacant surfaces of Robert Rauschenberg's white paintings. Tudor's installation brought to mind as well the contemporaneous work of Robert Morris, whose "sculptures for performing on," involved the use of "bodily reactions." In the spirit of Artaud's "poésie dans l'espace," the sounding objects of *Rainforest IV* inspired categorical shifts and displacements, for example in how its participants understood the role of their various sense in the aesthetic experience of listening. As Bill Viola exclaimed to David Tudor: "you did teach me (in *Rainforest*) to hear with my eyes." Tudor himself did not participate in the explicit interactive environment of *Rainforest IV*, at least not in any of the existing videos or according to the reviews. Instead, he sat almost immobile, in the state of utter seriousness he had learned with Cage, behind a large table of electronic devices, using his hands to activate mechanisms and alter sounds as efficiently as possible, as he had always done. His gestures were still the source of sound, but human sensuality had now been replaced utterly by mechanical precision, and a complete transfer of Tudor's bodily expressivity to the rational mechanics of electronic circuits. He had succeeded here in doing what he had always wanted to do: transform his living body into a gigantic, spiritual ear, which transcended the physical in its attunement to sound. His stage role consisted of listening intently, shaping the sound created by his own electronics, and thus establishing the long wished for direct bond between his inner ear and the produced tones. [Tamara Levitz]. A description by "Blue" Gene Tyranny : "David Tudor's *Sliding Pitches in the Rainforest in the Field: Rainforest (Version IV, Electro-Acoustical Environment)* (1968 - 1982) was first installed in 1968 at Chocorua, New Hampshire. Inside a large barn, many unique, vibrating resonant objects (bells, resonant beams held between the teeth while the ears are stopped with your fingers, dual metal transducers, parabolic reflectors attached to circular hat-like cages, etc.) were suspended from the ceiling and the audience moved throughout the space interacting with the ear-level objects and appreciating the gentle sounds emitted by them, like the calls of un-nameable creatures. Over the years, this piece was developed by Tudor in collaboration with many other composers and artists.") <http://www.emf.org/tudor/Works/rainforest.html> <http://lea.mit.edu/lmj/collinslmj14intro.html> [http://www.getty.edu/research/conducting\\_research/digitized\\_collections/davidthudor/av/rainforest.html](http://www.getty.edu/research/conducting_research/digitized_collections/davidthudor/av/rainforest.html)

- **1968** \_\_ **Revolution 9**, The Beatles ("Revolution 9" is a musique concrète track that appeared on The Beatles' 1968 self-titled LP release. The recording began as an extended ending to the album version of "Revolution", to which were added vocal and music sound clips, tape loops, reverse sound/music and sound effects influenced by the musique concrète styles of Karlheinz Stockhausen, Edgard Varèse, Luigi Nono, and John Cage, further manipulated with editing and sound modification techniques (stereo panning and fading). As some portions of "Revolution 9" are recordings of other music (from bits of Sibelius, Schumann's "Carnaval" and Beethoven, to a backward snippet of a tuning orchestra, culled from the session tapes for A Day in the Life), the piece can be seen as an early example of sampling. Other audio elements include various bits of apparently nonsensical dialogue spoken by Lennon and Harrison, various found sounds, reversed sounds and recordings of American football chants. At over eight minutes, it is the longest track on the album, as well as the longest Beatles track ever officially released, excluding the unreleased track "Carnival of Light" (which clocks in at 13 minutes, 48 seconds), which is said to carry avant-garde influences as well. The work is credited to Lennon/McCartney (as were all Beatles songs written by either composer), though it was primarily the effort of John Lennon. George Harrison, Ringo Starr, and Yoko Ono made small contributions, while Paul McCartney did not actively participate in the track's creation. Ono's avant-garde influence on Lennon's compositional style is clear throughout "Revolution 9." John Lennon describing creating 'Revolution #9' on the White Album: "It has the basic rhythm of the original 'Revolution' going on with some twenty loops we put on, things from the archives of EMI. We were cutting up classical music and making different size loops, and then I got an engineer tape on which some test engineer was saying, 'Number nine, number nine, number nine.' all those different bits of sound and noises are all compiled. There were about ten machines with people holding pencils on the loops - some only inches long and some a yard long. I fed them all in and mixed them live." (Miles, B. Paul McCartney: "Many Years From Now". p. 484. NY. Owl Books, 1997.) <http://www.geocities.com/hammodotcom/beethoven/revhome.htm>

- **1968** \_\_ **UCLA** (Larry Roberts works with Howard Frank and his team at Network Analysis Corporation designing the network topology and economics. Kleinrock's team prepares the network measurement system at UCLA, which is to become the site of the first node.)

- **1968** \_\_ **The Whole Earth Catalog**, Stewart Brand (The Whole Earth Catalog was a sizable catalog published twice a year from 1968 to 1972, and occasionally thereafter, until 1998. Its purpose was to provide education and "access to tools" so a reader could "find his own inspiration, shape his own environment, and share his adventure with whoever is interested." Apple Inc. founder and entrepreneur Steve Jobs has described the Catalog as a conceptual forerunner of Web search engines. The Catalog's development and marketing were driven by an energetic group of founders, primarily Stewart Brand, whose family was also involved with the project. Its outsize pages measured 11x14 inches (28x36 cm). Later editions were more than an inch thick. The catalogs disseminated many ideas now associated with the 1960s and 1970s, particularly those of the counterculture and the environmental movements. Later editions and related publications edited by Brand popularized many innovative ideas during the 1970s-1990s. "The WHOLE EARTH CATALOG functions as an evaluation and access device. With it, the user should know better what is worth getting and where and how to do the getting. An item is listed in the CATALOG if it is deemed: 1. Useful as a tool, 2. Relevant to independent education, 3. High quality or low cost, 4. Easily available by mail. CATALOG listings are continually revised according to the experience and suggestions of CATALOG users and staff. [From the opening page of the 1969 Catalog]. The title came from a previous project of Stewart Brand's. In 1966, he initiated a public campaign to have NASA release the then-rumored satellite image of the sphere of Earth as seen from space. He thought the image of our planet might be a powerful symbol, evoking adaptive strategies from people. Toward the end of the 1960s, the Stanford-educated Brand, a biologist with strong artistic and social interests, believed that there was a groundswell of commitment to thoroughly renovating American industrial society along ecologically and socially just lines, whatever they might prove to be. So using the most basic of typesetting and page-layout tools, he and his colleagues created the first issue of The Whole Earth Catalog. In subsequent issues, its production values gradually improved. In 1968 he started thinking about his friends who were starting communes in rural areas and needed information about various things, both "how-to" and "where-to-buy". His first idea was for a "truck store" that would take samples around to all the communes. It would also have a catalog, partially updated by the users, who would send in information about what worked best (sort of like a wiki, but printed on paper-- and they wouldn't waste any space reviewing the bad stuff, which was analogous to deleted pages on a wiki). He borrowed the "Whole Earth" name from his earlier project, and financed the startup with money he had inherited from his parents. The first issue of the Whole Earth Catalog was published in the fall of 1968, with a cover photo of the Whole Earth that had been taken by a satellite in November of 1967. The catalog divided itself into seven broad sections: Understanding Whole Systems, Shelter and Land Use, Industry and Craft, Communications, Community, Nomadics, Learning. Within each section, the best tools and books the editors could find were collected and listed, along with images, reviews and uses, prices, and suppliers. The reader was also able to order some items directly through the catalog.) [http://www.press.uchicago.edu/Misc/Chicago/817415\\_chap4.html](http://www.press.uchicago.edu/Misc/Chicago/817415_chap4.html) <http://wholeearthmag.com/>

- **1968** \_ **World Question Center**, James Lee Byars, The Hudson Institute, Croton-on-Hudson, New York (Originally the World Question Center was one of the Byars' rare "failed" artworks. Byars wanted to lock 100 of the world's most brilliant minds in a room and have them ask each other the questions they had been asking themselves. But when Byars attempted contact by telephone, John

Brockman, author of *The Late John Brockman* (1969), reports "70 people hung up on him." "James Lee Byars had in '71 [sic] this wonderful project called "The World Question Center". It was a huge inspiration for me, but it was also an inspiration for Brockman who has seen Byars earlier than me because he started earlier than me. But we both, being from different generations, were equally inspired by James Lee Byars, and we kind of met through this inspiration by James Lee Byars' "World Question Center". And he asked as an artist all the eminent people like Freeman Dyson, the Dalai Lama among others, to ask one question. He'd ring them, and the moment, he had that question, he'd hang up the phone. So the World Question Center was certainly a trigger." [Hans-Ulrich Obrist]. "Byars, it turns out, was fascinated with the idea of intellectual gurus, rather than any particular guru -- which explains the inconsistency of his choices. His projects often mined the self-abasing glory gleaned by serving as conduit for the great ideas of others. Famously, in 1969, he conceived of the "World Question Center," which involved attempting to contact a heterogeneous collection of the world's "100 most brilliant minds" to ask them what questions preoccupied them (he even managed to stage this work on TV, ludicrously dressing the callers in one of his group articles of clothing)." [Ben Davis]

## 1969

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- **1969** \_\_ « *The Architecture of Well-Tempered Environment* », Reyner Banham (*The Architecture of Well-Tempered Environment* (1969) follows Giedion's *Mechanization Takes Command* (1948), putting the development of technologies (electricity, air conditioning) even ahead of the classic account of structures. This was the area found absorbing in the 1960s by Cedric Price, Peter Cook and the Archigram group.) [http://fr.wikipedia.org/wiki/Reyner\\_Banham](http://fr.wikipedia.org/wiki/Reyner_Banham) <http://query.nytimes.com/gst/fullpage.html?res=9A0DE2DA173DF937A35756C0A960948260&sec=&spoon=&pagewanted=print>

- **1969** \_\_ **ARPANET** (future Internet) links first two computers at UCLA and Stanford Research Institute, USA. Dr. Leonard Kleinrock, a UCLA-based pioneer of Internet technology, and his assistant Charley Kline manage to send successfully, after solving an initial problem with an inadequate memory buffer, a command "login" to a Stanford machine which was set-up and tuned by Bill Duvall. Frank Heart puts a team together to write the software that will run the IMPs and to specify changes in the Honeywell DDP- 516 they have chosen. The team includes Ben Barker, Bernie Cosell, Will Crowther, Bob Kahn, Severo Ornstein, and Dave Walden. Four sites are selected. At each, a team gets to work on producing the software to enable its computers and the IMP to communicate. At UCLA, the first site, Vint Cerf, Steve Crocker, and Jon Postel work with Kleinrock to get ready. On April 7, Crocker sends around a memo entitled 'Request for Comments.' This is the first of thousands of RFCs that document the design of the ARPANET and the Internet. The team calls itself the Network Working Group (RFC 10), and comes to see its job as the development of a 'protocol,' the collection of programs that comes to be known as NCP (Network Control Protocol). The second site is the Stanford Research Institute (SRI), where Doug Engelbart saw the ARPA experiment as an opportunity to explore wide-area distributed collaboration, using his NLS system, a prototype 'digital library.' SRI supported the Network Information Center, led by Elizabeth (Jake) Feinler and Don Nielson. At the University of California, Santa Barbara (UCSB) Glen Culler and Burton Fried investigate methods for display of mathematical functions using storage displays to deal with the problem of screen refresh over the net. Their investigation of computer graphics supplies essential capabilities for the representation of scientific information. After installation in September, handwritten logs from UCLA show the first host-to-host connection, from UCLA to SRI, is made on October 29, 1969. The first 'Log-In' crashes the IMPs, but the next one works! In 1970 Nodes are added to the ARPANET at the rate of one per month.

- **1969** \_\_ « *Art After Philosophy* », Joseph Kosuth ("One can fly all over the earth in a matter of hours and days, not months. We have the cinema, and color television, as well as the man-made spectacle of the lights of Las Vegas or the skyscrapers of New York City. The whole world is there to be seen, and the whole world can watch man walk on the moon from their living rooms. Certainly art or objects of painting and sculpture cannot be expected to compete experientially with this.")

- **1969** \_\_ **Art by Telephone**, Museum of Contemporary Art of Chicago (Shortly after its opening, the Museum of Contemporary Art planned an exhibition to record the trend, incipient then and pervasive today, toward conceptualization of art. This exhibition, scheduled for the spring of 1968 and abandoned because of technical difficulties, consisted of works in different media, conceived by artists in this country and Europe and executed in Chicago on their behalf. The telephone was designated the most fitting means of communication in relaying instructions to those entrusted with fabrication of the artists' projects or enactment of their ideas. While instructions for works in such exhibitions generally were provided to the curator in written form, an important exception is Jan van der Marck's 1969 show at the Museum of Contemporary Art in Chicago, *Art by Telephone*, for which instructions could be communicated only by telephone. Reproduction of the phone calls of participating artists: Siah Armajani, Richard Artschwager, John Baldessari, Iain Baxter, Mel Bochner, George Brecht, Jack Burnham, James Lee Byars, Robert H. Cumming, Francoise Dallegret, Jan Dibbets, John Giorno, Robert Grosvenor, Hans Haacke, Richard Hamilton, Dick Higgins, Davi Det Hompson, Robert Huot, Alani Jacquet, Ed Kienholz, Joseph Kosuth, Les Levine, Sol LeWitt, Robert Morris, Bruce Nauman,

*Claes Oldenburg, Dennis Oppenheim, Richard Serra, Robert Smithson, Guenther Uecker, Stan Van Der Beek, Bernar Venet, Frank Lincoln, Viner Wolf Vostell, William Wegman, William T. Wiley, giving instructions to the MCA staff on how to execute their various pieces for this exhibition which alas, went unrealized.)* [http://www.ubu.com/sound/art\\_by\\_telephone.html](http://www.ubu.com/sound/art_by_telephone.html)

- **1969** \_\_ **Art by Telephone II**, Walter de Maria (Walter de Maria's 'Art by Telephone', exhibited in 'When Attitudes Become Form', though he didn't stretch to providing the furniture. By de Maria's phone was a sign that read: "If this telephone rings, you may answer it. Walter de Maria is on the line and would like to talk to you." This was the voice of the artist as voice of God — mysterious, immanent, invisible, omnipresent. (As it happened, God never called).)

- **1969** \_\_ **CompuServe** (CompuServe, (CompuServe Information Service, also known by its acronym CIS), was the first major commercial online service in the United States. The objectives of the new company were twofold: to provide in-house computer processing support to Golden United Life Insurance Co.; and to develop as an independent business in the computer time-sharing industry, by renting time on its PDP-10 mainframe computers during business hours. The company was notable for introducing a number of online services to personal computer users. CompuServe began offering electronic mail capabilities and technical support to commercial customers in 1978 under the name Infoplex, and was also a pioneer in the real-time chat market with its CB Simulator service introduced in 1980. Around 1981, CompuServe introduced their CompuServe B protocol, a file transfer protocol, allowing users to send files to each other. CompuServe also began to expand its reach outside the United States. It entered the international arena in Japan in 1986 with Fujitsu and Nissho Iwai, and developed a Japanese language version of CompuServe called NIFTY-Serve in 1989. Fujitsu and CompuServe also co-developed WorldsAway, a prototype interactive community featuring a virtual world now called VZones with newHorizons and Dreamscape worlds complete with avatars representing the participants. In the late 1980s, it was possible to log into CompuServe via worldwide X.25 packet switching networks, but gradually it introduced its own direct dialup access network in many countries, a more economical solution. With its network expansion, CompuServe also extended the marketing of its commercial services, opening branches in London and Munich. CompuServe was the first online service to offer Internet connectivity, albeit limited access, as early as 1989 when it connected its proprietary e-mail service to allow incoming and outgoing messages to other Internet e-mail addresses. In the early years of the 1990s, CompuServe was enormously popular, with hundreds of thousands of users visiting its thousands of moderated Forums, forerunners to the endless variety of discussion sites on the Web today. In 1992, CompuServe hosted the first known WYSIWYG e-mail content and forum posts. Fonts, colors and emoticons were encoded into 7-bit text-based messages via the CompuServe navigation software NavCIS.) <http://www.compuserve.com>

- **1969** \_\_ **Conspiracy 8**, Gordon Mumma (Conspiracy 8 (1969-70) is a collaborative project by Mumma and Stephen Smoliar, then a doctoral candidate in applied mathematics at the MIT. Mumma performed on a bowed musical saw processed sporadically with cybersonics, and Smoliar at the audible teletype console, communicating in real time with a large PDP-6 computer. "One of the major difficulties with the hybrid performance systems of the late 1960's and early 1970's was the sheer size of digital computers. One solution to this problem was presented by Gordon Mumma in his composition Conspiracy 8. When the piece was presented at New York's Guggenheim Museum, a remote data-link was established to a computer in Boston which received information about the performance in progress. In turn this computer then issued instructions to the performers and generated sounds which were also transmitted to the performance site through data-link." [David Dunn]. Aside from its title, the work avoids polemical commentary on the then recently concluded "Chicago conspiracy trial." In his 1970 "Notes on Cybersonics," however, Mumma admits that the work shares specific social similarities to the trial of the eight—then seven—defendants: "It is a theatre of communication under hazardous conditions. In an interaction of diverse personalities the forces of social regulation are neither predictable nor necessarily just. The viability and survival of a democratic ensemble implies (virtually requires) a condition of constantly changing allegiances, raising unresolvable questions of conspiracy, and reactions of repression." Conspiracy 8 also captures the social conditions of its performance, including random snatches of conversation among the performers and audience members, and several spontaneous bursts of laughter that act as formal markers in the work. The loudest outburst was provoked when Mumma produced his musical saw, which must have seemed strangely anachronistic in the new-age context of the computer. When bowed with his signature extended techniques and subjected to cybersonic processes, however, this folkloric instrument produces an eerie, disembodied voice that humanizes the technological sounds.) <http://www.newworldrecords.org/uploads/filexbmFI.pdf>

- **1969** \_\_ **Duration Piece #13**, Douglas Huebler (Between July 1, 1969 and July 1994, Douglas Huebler created Duration Piece #13. One hundred one-dollar notes were circulated, accompanied by a letter saying that anyone sending the note back to Huebler would receive \$1,000 in return. What could possibly be identified as the material, space, or work of art in this case? How can a separation of the works be formulated beyond its arbitrary temporal fixation? Who emerges through all of this as the producer? Who decides the "form" of the work? Because of artists', like Huebler's, strategies in dealing with these questions and because of the way they provided - so to speak - new answers, art is effectively released from the discourse of production in the narrower sense. Art remains in the background as a would-be strategy, as a way of describing and justifying. Huebler defined art as a "system of documentation", a system that is becoming more and more, according to Jean-Louis Comollin, a "system of cooperation" within the

*framework of change from a culture “driven by representation” to a culture driven by networked operations. [Reinhard Braun]*

- **1969 \_\_ Evluon amateur radio station** *(A permanently manned amateur radio station was based in the Evluon in Eindhoven. Radio amateurs who contacted PE2EVO got a special ‘qsl’ card from the operators to confirm the contact. (In morse traffic the code QSL means that the message has been received correctly). The operators of PE2EVO (Karel, PA0KGV, Peter, PA0PAZ and Wim, PA3BEB) were probably the only professional amateur radio operators on the world, actually paid by Philips to operate an amateur radio station, which was also property of Philips of course! The operators also had other responsibilities, like giving explanations to the guests. (Peter also was the computer sysadmin and programmer for the Evluon computer systems.))* <http://www.evluon.org>
  
- **1969 \_\_ Fågel Blå**, Ralph Lundsten, Leo Nilson *(Ralph Lundsten and Leo Nilson’s Fågel Blå (Blue Bird, 1969), commissioned by the Foundation for Nationwide Concerts as inauguration music for the Expo-Norr Festival in 1969 at Östersund, was a two-channel electronic composition broadcast from giant balloons that floated over the city... a strange effect was that the sounds did not dissipate when passing over a listener, so that the height of the balloons made no difference. [“Blue” Gene Tyranny])*
  
- **1969 \_\_ Sonic Object & Reduced Listening**, Pierre Schaeffer *(‘Bereft of words, prior to any intention, adoration is attention, a summons to consciousness’ (Schaeffer 1969). Listening reducedly, we receive a sonic thing whose image starts forming in our consciousness. The flow of distanceless uniformity where all things are carried away and mixed up is halted thereby. ‘That the thingness of the thing is particularly difficult to express and only seldom expressible is infallibly documented by the history of its interpretation’ (HEIDEGGER, Martin. 1935–36. Der Ursprung des Kunstwerkes. Holzwege. In Gesamtausgabe V.): a bearer of traits (i.e. the sonic object as qualified by the seven morphological criteria); the unity of a manifold of sensations (i.e. the raw sonic object and the transcendental sonic object); formed matter (i.e. the shape/matter pair that underpins morphology). That remoteness, however near, is the sonic thing itself. From the objectlessness of the standing reserve Schaeffer elicits a sonic object that relapses into there as musicalness reservoir. There is in the sonic object ‘the impetus of a break and the impetus of a coming to power, there is the very shape of every revolutionary situation, the fundamental ambiguity of which is that Revolution must of necessity borrow, from what it wants to destroy, the very image of what it wants to possess’ (BARTHES, Roland. 1953. Le degré zéro de l’écriture.). For all that, the sonic object is not an aesthetic product but a signifying practice, not a structure but a structuration, not an object but a work and a game (Ponge’s objeu), not a group of closed signs but a volume of traces in displacement, not signification but the signifier, not the old musical work but the Text of Life (BARTHES, Roland. 1974. L’aventure sémiologique.). [In 1975 Stefani opened the proceedings of the First International Congress on Musical Semiotics avouching that the object of musical semiotics was the score, since no theory of the musical Text existed yet, and Schaeffer’s sonic object would not be reckoned with. (STEFANI, Gino (ed.). 1975. Actes du Premier Congrès International de Sémiotique Musicale. Pesaro: Centro de Iniziativa Culturale.)]. With musique concrète Schaeffer has brought the technical object’s concrescence (see Simondon 1958) to bear upon the ‘problematics’ of Western composition. With acousmatic listening he has brought the tape machine into play as a component of a global rebirth of culture. With the sonic object he has brought listening to recorded sounds into the world of significations. With reduced listening he has brought hearkening to sonic things up to date with the poetics of Varèse, Scelsi, Ponge, Freud, Heidegger, Barthes, Lacan, and Calvino.) [Carlos Palombini, “Musique Concrète Revisited”]* <http://www.rem.ufpr.br/REMv4/vol4/arti-palombini.htm>
  
- **1969 \_\_ GMEM**, Groupe de Musique Expérimentale de Marseille *(Marcel Frémot, Georges Bœuf, Michel Redolfi participe activement à la fondation du Groupe de Musique Expérimentale de Marseille, le GMEM, en 1969. Fondé en 1969 par Marcel Frémot, Georges Bœuf et Michel Redolfi, à partir de la classe de musique expérimentale assurée par Marcel Frémot au conservatoire de Marseille, le G.M.E.M. est devenu, sous la direction de Georges Bœuf, un groupe autonome et actif pour la production et la diffusion des musiques électroacoustiques et des recherches qui s’y rattachent. Sa première période, marquée par la personnalité de son fondateur Marcel Frémot, met l’accent sur le travail de groupe, s’exprimant dans des réalisations collectives, et sur la discipline de composition. En 1974, la direction du G.M.E.M. est reprise par Georges Bœuf, et le groupe traverse certaines difficultés pour obtenir les moyens de travailler comme studio autonome. À présent dirigé par Raphaël de Vivo, il dispose d’un local et d’un studio, où il peut poursuivre les recherches déjà engagées : notamment sur la « lecture sonore de l’événement », sociologie active par les moyens audiovisuels animée par Lucien Bertolina, sur l’informatique musicale, secteur pris en charge plus spécialement par Michel Redolfi (instrument de synthèse « hybride » Synclavier, inspiré des réalisations de John H. Appleton) et, enfin, sur la diffusion en concert par « homo-parleur ». La production musicale, l’animation et l’organisation de concerts figurent également parmi les activités du G.M.E.M., où ont travaillé notamment Georges Bœuf, Michel Redolfi, Claude Colon, Jacques Diennet, Lucien Bertolina et Frank Royon-Lemée.)* <http://www.gmem.org>
  
- **1969 \_\_ GlowFlow**, Myron Krueger *(For this reactive Light-sound-installation, Myron Krueger uses the walls of the dark space with four, transparent tubes containing differently colored, phosphorescent liquids. Also mounted to each of the four walls are two columns, containing the tubes (equipped with movement sensors). As visitors pass through this space, they activate visual and audio-effects, which integrate recipients into the work by way of perception and movement. The Glowflow experiment they set up was*

very simple and perhaps could be spiced a little bit more. The creation of illusory perception is not a new phenomenon and certainly wasn't during the late sixties. Creative students in psychology are always coming up with class projects that illustrate classical perceptual illusion. (I have been inside one.) What makes the author's system unique is the fact that his system is centered on technology. The way light bulbs and sound were controlled by computer was perhaps unique until their work. Another thing their project touches on, although they disown it for the large part, is the fact that their system was designed for user interaction. In choice of making the system more 'relaxing', they delayed and modified the feedback response. However, it is clear that the users were quite excited of the system being able to respond to their actions – to the extent that he thinks they are creating 'superstitions'. GLOWFLOW is a computer art project Krueger developed in collaboration with Dan Sandlin, inventor of a video image processor; Jerry Erdman, a minimalist sculptor; and Richard Venezky, a computer scientist. GLOWFLOW was exhibited at the Memorial Union Gallery at the University of Wisconsin in April 1969. It consisted of a computer-controlled lightsound environment that responded to people within it. In a dark empty room, four transparent tubes were attached to the gallery walls. The tubes had phosphorescent particles in water with each tube containing a different colored pigment. The room was completely dark, and the lighted tubes provided the only visual reference. They were arranged to distort the visitor's perception as they caused the room to appear wider in the center than at each end. As the visitors walked down the length of the room they felt that they were going downhill with respect to their own position based on the direction of the tube.) <http://www.medienkunstnetz.de/works/glow-flow/>

- **1969** \_\_ **Hello**, Allan Kaprow (Closed circuit inputs from various areas of Boston: MIT, a hospital, a video-tape library, and the airport were connected with 5 cameras and 27 monitors. The piece combined the elements of randomness and chance with conversation. As people around Boston search to communicate with one another, Kaprow as director would randomly switch links during conversation.)

- **1969** \_\_ **I'm sitting in a room**, Alvin Lucier ("I'm sitting in a room" (1969). This composition is interesting not only because the composers names are almost the same but it also explores the boundary between sound and space. The first thing we hear is the composer Alvin Lucier reading: "I am sitting in a room different from the one you are in now. I am recording the sound of my speaking voice and I am going to play it back into the room again and again until the resonant frequencies of the room reinforce themselves so that any semblance of my speech, with perhaps the exception of rhythm, is destroyed..." The voice in the room and the reverb, one layer added after the other, evolves into a poetic interpretation of what a room sounds like. This is with no doubt one of the most intelligent pieces ever made on the subject place and space.) <http://www.hz-journal.org/n10/horgren.html>

- **1969** \_\_ **Intelsat** (20 July 1969 : Intelsat transmits television images of the moon landing (Apollo 11) around the world - a record 500 million television viewers worldwide see Neil Armstrong's first steps on the moon "Live via Intelsat.")

- **1969** \_\_ **Internet** (4 computer hosts are connected by the Net (Zakon 1998).)

- **1969** \_\_ **Interrogation 69**, Fred Forest (This "electronic mass" celebrated in a historic gothic chapel in Tours is the first-ever video installation created in France. A system incorporating 5 video cameras, a closed circuit television hookup, a computer, and 15 fluorescent screens offered visitors an opportunity to meditate on their own movements and gestures, electronically transfigured in real time. The work garnered national attention in the post-May 68 context.) <http://fredforest.org>

- **1969** \_\_ **July, August, September, 1969**, Seth Siegelaub (Documentation of conceptual works by Carl Andre, Robert Barry, Daniel Buren, Jan Dibbets, Douglas Huebler, Joseph Kosuth, Sol LeWitt, Richard Long, N.E. Thing Co. Ltd., Robert Smithson and Lawrence Weiner. The works were created at many locations and "gathered" only in this catalogue, in lieu of an actual gallery space. A slight bit of edge darkening, otherwise a near fine copy in publisher's stapled wrappers.) (En juillet 1969, Seth Siegelaub constituait l'art conceptuel lui-même en réseau lorsqu'il invitait "onze artistes situés dans autant de lieux géographiquement différents d'y réaliser un travail et de faire parvenir le compte-rendu pour publication dans le catalogue-exposition" [Karen O'Rourke].) <http://www.volny.cz/rhorvitz/seth.html>

- **1969** \_\_ **Moosack Machine**, Stanley Lunetta (« The Moosack Machines are a series of compositions. The first one was made for the Crocker Art Museum in Sacramento, and it was made to be an artistic-looking setup. In other words, it was an electronic machine but it was spread out, its innards were visible, and the wires, the transistors, the resistors and all that were used for their visual as well as their electronic use. The Moosack Machine produces, mixes, and processes sound and light activities completely on its own. Considering the interaction among its many elements, the probability of its repeating itself, even after many hours of continuous performance, seems incredibly small. The sounds of the Moosack Machine are produced by oscillators, the frequency and amplitude of which are controlled by a combination of light, temperature, and proximity sensors. The resultant sounds are mixed, modified, and articulated in conjunction with a logic system consisting of a 16-bit digital counter/decoder and a frequency-divider chain. Various moving parts, a transducer, and the lighting of the sculpture are also activated by the digital logic system. The motion,

lighting, and temperature of the Moosack Machine and its environment are monitored by the same sensors that control the initial sound generation, thus completing the complex feedback loop of this self-sustained sculpture system. The design and character of the Moosack Machine is such that it is on that nebulous line between an automaton and an artificial intelligence. In this sense it is a candidate for the category of live-electronic music because it so closely mimics the attributes of live performance. The base had photoresistors and heat-sensitive elements and proximity detectors like they use in burglar alarms. And there was a set of spinning discs which were on little electric motors. The electric motors were turned on and off by the music, and the discs, when they spun, were spinning over the photoresistors. They had holes cut in them, so that depending on what sound came out, the motors would go on or off, and when they went on and off and the disc spun, the holes would uncover and cover the photoresistors which would make different pitches in the oscillators, which would make the music different, which would make the discs turn differently--it was a big loop. There were several places where if you walked in front of the thing you interrupted a light beam and that had an effect on that whole loop. And there were heat detectors up by the air-conditioning-heating system which was automatic and kept going on and off to keep the room at a certain temperature. So the piece would change depending on whether the heat was on or off. There were sensors on the sides of the building so that in the morning when the sun shone on one side the piece sounded a certain way, then when the sun was at twelve o'clock it sounded different, and when the sun started to go down it sounded different again. At night, it sounded totally different, and on cloudy days it sounded different--it was a weather indicator too. And it played all day, every day, for six weeks. ») <http://www.o-art.org/history/50s&60s/DavisScene/StanLunneta/>

- **1969** \_\_ **Mutations**, Jean-Claude Risset (Jean-Claude Risset was a Physics student in France, at the time. He decided to write his thesis on Mas Mathews's research. He went to the Bell Laboratories in 1964 to start working on timbre, and wrote Little Boy (1966) and Mutations I (1969). Risset's 'sound' is characterized by the physical illusion it generates - a feeling of going up or down! The IRCAM opened in Paris in 1974 and Risset was appointed head of the Computer Music Department. The IRCAM (Institut de Recherche et Coordination Acoustique/Musique) is a research centre for composers, where sound synthesis, spatialization and notation programs are developed. This centre still exists; it also offers courses in sound perception and acoustics. "Risset has observed that the computer must have sufficient word length to accurately represent the phase in order to prevent noticeable roundoff error. For the acoustical illusion to be effective, a sufficient duration must be used. Risset chose 120 seconds for the completion of the entire cycle of 10 glissandos. He used the design and other closely related ones in his composition, Mutations I. A useful class of sounds for certain kinds of musical textures is choral tone, which is analogous to the effect in acoustic music of more than one instrument or voice playing a line in unison. A spectral analysis of a group of instruments playing in unison reveals a significant amount of spreading in components of the spectrum; that is, the energy of each component will be more widely distributed about its average frequency than when a single instrument is playing. This is the result of slight mistunings of the instruments and the lack of correlation among their vibratos. The effect can be approximated by adding another copy of the computer instrument design at 1 or 2 Hz away from the original and then applying a small (approximately 1%) amount of random frequency deviation to both instruments. The randomness is best implemented with a noise generator that has most of its energy below 20 Hz. Also, because voices do not enter and exit at exactly the same times, a small amount of random deviation in their starting times and durations, as well as in the breakpoints of their envelopes, is desirable." [Charles Dodge]) (Mutations est composée en 1969 aux Bell Labs et primée en 1970 au concours de musique électroacoustique de Dartmouth. Il s'agit aussi de la première œuvre numérique du répertoire du GRM [Anne Veitl, Politiques de la musique contemporaine]. L'accent dans cette œuvre est mis sur la synthèse spectrale, par le biais de mutations et de développements harmoniques réalisés à partir de spectres de fréquences. Jean-Claude Risset étudie ici les transformations de motifs en mélodies, en harmonies ou en timbres et le passage d'échelles de hauteurs discontinues à des glissandos continus [Laurent Pottier]. "Cette pièce tente d'exploiter, notamment dans l'ordre harmonique, quelques unes des possibilités qu'offre l'ordinateur de composer au niveau-même du son — pour ainsi dire de composer le son lui-même. Ainsi, tout au début, un même motif apparaît d'abord sous forme mélodique, puis harmonique — comme un accord, enfin sous forme de timbre, comme un simulacre de gong qui est comme l'ombre de l'accord précédent — l'harmonie est prolongée dans le timbre. Le titre fait allusion aux transformations graduelles qui s'opèrent au cours du morceau, et notamment au passage d'une échelle de hauteurs discontinues à des variations de fréquence continues. Ce passage se fait par l'intermédiaire de développements en mutations — au sens des jeux de mutations (ou de mixtures) de l'orgue : l'ajout graduel d'harmoniques de plus en plus élevées donne lieu à un réseau d'intervalles de plus en plus resserrés. Les sons continus glissent vers l'aigu suivant une montée "en spirale" qui peut se poursuivre indéfiniment — un paradoxe ou une illusion acoustique. Après un pont faisant appel — pour la première fois dans une œuvre musicale — à la technique de modulation de fréquence de John Chowning, une récapitulation fait entendre ensemble échelles de hauteur continues et discontinues, jusqu'à un point final qui libère les composantes aiguës et graves des structures harmoniques initiales." [Jean-Claude Risset]. "En 1969, Risset crée Mutations, qui est la pièce pivot, la pièce — manifeste, qui résorbe l'harmonie dans le timbre et qui promeut le timbre à la dignité d'un élément porteur de forme. On peut considérer Mutations comme la pièce véritablement fondatrice de la musique spectrale car elle se propose de synthétiser des sons évoquant des gongs ou des cloches, tout comme on compose des accords. L'idée directrice est de libérer la fréquence et l'intensité des partiels de leur camisole instrumentale. La nouveauté radicale consiste dans le traitement séparé et autonome de la fréquence et de l'intensité d'une sinusoïde au cours du temps. Ce principe permet de composer des sons qui n'existent pas dans la nature. Lorsque tous les partiels décroissent de manière similaire, ils fusionnent et l'on obtient un timbre, celui d'un gong. Mais si chaque sinusoïde est pourvue d'harmoniques et d'un vibrato, le son

défusionne et l'on perçoit un concert de voix chantées. On peut donc passer d'une manière continue de la perception d'un timbre à celle d'un complexe de hauteurs, ou d'un timbre à un autre. Le parcours continu dans l'espace des timbres est-il techniquement possible, et, à supposer qu'il le soit, est-il musicalement viable ? Une composition élaborée de la microstructure sonore suffira-t-elle à procurer une perception assez différenciée pour permettre d'articuler un discours et d'échapper à l'informe ? On ne sait pas contrôler la composition harmonique d'un gong acoustique, par contre, on sait trouver des équivalents. L'idée était de transformer les sons percussifs du gong en adoucissant le profil dynamique de leurs composantes. L'harmonie sous-jacente reste la même mais les percussions sont capables de se muer en des textures fluides. Le procédé consiste à dissocier par synthèse les composantes sinusoïdales dont la fusion constitue la dimension spectrale du timbre. Sur une harmonie immuable, on modifie les profils et les enveloppes des composantes inharmoniques. Ce type de transformation n'est possible que parce que l'ordinateur peut dissocier le traitement de l'amplitude de celui de la fréquence. La transformation sélective de l'amplitude, sur un fond fréquentiel immuable, provoque chez l'auditeur une transformation du mode perceptif. Il passe d'une écoute d'objets prégnants à une écoute de textures, plus analytique. L'intérêt est de se situer aux frontières de la fusion car ce sont toutes les fonctions cognitives, créatrices de l'audition qui sont sollicitées. L'oreille ne sait pas si l'agrégat qu'on lui propose appartient au timbre ou à l'harmonie. Mais il apparaît tout de même que la fonction prégnante est celle du timbre. Le problème n'est donc pas de savoir si le timbre peut s'intégrer aux processus formels de l'écriture mais s'il peut en susciter et en soutenir de nouveaux. Dix ans plus tard, Risset composait *Inharmonique* (1977) et *Songes* (1979), où la forme est agencée en fonction du parcours d'occupation de l'espace spectral et en fonction de la dialectique fusion / dispersion" [Hughes Dufourt, *De la dimension productive de l'intensité et du timbre et leur intégration au système des 'éléments porteurs de forme'*] <http://www.olats.org/pionniers/pp/risset/musicElectronRisset.php> <http://www.meshs.fr/page.php?r=23&id=228&lang=fr> <http://auriol.free.fr/psychosonique/ClefDesSons/ParadoxesJCR.htm> <http://www.pfast.fr/?Article-implications-2>

- **1969** \_\_ **Pendulum Music**, Steve Reich ("I was spending the summer in New Mexico, living and working out there in '68. I went up to Boulder to collaborate with a friend of mine, William Wyllie, who's a painter. We were trying to put together a 'happening' with sculpture, black light. While we were working on that, Bruce Nauman, who was a student of Wyllie, stopped by. The three of us were in this room and I had one of these Wollensack tape recorders- they're these funky 1950's models with a cheap electric microphone. It was an old machine by then. I had holding the microphone, which was plugged into the back of the machine so it could record. The speaker was turned up. Being out West, I let it swing back and forth like a lasso. As it passed by the speaker of the machine, it went 'whoop!' and then it went away. We were all laughing at this and the idea popped into my mind that if you had two or three of these machines, you would have this audible sculpture phase piece. The event that Wyllie and I did was the first use of this piece, done with two machines. When it was done as a concert piece at the Whitney Museum in 1969, during an event of my music, it was 'performed' by Bruce Neuman, Michael Snow, Richard Sierra, James Tenney and myself. They pulled back their measured microphones and I counted off 4-4 and on the downbeat, they all let it go and sat down, including me. Then the microphones begin to 'whoop!' as they pass in front of the speaker because the microphones had been preset to be loud enough to give feedback when it's in front of the speaker but not when it swings to the left and the right. Over a period of ten minutes, which was a little too long for my taste, and as the pendulums come to rest, you entered a pulsing drone. Once it hit the drone, I would pull the plug on the machine and the whole thing ended." [Steve Reich]) (Ainsi fonctionne PENDULUM MUSIC de Steve Reich, présentée au Whitney Museum en 1969 : des microphones sont suspendus, lestés, et se balancent au-dessus de haut-parleurs. «They pulled back their measured microphones and I counted off 4-4 and on the downbeat, they all let it go and sat down, including me.» «It's the ultimate process piece. It's me making my peace with Cage. It's audible sculpture. If it's done right, it's kind of funny.» Ce qui est caractéristique de ce type de travail, ce sont les deux étapes distinctes, les deux temps de l'acte. Tout d'abord, la manipulation : interconnexion des modules de la chaîne électroacoustique jusqu'à ce qu'un phénomène intrigant émerge. Il s'agit véritablement d'un jeu d'assemblage, un véritable "Lego", sans intention définie. Ensuite vient, la phase d'écoute, de découverte distante : le processus livré à lui-même évolue librement, les signaux sonores suivent le labyrinthe électronique, le système est devenu vivant. [Yannick Dauby]) <http://www.furious.com/perfect/ohm/reich.html>

- **1969** \_\_ **Radio Free Poetry**, John Giorno, *The Software Show*, and *The Jewish Museum*, New York (Broadcasted through the electrical wiring in the building, and aired for museum visitors on transistor radios.)

- **1969** \_\_ **Request For Comments**, Jon Postel, Network Working Group ("The Network Working Group seems to consist of Steve Carr of Utah, Jeff Rulifson and Bill Duvall at SRI, and Steve Crocker and Gerard Deloche at UCLA. Membership is not closed. The Network Working Group (NWG) is concerned with the HOST software, the strategies for using the network, and initial experiments with the network. Documentation of the NWG's effort is through notes such as this. Notes may be produced at any site by anybody and included in this series. The content of a NWG note may be any thought, suggestion, etc. related to the HOST software or other aspect of the network. Notes are encouraged to be timely rather than polished. Philosophical positions without examples or other specifics, specific suggestions or implementation techniques without introductory or background explication, and explicit questions without any attempted answers are all acceptable. The minimum length for a NWG note is one sentence. These standards (or lack of them) are stated explicitly for two reasons. First, there is a tendency to view a written statement as ipso facto

authoritative, and we hope to promote the exchange and discussion of considerably less than authoritative ideas. Second, there is a natural hesitancy to publish something unpolished, and we hope to ease this inhibition.” (“For me, participation in the development of the ARPAnet and the Internet protocols has been very exciting. One important reason it worked, I believe, is that there were a lot of very bright people all working more or less in the same direction, led by some very wise people in the funding agency. The result was to create a community of network researchers who believed strongly that collaboration is more powerful than competition among researchers. I don’t think any other model would have gotten us where we are today [Robert Braden, <ftp://ftp.isi.edu/in-notes/rfc1251.txt>] .) <ftp://ftp.isi.edu/in-notes/rfc2555.txt> <ftp://ftp.isi.edu/in-notes/rfc1.txt> <ftp://ftp.isi.edu/in-notes/rfc3.txt>

- **1969** \_\_ **Schizophrenia** (Today, the electroacoustic community is becoming increasingly global. Here I refer both to the group of student and professional practitioners, and to the common experience of people in industrialized countries to hear more sound via electroacoustic reproduction (Truax 1992b). Schafer (1969) originally described the electroacoustic listening experience as ‘schizophonic’, suggesting it was an aberration. Today, such ‘aberration’ is increasingly the norm. I have described one aspect of this trend as the creation of surrogate environments through the use of background music, radio, television and recordings. Foreground information comes as often as not from national and international media sources, rather than from one’s neighbourhood, perhaps even more readily in most cases. So-called ‘virtual reality’ is increasingly becoming an aspect of ‘normal reality’ and one wonders whether the younger generation is capable of distinguishing the difference, or even if they care to. [Barry Truax]. “Schizophrenia. The Greek prefix schizo means split, separated. Schizophrenia refers to the split between an original sound and its electroacoustical transmission or reproduction.” [Robert Murray Schafer, “The music of Environment”, 1973]) <http://www.sfu.ca/~truax/OS7.html>

- **1969** \_\_ **The Scratch Orchestra** (The Scratch Orchestra, to whom The Great Learning is dedicated, was founded by Michael Parsons, Howard Skempton and Cardew himself, and emerged out of Cardew’s composition class at Morley College in London in 1969 (in fact at least two paragraphs of The Great Learning had been completed before the Scratch Orchestra was formed). It was an enterprising body of around 40 performers of varied skills, who played all kinds of experimental music - by Cage, Cardew, Wolff, Riley, Young, Rzewski, and themselves - in all kinds of situations and for all classes of people: for Cornish farm-workers in village squares, for the young industrial workers of the north-east, and for both urban and rural communities on the Continent, as well as for music lovers who frequented the Royal Festival Hall. The Scratch Orchestra consisted of an assortment of people from various walks of life, some of them with considerable artistic talent, who loved and needed music. There was no more enthusiastic, more committed collection of individuals working in the field of contemporary art at that time. The first two years of the Scratch Orchestra’s existence were idyllic, and the performances and compositional output were prolific. But the nature and intensity of its activities created problems, and complaints and disillusionment began to surface. Cardew opened a ‘discontent file’, which functioned therapeutically for a while but did not relieve the underlying tensions. The situation eventually reached crisis point. At one of the meetings two members of the Orchestra presented an analysis of the predicament, which pinpointed a fundamental disunity of theory and practice as the principal source of discontent and frustration: in theory the Scratch Orchestra believed in integration and gregariousness, in practice it was isolationist and parochial; in theory it rejected the musical establishment, in practice it asked for support (Arts Council grants, BBC television and Festival Hall appearances); in theory it wished to be an instrument of inspiration, in practice it appeared to many as a pessimistic symptom of a system in decay; and so on. The passage concerned, which comes from Caudwell’s essay on D. H. Lawrence, deals with the function of art and the role of the artist in bourgeois society: “But art is not in any case a relation to a thing, it is a relation between men, between artist and audience, and the art work is only like a machine which they must both grasp as part of the process. The commercialisation of art may revolt the sincere artist, but the tragedy is that he revolts against it still within the limitations of bourgeois culture. He attempts to forget the market completely and concentrate on his relation to the art work, which now becomes still further hypostatized as an entity-in-itself. Because the art work is now completely an end-in-itself, and even the market is forgotten, the art process becomes an extremely individualistic relation. The social values inherent in the art form, such as syntax, tradition, rules, technique, form, accepted tonal scale, now seem to have little value, for the art work more and more exists for the individual alone”. The Caudwell essay made (I believe) a profound impression on Cardew, not because it imparted new thoughts, but because it crystallised his own thoughts and feelings, and he began to identify with Marxism. “Music backs up, supports the social conscience of its audience (which is also its indirect producer). Thus when we try and write revolutionary music for the usual audience we’re faced with the insurmountable problem of giving it a form that backs up the bourgeois class consciousness of the audience. If we succeed then the revolutionary content is turned around to serve the bourgeois audience in its ideas and prejudices. If we fail, then the revolutionary content remains but does not touch the audience - you get the negative reaction either on the grounds that it’s bad music, or on the grounds that it is an attack on the audience (on their bourgeois consciousness).” “From a certain point of view improvisation is the highest mode of musical activity, for it is based on the acceptance of music’s fatal weakness and essential and most beautiful characteristic - its transience. The desire always to be right is an ignoble taskmaster, as is the desire for immortality. The performance of any vital action brings us closer to death; if it didn’t it would lack vitality. Life is a force to be used and if necessary used up. ‘Death is the virtue in us going to its destination.’ [Lieh Tzu]” [John Tilbury, Contact n°6, 1983]) <http://www.users.waitrose.com/~chobbs/tilburycardew.html>

- **1969 \_\_ Soundscape** (As a reminder, the concept of "soundscape" was formulated by Murray Schafer In the 1970's. His work *The Tuning of the World*, published In Canada in 1977, gave rise to a movement of consciousness of sonic environment. It's main theme is the notion of "soundscape", which Barry Truax, in *Handbook for Acoustic Ecology*, defines in the following way: "An environment of SOUND (or sonic environment) with an emphasis on the manner it is perceived and understood by the individual, or by a society. [...] The term can refer to actual environments, or to abstract constructions such as musical compositions and audio montages, particularly when considered as an artificial environment." What is significant in this definition is the importance granted to the individual and to groups of individuals who will be immersed in, interact with, and even create contexts stimulating hearing. It is in this way a condensing of the theories of Schafer, who assembles factual physical studies (the rational measure and analysis of the acoustic phenomena that surround us), a semantic aspect (the signification granted to signals emitted more or less voluntarily by our human activities), studies of a medical and/or historical nature (the impact of these phenomena on our physiology and the mental health of our post-industrial societies), along with aesthetic positions (Schafer posits that the post-industrial soundscape has arrived at "the height of vulgarity") and artistic practices (from performances which have become "soundwalks" to electroacoustic compositions destined for compact disc). If the concept of sonic landscape disconcerts and is subjected to the violent critique of some, it is precisely because of the multiplicity and the plasticity of these approaches that do not allow us to think about our environment and our perception of it. I propose, therefore, that we return to a few basic questions: how do we perceive the sounds of a space? [Yannick Dauby, "SOUNDSCAPE, UMWELT & THE PRACTICE OF PHONOGRAPHY", 2007]. A sound environment is an acoustic space where sounds can be emitted, transmitted, received. It implies at least the level of hearing, in a passive mode or in a non-intentional mode. The idea of environment is about the physical space that surrounds us, it is the whole things outside of our body and which we can not predict. Being aware of what may happen in the environment, passing from hearing to listening, in an active perception mode, one enter in a specific relationship to the sound environment. This relationship can be defined as a dialogue. Let's take the example of an octopus. This animal has 8 organs used for movement, manipulation of objects and the perception of the physical surroundings. The octopus send the tentacles in front of him to test, to explore the environment. He receives informations by contact : his behaviour will be different if he touches an object or if he is touched by an object. He is in a loop of perception : the stimulus makes him trying to receive more information. The situation of a listener in an environment is not very different from the one of the octopus : some sounds comes to his ears which makes him paying attention to his surroundings, listening carefully and exploring the environment with his ears. The sounds he receives are compared to his own experience, his personal memory, and this comparison will affects his listening behaviour. Soundscape (the term comes from Murray Schaeffer) is what emerge from this listening loop. [Yannick Dauby]. A soundscape is a sound or combination of sounds that forms or arises from an immersive environment. The study of soundscape is the subject of acoustic ecology. The idea of soundscape refers to both the natural acoustic environment, consisting of natural sounds, including animal vocalizations and, for instance, the sounds of weather and other natural elements; and environmental sounds created by humans, through musical composition, sound design, and other ordinary human activities including conversation, work, and sounds of mechanical origin resulting from use of industrial technology. The disruption of these acoustic environments results in noise pollution. The term "soundscape" can also refer to an audio recording or performance of sounds that create the sensation of experiencing a particular acoustic environment, or compositions created using the "found sounds" of an acoustic environment, either exclusively or in conjunction with musical performances. Pauline Oliveros defined the term "soundscape" as "All of the waveforms faithfully transmitted to our audio cortex by the ear and its mechanisms". According to author, composer and environmentalist, R. Murray Schafer, there are three main elements of the soundscape: Keynote sounds, Sound signals, Soundmarks. In his 1977 book, *The Tuning of the World*, Schafer wrote, "Once a Soundmark has been identified, it deserves to be protected, for soundmarks make the acoustic life of a community unique". In the late 1960s, R. Murray Schafer (1969, 1977) suggested a radically different concept: the soundscape as the 'universal' composition of which we are all composers. This bold concept, intended as an alternative not to music but to the problems of noise, led to the formation of the World Soundscape Project (WSP) at Simon Fraser University in the early 1970s. Although in common usage the WSP often got abbreviated to 'the soundscape project', Schafer clung to the idea of its global basis, and in 1975 conducted a tour through Europe to make recordings and study five villages in each of five different countries. The main purpose of the WSP's work was to document acoustic environments, both functional and dysfunctional, and to increase public awareness of the importance of the soundscape, particularly through individual listening sensitivity. In current terminology, the goal is to put 'acoustic ecology' on the environmental agenda. However, given the importance of local action, one of the WSP's first major publications was *The Vancouver Soundscape*, a booklet plus two records which appeared in 1973. Twenty years later, most of the recordings were re-issued on a double CD, where the second CD consists of documentary recordings and soundscape compositions derived from digital recordings made in Vancouver in the 1990s. Not only was the Vancouver project probably the first systematic study of the soundscape of a city, but the 20-year span with the follow-up project gave a unique aural portrait of the rapid evolution of the city and its soundscape. Such longitudinal work is rare in acoustics and noise studies, and should be encouraged in soundscape documentation, since both personal and cultural memory lacks the ability to track such aural changes in the environment. The Vancouver study also set the frame of the city for other work to follow. In the last decade, city 'portraits' on CD, varying in the degree to which they mingle documentation and composition, have appeared for Madrid, Amsterdam, Lisbon, Brasilia, and others. Many other unpublished compilations and individual research results have also been carried out. In other words, it can be argued that the WSP's influence has spread worldwide as a concept practiced by locals,

rather than by outside experts. In fact, following the 1993 Tuning of the World conference in Banff, Alberta, the international organization known as the World Forum for Acoustic Ecology (WFAE) was formed, which maintains an extensive website and soundscape newsletter and journal, as well as an on-line discussion group. In 1998, a Swedish group organized an international conference in Stockholm on the theme of acoustic ecology, and an administrative structure was set up during the conference for the WFAE consisting of both national or regional groups and individual members. In other words, the type of system that has emerged from this evolution can be described as an international network with local nodes. So does this mean that the soundscape is a shared global experience? Although it is clearly the concern of a dedicated group of individuals who are networked worldwide, soundscapes are inherently local and particularized. To be sure, there is a disturbing analogy to economic and cultural globalization which is a force for homogenization, and that is the pervasive and invasive influence of technological sounds and noise. Almost everything about technology promotes standardization and uniformity, right from the micro level of hums and broad-band noise, through to the influences that produce 'lo-fi' soundscapes in every urban centre, as well as their surroundings (Schafer 1977, 1993). It is a simplification, but one which is suggestive: hi-fi soundscapes are varied and uniquely local; lo-fi soundscapes are uniform and about the same everywhere. From an ecological standpoint, the hi-fi soundscape is populated by many individual 'species' which are the result of local conditions. They are information rich, and most importantly, are most richly interpreted by locals who understand their contextual meanings. The lo-fi soundscape is created by the hegemony of only the most powerful sounds which eradicate, or at least mask, all local varieties. Even more seriously, the lo-fi soundscape seems to create a common habit of non-listening, one which soundscape theory argues is detrimental both to the individual and to the soundscape as a whole since it can deteriorate unchecked (Truax 2001). (...) I find it striking how easily applicable the basic, and rather simplistic, soundscape categories still are for the analysis of all such electroacoustic soundscapes. It is significant that those categories are strongly related to perceptual habits, such as 'keynote' sounds for background listening, sound signals for foreground perception, and 'soundmarks' for those sounds recognized as having cultural and symbolic importance within a community. These concepts rely heavily on the listener's understanding of and ability to interpret such sounds, as well as pointing to the shifting levels of listening awareness and the importance of social, cultural and psychological context for soundscape perception. With a typical radio music format, the recorded music often functions as a background ambience, with recurring elements such as the station logo functioning as keynote sounds. The station attempts to attract foreground attention to the ads through a variety of strategies, and within the ads highly symbolic and culturally interpretable sounds are used to provide associations and reinforce a product image, often in the manner of the soundmark. In terms of their structural function, keynotes provide background continuity, signals provide foreground encoded and interpretable information (which can become a keynote if heard frequently enough) and can become soundmarks if given uniqueness by cultural and social associations that transcend an immediate situation. Unlike the arbitrariness of the linguistic sign, the specific aural qualities of environmental sounds become tied to their interpretation, and such sounds cannot be changed arbitrarily without cognitive disruption. It can be noted that electroacoustic music as a form of intensely designed communication may also provoke these basic kinds of listening and interpretation strategies even if the sound material doesn't particularly resemble environmental sound [Barry Truax]. « An environment of SOUND (or sonic environment) with emphasis on the way it is perceived and understood by the individual, or by a society. It thus depends on the relationship between the individual and any such environment. The term may refer to actual environments, or to abstract constructions such as musical compositions and tape montages, particularly when considered as an artificial environment. » [Barry Truax, *Handbook for acoustic ecology*, 1978] (*Ce que nous appellerons paysage sonore repose sur le principe de l'intentionnalité d'un auditeur, qui se met à l'écoute d'un environnement sonore. C'est-à-dire qu'il lui porte une attention particulière, construisant ainsi son paysage sonore.* [Yannick Dauby, *Paysages Sonores Partagés*, p.14]) [http://kalerne.net/joomla/index.php?option=com\\_content&task=view&id=159&Itemid=48](http://kalerne.net/joomla/index.php?option=com_content&task=view&id=159&Itemid=48) <http://www.sfu.ca/~truax/OS7.html>

- **1969 \_\_ Telepathic Piece**, Robert Barry, Simon Fraser University in Vancouver ("It was a telephone hook-up in New York where Seth Siegelau organized the exhibition. At Simon Fraser University there was some set up in the auditorium or some public meeting place, I don't remember exactly, but I do remember sitting at Siegelau's apartment. Siegelau was there and some of the other artists in the show like Lawrence Weiner, Doug Huebler and Joseph Kosuth. I remember that there was some discussion, there were some questions we could hear via the telephone hook-up and we tried to answer them. I just tried to get my thoughts together about what I was feeling at the time. I tried really to concentrate on what it was and for however long I could do it. That's basically what it was. I don't remember whether anybody got it, although some people said they have caught it. How to send things telepathically? I don't know." [Robert Barry]) [http://www.janmot.com/newspaper/barry\\_monk.php](http://www.janmot.com/newspaper/barry_monk.php)

- **1969 \_\_ 39 Minutes for 39 Autos**, Robert Moran (39 automobiles honked and flashed their headlights on and off and homes and office buildings in the city below answered according to a complex pre-arranged "score" published in that morning's San Francisco Chronicle. On an August evening in 1969 on the summit of Twin Peaks overlooking San Francisco, Robert Moran, in collaboration with artist Paul Crowley, realized 39 Minutes for 39 Autos. Several local radio and television stations broadcast the event live, while buildings in downtown San Francisco performed light displays (all according to precise cuing) on their facades. In concert, many local residents followed light cues given via radio, orienting their home radio speakers toward the streets. Robert Moran conducted the auto horns and headlights, while Margaret Fabrizio and assistants performed a special Moran score for realization on an

electronic music synthesizer (all broadcast to local radio and television stations.) [http://www.o-art.org/history/50s&\\_60s/39\\_39/](http://www.o-art.org/history/50s&_60s/39_39/)

- **1969** \_\_ **Transmission One**, Larry Austin (In *Transmission One* you see/hear a video/audio composition for television broadcast. The work lasts twenty-five minutes and utilizes no television cameras. You see no images you might expect to find on a television viewing screen. Instead, various geometric forms appear in kinetic sequence. You hear none of the usual sounds of television. Instead, you hear electronically-produced sounds in kinetic sequence. The video and audio signals interact in an electronic syndrome. In *Transmission One* the audible "video-hum" is picked up by a special microphone (or AM detector), amplified, and used as a basic carrier wave for a ring modulator. This signal, combined with other synthesized signals, becomes the modulator of an RF signal being transmitted to the television receiver. The video picture that results affects the nature of the video-hum, creating what I refer to as a "video/audio syndrome," i.e., electronic concurrence between sound and sight.)

- **1969** \_\_ **William Whyte** (In 1969, William Whyte began a sixteen year observation study of the workability and use of public spaces within New York City and other cities (Whyte). Using time-lapse cameras, 35mm cameras, tele-photo lenses, and interviews, his group documented patterns of traffic and behavior in selected public spaces. He observed people at street corners, hidden plazas, open plazas, building atriums, market places, alleyways, and mega structures. Within these spaces he documented climate, lighting, density of people, where they stood, sat, and walked, carrying capacity, and public events in the spaces.) <http://smg.media.mit.edu/papers/kkarahal/thesis/kk-dissertation.pdf>

- **1969** \_\_ **Wipe Cycle, Raindance Corporation**, Frank Gillette, Michael Shamberg, and Ira Schneider among others (It was Gillette's intention to found an alternative media think tank; a source of ideas, publications, videotapes and energy providing a theoretical basis for implementing communication tools in the project of social change. To make his point, Gillette chose the name Raindance as an ironic reference to the Rand Corporation, then and now an establishment think tank advising government and industry (The name "Raindance" was a play on words for "cultural R & D", research and development). Influenced by the communications theories of Marshall McLuhan and Buckminster Fuller, the collective produced a data bank of tapes and writings that explored the relation of cybernetics, media, and ecology. Gillette, Shamberg, Jaffe, and Gillette's friend Marco Vassi, registered Raindance as a Delaware corporation in October of 1969. In Spring 69 Gillette and Ira Schneider were invited to participate in TV as a Creative Medium, a group show focusing on those artists in New York who were working with video in 1969, curated by Howard Wise at his gallery on 57th Street. Gillette and Schneider proposed an interactive, multi-channel video piece called Wipe Cycle, the idea for which had grown out of Gillette's experience with the equipment he had worked with over the previous summer, and Schneider's concern with viewer interaction and delayed feedback. Wise agreed to fund the project with \$10,000. Wipe Cycle was a complex piece, requiring special circuitry to realize. It was not beyond Gillette's ability to imagine, but it was Schneider who understood how it could be built. The successful completion and exhibition of this very early video installation further enhanced the friendship and respect between the two men. With nine monitors and a live camera, «Wipe Cycle» transposes present-time demands as a way to disrupt television's one-sided flow of information. In the exhibition «TV as a Creative Medium,» the installation was constructed before the elevator. So each visitor was immediately confronted with his or her own image. But the monitors also showed two video tapes and a television program. The installation, which made visitors a part of the information, was rigged in a highly complicated fashion: in four cycles, images wandered from one monitor to the other delayed by eight or sixteen seconds, while counter-clockwise a gray light impulse wiped out all the images every two seconds. "Amplifying an idea is easy when the social space is ready for it, impossible when it's not", is a conclusion reached in the book 'Guerrilla Television', published in 1971 by a former employee of the Time publishing company, Michael Shamberg together with Raindance Corporation, the counter culture analogue to the Rand Corporation. The book is split up in two parts, one a reflection on the implications of the new media for society, the other part a practical manual with examples of past and ongoing projects. All ideas that now, after twenty years, start to materialize are already there: 'community video', 'video theatre, a 'media bus' (Ant Farm), using central antenna systems in apartment buildings, video in meditation and therapy, setting up of a videocassette network, use of cable television. The authors saw all this as a "techno-evolution" which would in the end help "to restore media ecological balance to TV". The way they thought this was best done was by "re-structuring communication channels, not capturing existing ones". The magazine 'Radical Software' published in the same period is another visionary source full of ideas which deserves to be republished now.)

## 1970

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- **1970** \_\_ **Cereal Sound Box** ("Back in the seventies novelty cereal packet gifts reached a zenith of inventiveness and surreality. My particular favourite was a sound player 'toy' - basically a strip of red plastic, shaped like a cable tie, with audio samples encoded into grooves in the strip. The idea was to fit one end to a hole in the empty cereal packet and run your fingernail along the strip at a

constant speed. the cereal box acted as an sound box, amplifying the vibrations delighting the astonished breakfast audience with audio clips from history, if my memory serves me correctly, Chamberlain's "...and here is the paper" and Churchill's "some chicken, some neck" amongst others." [Simon Crab] <http://crab.wordpress.com/2009/01/19/musical-roads-of-the-world/#more-454>

- 1970 \_\_ « **Constituents of a Theory of the Media** », Hans Magnus Enzensberger (« Electronic techniques recognize no contradiction in principle between transmitter and receiver. Every transistor radio is, by the matters of its construction, at the same time a potential transmitter; it can interact with other receivers by circuit reversal. The development from a mere distribution medium to a communications medium is technically not a problem. It is consciously prevented for understandable political reasons. The technical distinction between receivers and transmitters reflects the social division of labor into producers and consumers. (...) The new media are oriented toward action, not contemplation; (...). Their attitude to time is completely opposed to that of bourgeois culture, which aspires to possession, that is, to extension in time, best of all, to eternity. The media produce no objects that can be hoarded and auctioned. They do away completely with 'intellectual property'. (...) It is wrong to regard media equipment as mere means of consumption. It is always, in principle, also means of production. (...) The contradiction between producers and consumers is not inherent in the electronic media; on the contrary, it has to be artificially reinforced by economic and administrative measures. » Hans Magnus Enzensberger, "Constituents of a Theory of the Media," *New Left Review* 64 (1970) 15. Hans Magnus Enzensberger's landmark essay "Constituents of a Theory of New Media" originally published in the *New Left Review* in 1970, offered a perspective on the new electronic media of the time that in retrospect seems remarkably visionary and dated at the same time. Informed by an essentially Marxist perspective, Enzensberger saw the media of the '70s as a major reconfiguration of the production process: "For the first time in history, the media are making possible mass participation in a social and socialized productive process, the practical means of which are in the hands of the masses themselves." Enzensberger sees television or film as media that prevent rather than enable communication since they allow no reciprocal action between transmitter and receiver but reduce feedback to a lowest common denominator. As he points out, this limitation of the communication process mostly is not inherent to the technology itself, which would allow for the reconfiguration of the transistor radio from a receiver into a potential transmitter by circuit reversal. Media equipment is therefore both a means of consumption and production, and the boundary between the distribution and communications medium is a fluid one. The division between receiver and transmitter, as Enzensberger makes clear, reflects the one between producer and consumer. Revisiting Enzensberger's essay today, it often is easy to forget that he was not writing about digital networks or the World Wide Web as communications medium, where the division between transmitter/receiver and producer/consumer becomes increasingly blurred. Other conclusions he draws, however, come as a surprise — among them the assumption that the great advantage of a switchable network is that it can no longer be centrally controlled and thus undermines authoritarian, top-down systems. In the age of Echelon and packet-sniffing — the monitoring of network traffic and "eavesdropping" on the information exchanged — by federal agencies, it is hard to imagine that Enzensberger could not see that control itself can rely on decentralized systems (as Baudrillard would point out in his reply). The most debatable assumption Enzensberger makes may very well be that "The new media are egalitarian in structure." As Jean Baudrillard (2003) points out in his reply to Enzensberger's essay, "Requiem for the Media" (originally published in 1972), "the media are not even, somewhere else or potentially, neutral or non-ideological." Particularly in the context of today's new media, it is crucial to be aware of the encoded agenda — political, commercial etc. — of any hardware or software, which has become a prominent topic in software art. While Baudrillard appreciates Enzensberger's attempt to go beyond a "dialectic" of transmitter and receiver, he is fundamentally critical of the concept that the media allow mass participation in a productive process: "The mass media are anti-mediatory and intransitive. They fabricate non-communication — this is what characterizes them, if one agrees to define communication as an exchange, as a reciprocal space of a speech and response." [Christiane Paul] <http://excerpter.wordpress.com/2006/10/21/hans-magnus-enzensberger-constituents-of-a-theory-of-the-media-1970/>

- 1970 \_\_ **Datapoint 2200** (In the very late 1960's, 2 professors at Case Western Reserve University in Ohio came up with the idea of a high density integrated circuit which would be programmable. Its purpose would be to a programmable/adaptable physical interface. They took this circuit design to various IC manufacturers and were turned down by all of the existing IC manufacturers. The reason? The chip was too specialized and would never have enough widespread applicability to be financially worth developing. The Datapoint 2200 was a mass-produced programmable terminal announced by Computer Terminal Corporation (CTC) in June, 1970 (with units shipping in 1971). It was intended by its designers simply to be a versatile, cost-efficient terminal for connecting to a wide variety of mainframes by loading various terminal emulations from tape rather than being hardwired as most terminals were. However, enterprising users in the business sector (including Pillsbury Foods) realized that this so-called "programmable terminal" was equipped to perform any task a simple computer could, and exploited this fact by using their 2200s as standalone computer systems. Equally significant is the fact that the terminal's CPU (processor) was the embryo of the x86 instruction set architecture, which powered the original IBM PC and has powered all of its descendants since. The Datapoint 2200 had a small built in CRT screen, keyboard and 2 cassette decks. There was a run light and 2 other lights on the keyboard. When the machine halted, you could not tell where in the program it had done so. So you put in the O/S cassette and rebooted. You then did a memory dump and tried to deduce what had went wrong. Primitive by today's standards, it was the first computer on a desktop.) <http://www.old->

[computers.com/museum/computer.asp?c=596](http://computers.com/museum/computer.asp?c=596) <http://www.oldcomputers.net>

- **1970** \_\_ **Interactive broadcast performance**, Douglas Davis (*Douglas Davis, interactive broadcast performance from the atrium of the Corcoran Gallery, Washington, D.C., sponsored by WCBS-TV.*)

- **1970** \_\_ **Ecology of the Skin**, David Rosenboom (*Then in the late 1960s, another composer, David Rosenboom, began to use EEG signals to generate music. In 1970-71 Rosenboom composed and performed Ecology of the Skin, in which ten live EEG performer-participants interactively generated immersive sonic/visual environments using custom-made electronic circuits. Around the same time, Rosenboom founded the Laboratory of Experimental Aesthetics at York University in Toronto, which encouraged pioneering collaborations between scientists and artists. For the better part of the 1970s, the laboratory undertook experimentation and research into the artistic possibilities of brainwaves and other biological signals in cybernetic biofeedback artistic systems. Many artists and musicians visited and worked at the facility during this time including John Cage, David Behrman, LaMonte Young, and Marian Zazeela. Some of the results of the work at this lab were published in the book Biofeedback and the Arts (Aesthetic Research Centre of Canada, 1976). A more recent 1990 monograph by Rosenboom, Extended Musical Interface with the Human Nervous System (<http://mitpress2.mit.edu/e-journals/LEA/MONOGRAPHS/ROSENBOOM/rosenboom.html>) , remains the definitive theoretical document in this area. [Andrew Brouse, A Young Person's Guide to Brainwave Music] <http://www.mindmodulations.com/mindmods/general/a-young-persons-guide-to-brainwave-music.html>*)

- **1970** \_\_ **The GROOVE System**, Max Mathews (*Generated Real-time Output Operations on Voltage-controlled Equipment*) (In 1970, Mathews pioneered GROOVE (Generated Real-time Output Operations on Voltage-controlled Equipment), the first fully developed hybrid system for music synthesis, utilising a HoneywellDDP-224 computer with a simple cathode ray tube display, disk and tape storage devices. The synthesiser generated sounds via an interface for analogue devices and two 12 bit digital to analogue converters. Input devices consisted of a qwerty keyboard a 24 note keyboard, four rotary knobs and a three dimensional rotary joystick. Mathews saw the function of the GROOVE system as being a compositional tool which the composer/conductor manipulates in real time: "The composer does not play every note in a (traditional) score, instead he influences (hopefully controls) the way in which the instrumentalists play the notes. The computer performer should not attempt to define the entire sound in real time. Instead the computer should retain a score and the performer should influence the way in which the score is played..... the mode of conducting consist of turning knobs and pressing keys rather than waving a stick, but this is a minor detail.....The programme is basically a system for creating storing, retrieving and editing functions of time. It allows the composition of time functions by turning knobs and pressing keys in real time: it stores the functions on the disk file, it retrieves the stored functions (the score), combines them with the input functions (the conductor) in order to generate control functions which drive the analogue synthesiser and it provides for facile editing of functions via control of the programme time..." The GROOVE system remained in operation until the end of the seventies when Honeywell withdrew from the computer market. Max Mathews (Now professor emeritus at Stanford) is still actively involved in digital music performance. His "radio baton" hyperinstrument allows him to conduct a computer orchestra by simply waving a wand over an electromagnetic field. The father of computer music predicts that by 2010, "almost all music will be made electronically, by digital circuits." [Simon Crab] <http://120years.net/machines/software/>)

- **1970** \_\_ **Humid Installation**, Ana Lupas (*In 1970 Lupas invited the women of the village of Margau to stretch their laundered sheets in linear patterns across a Transylvanian hillside. An affecting instance of ephemeral land art that was born of the communal enactment of a domestic chore, Humid Installation anticipates and--with the advantage of hindsight--seems to gently reproach the brazen ambition of Christo's industrial-scaled, albeit temporary, Running Fence of 1972-76.*)

- **1970** \_\_ **I Got Up**, On Kawara (*Considered the most personal and intimate of his works, I GOT UP is part of a continuous piece produced by On Kawara between 1968 and 1979 in which each day the artist sent two different friends or colleagues a picture postcard, each stamped with the exact time he arose that day and the addresses of both sender and recipient. The length of each correspondence ranged from a single card to hundreds sent consecutively over a period of months; the gesture's repetitive nature is counterbalanced by the artist's peripatetic global wanderings and exceedingly irregular hours (in 1973 alone he sent postcards from twenty-eight cities). Moreover, Kawara's postcards do not record his waking up but his "getting up," with its ambiguous conflation of carnal and existential (as opposed to not getting up) implications.) [http://www.metmuseum.org/TOAH/HD/cncp/ho\\_2001.228a-pp.htm](http://www.metmuseum.org/TOAH/HD/cncp/ho_2001.228a-pp.htm)*)

- **1970** \_\_ **Kugelauditorium**, Karlheinz Stockhausen, Fritz Bornemann (*Stockhausen himself, inspired by the geometrical projects of architect Buckminster Fuller, designed the Kugelauditorium, a spherical loudspeaker construction for the World Expo in Osaka 1970. The German architect Fritz Bornemann transformed it to a pavilion, and the speakers were arranged to achieve a realistic three-dimensional effect around the listener. ) (En 1970, Stockhausen, accompagné de l'architecte Fritz Bornemann, conçoit un auditorium sphérique de 28 mètres de diamètre pour le planétarium du pavillon allemand de l'exposition universelle d'Osaka. Il y voit une architecture idéale de spatialisation du son : le son était projeté dans 55 haut-parleurs qui entouraient complètement un*

public de 550 auditeurs [Gilles Malatray]. Karlheinz Stockhausen pose à nouveau la question d'une architecture adaptée à la spatialisation de la musique. La musique pour lui, est « un espace sphérique à la surface duquel sont disposés des hauts-parleurs et au milieu duquel est suspendue une plate-forme acoustiquement perméable et transparente sur laquelle les auditeurs prennent place ». Pour l'Exposition universelle d'Osaka de 1970, Stockhausen a pu collaborer avec l'architecte Fritz Bornemann afin de construire cet auditorium sphérique de 30 mètres de diamètre destiné à des concerts de musique expérimentale. Les 550 auditeurs étaient placés sur une plate-forme centrale perméable au son, les haut-parleurs les entourant complètement. L'espace ainsi construit n'est qu'un espace de perception physique. C'est également pour Stockhausen un espace intérieur, mental, branché sur l'espace isotrope du cosmos.) <http://mediatheque.cite-musique.fr/masc/?INSTANCE=CITEMUSIQUE&URL=/MediaComposite/CMDE/CMDE000000300/03.htm> <http://www.hz-journal.org/n10/horgren.html>

- 1970 \_\_ **Labyrinth**, Ted Nelson & Ned Woodman (Software - the exhibition by Jack Burnham at Jewish Museum : Software: Information Technology: Its New Meaning for Art - therefore does not praise technological art at the dawn of a new decade but comments on the emergence of a media environment overdetermining henceforth all areas of knowledge, including the field of art. More focused on the testing of concepts, computer scientist Ted Nelson, in *The Crafting of Media*, distinguishes the notion of the computer as a black box (programmed to execute predetermined functions) from the universal machine (adapted to several contexts). He conceives of using technology in such a way that varied functions can co-exist and operate on the same platform. His tool for reading the catalogue through computerized files is a good example of semantic flexibility. Titled *Labyrinth*, this multiform device, a precursor of hypertext, allowed users to consult artist files and other computerized documents while sidestepping the linear path imposed by the pagination of the book. This unique trail was then stored in the computer's memory and printed out at the user's request to reveal his or her journey through the files (and the exhibition).) <http://www.fondation-langlois.org/html/e/page.php?NumPage=541>

- 1970 \_\_ **George Meek** (The American George Meek, born in Springfield, Ohio, imagined that the traditional devices used so far, were not really suitable. He believed that if higher frequencies were used as a bridge from our space to other spaces, higher spirit communicators would be able to contact us. He invested in a series of prototypes called Mark I, Mark II... until Mark X. The prototype Mark I became ready in 1973. The only ones to function were Mark III and IV, when for the first time in history, a full dialog with another Dimension was achieved. Though, as Sarah Estep has suggested, apparently these devices required some special human energy to function, since she was invited by G. Meek to test it, and the results she got were not similar to those obtained by William O'Neil, the partner of Meek, and an excellent sensitive. In spite of Meek's effort, the contacts ceased in the Fourth prototype. For you to have an idea of how these contacts sounded, we will listen to a dialog between William O'Neil and his deceased partner Doctor Müller: (AUDIO) Doc Muller: -"Turn that camera off" Bill: -"Turn the camera off? Well sir.. I'd like to record this, so that, if you should tell me something, sir, and I forget, and I am trying to remember, I can always play this back!" Doc Müller: -"I said turn that damned camera off!" Bill: "Well, Doc Müller..." Doc Müller: -"Turn that camera off or our conversation is at the end. Do you understand me William?" Bill: -"All right sir!". ["BRIEF HISTORY OF ITC", Sonia Rinaldi in the Psychotronics Congress, in Ohio, USA]. In 1973, spiritual researchers George and Jeannette Meek met a psychically gifted man, William O'Neil, who could see and hear spirits. The Meeks provided funding and direction for a ground-breaking project of advanced spirit communication, and O'Neil provided the necessary psychic skills and electronics know-how. O'Neil recruited several of his spirit friends into the project. One of his invisible colleagues was the spirit of Dr George Jeffries Mueller, a deceased university professor and NASA (National Aeronautic and Space Administration) scientist who simply appeared in O'Neil's living room one day as a semi-materialized spirit, and announced that he was there to assist in the project of Meek and O'Neil. It became a rather astonishing collaboration between dimensions: Doc Mueller in spirit helping Bill O'Neil on Earth design a new piece of electromagnetic equipment that would convert spirit voices into audible voices. Appropriately christened *Spiricom*, the new device was a set of tone generators and frequency generators that emitted 13 tones spanning the range of the adult male voice. [Mark H. Macy, *The Phenomenal History and Future of ITC Research*] [http://www.worlditc.org/a\\_02\\_macy\\_itc\\_history.htm](http://www.worlditc.org/a_02_macy_itc_history.htm)

- 1970 \_\_ **New York – Sound Space #1, #2, #3, #4, #5**, Bernhard Leitner (#1 Bryant Park enclosed by travelling sound. Very high pitch, every 15 seconds, time for one around-the-block-line of sound : 3 sec. / #2 Broadway between 26th and 51st Streets. Low and intense pitch travelling uptown, duration 2 minutes. / #3 Six blocks between 5th and Park Avenue. Sound travelling in both directions, frequency : every 3 min., duration 7 sec. / #4 Rescaling Lexington Ave from 34th to 65th Street. Sound – 3 tone composition – moving downtown, duration 45 sec., every 5 min. / #5 42nd Street (River to River). Low pitch moving W->East, high pitch on avenues N->S interceptions, duration 1 hour.) <http://www.bernahrdleitner.at/>

- 1970 \_\_ **Presque Rien(s) (1967-2001)**, Luc Ferrari (Presque Rien means 'Almost Nothing'. It is a series of field recordings, which have been treated electronically by Ferrari - in some cases only slightly, in other cases intensively. The first of the series, "Presque Rien n° 1, le lever du jour au bord de la mer", was recorded in 1970 in a tiny fishing village on the Dalmatian coast of Croatia (in those days part of the Socialist Federal Republic of Yugoslavia). In an interview for the Paris Transatlantic magazine, Ferrari recounts: "I was in this Dalmatian fishing village, and our bedroom window looked out on a tiny harbour of fishing boats, in an inlet

*in the hills, almost surrounded by hills-which gave it an extraordinary acoustic. It was very quiet. At night the silence woke me up-that silence we forget when we live in a city. I heard this silence which, little by little, began to be embellished... It was amazing. I started recording at night, always at the same time when I woke up, about 3 or 4am, and I recorded until about 6am. I had a lot of tapes! And then I hit upon an idea-I recorded those sounds which repeated every day: the first fisherman passing by same time every day with his bicycle, the first hen, the first donkey, and then the lorry which left at 6am to the port to pick up people arriving on the boat. Events determined by society. And then the composer plays!". Ferrari takes a more understated approach: 'Presque Rien N° 1' sounds more like a chance meeting of John Cages 4'33'' and the Dalmatian sea coast on a tape recorder than an aestheticizing soundscape. Hearing it, it is easy to forget it was edited from a whole day of recorded sound, it is easy to forget that the work is a composition in the traditional sense of the world, i.e. sound organized by conscious interventions (editing) by the composer - even though no 'musical' sound is apparent. As a postscriptum, I must add that in later parts of the 'Presque Rien' series, Ferrari as a composer does not hide himself as much as he does in the first. For example, on 'Presque Rien N° 2, ainsi continue la nuit dans ma tête multiple' (a 1977 field recording made in Tuchan, a tiny village in Corbières, France), Ferrari's voice is both part of the recording and simultaneously commenting on it; both a diegetic and a non-diegetic sound. In the last movement of this piece, there are clear, musical interventions in the sound recording which sharply and dramatically highlight the sound of thunder on the field recording. Much the same goes for later 'Presque Riens'. [Valter]. Presque Rien No. 4 was completed in 1998 and here receives its American premiere. It is a tape work with a ground bass ambient style. Throughout the length of the piece one hears a recording of Ferrari and his longtime collaborator and wife, Brunhild Meyer-Ferrari, walking in the Italian town of Ventemillia, just across the French border near Monte Carlo. They slowly ascend a steep hill into the town, recording all the way whatever they encounter. Overlaid on this pedestrian activity is a panoply of digital signal processing of individual moments and overlays of other unrelated sounds which form the musical construct of the piece. [Charles Amirkhanian]) (Avec "Presque-Rien n°1", inscrite dans le genre des musiques pour bande seule (une dénomination plus pragmatique que celle de "musique concrète"), datée de 1970, Ferrari construit de toutes pièces un paysage sonore. À l'audition, il s'agit d'une excursion matinale dans un port méditerranéen. Un "pastel sonore" en quelque sorte. Luc Ferrari dit : « Il y a un paysage, un seul, et un temps donné, et la radicalité de la chose c'est que c'est un seul endroit et c'est un moment de la journée déterminée, le lever du jour. Ce qui est bien dans les "Presque Riens" ce sont des choses entendues qui se font remarquer: finalement il y a un moment où les sons se font remarquer plus que normal ». Il y a un parallèle entre cette remarque et l'attitude cagienne : le compositeur trouve le moyen de se retirer, discrètement. En réalité, il s'agit d'un simulacre : tout est fictif. Les sons ont été enregistrés sur une large échelle temporelle, remontés méticuleusement, assemblés en un tout cohérent. « Après j'ai trouvé un truc – j'ai choisi les sons qui se répétaient chaque matin... Le premier pêcheur qui passait toujours à la même heure, avec sa bicyclette... La première poule, le premier âne, et puis ce camion qui partait à 6h du matin au grand port pour chercher des passagers du bateau qui arrive. Les événements imposés par la société. Après c'est le compositeur qui joue ! ». L'articulation des constituants se fait de manière fluide, pourtant à l'écoute certains détails nous frappent : telle voix qui se répète, les cigales qui naissent subitement... tout est parfait (trop parfait ?), et coïncide pour construire une ébauche de narration. Luc Ferrari appelle ces assemblages de phonographies des "diapositives sonores". Avec Presque rien n°2 (1977), Luc Ferrari s'attache aussi à rendre un paysage sonore, mais cette fois-ci l'illusion d'un lieu perçu à travers la bande, le factice d'un reportage neutre, laisse place à une dramatisation de l'écoute, la mise en scène du preneur de son / compositeur lui-même, qui prend le rôle d'un témoin ou d'un confident. Dans cette pièce, un paysage sonore "extérieur", celui de la prise de son qui se veut objectif, une retranscription sonore de la nuit campagnarde, est exploré par un récitant. De manière quasi-psychanalytique, le paysage intérieur va perturber, transformer la perception de l'environnement en une véritable dramaturgie. La voix de Ferrari, dans cette pièce, explique : « J'essaie de cerner et de pénétrer un paysage, c'est pas facile ». La série des Presque rien est en quelque sorte la mise en commun d'une expérience : celle du compositeur qui utilise la phonographie pour rendre compte d'une écoute. Nous avons supposé que la phonographie d'un paysage sonore représente un paysage autant que une certaine manière de l'entendre. Mais ici, Luc Ferrari va plus loin il recompose avec des phonographies (des enregistrements) un nouveau paysage sonore, fictionnel mais dont se dégage une unité, un certain "esprit", et par là compose aussi une écoute de ce paysage inventé. [Yannick Dauby]) <http://www.lucferrari.org>*

- 1970 \_\_ **Quad Systems** (Quadraphonic (or quadrophonic) sound – the most-widely-used early term for what is now called 4.0 stereo – uses four channels in which speakers are positioned at the four corners of the listening space, reproducing signals that are (wholly or in part) independent of one another. Quadraphonic audio was one of the earliest consumer offerings in surround sound. It was a commercial failure due to many technical problems, which were solved too late to save the technology from disaster. The format was more expensive than standard two-channel stereo. It also required extra speakers, and suffered from lack of a standard format for LP records. The rise of home theatre products in the late 1980s and early 1990s brought multi-channel recording formats back to the forefront, although in a completely different form. Quite a few quadraphonic recordings were made before its demise, and some of these recordings were later reissued on CD in Dolby Surround. Introduced to the American market in September 1970 as the Quad-8 or Quadraphonic 8-Track, "Quad" (as it became known) did not remain restricted to the discrete channel format used in the Quad-8. It appeared in several different and largely incompatible formats on different media. Quadraphonic audio could be obtained from vinyl records, eight track tapes, and reel-to-reel tapes. Quadraphonic audio on vinyl records was problematic because some systems were based on discrete sound channels (allowing for full separation of the four original recorded channels, albeit with restricted high-frequency response and reduced record life), while others were matrix encoded into two tracks that would also play back in standard,

two-channel, stereo on normal audio equipment (so-called 'compatible' quadraphonic). There were some experiments done with radio broadcasts (e.g. a Cliff Richard concert by the BBC), but they were short-lived. One of the longest-lived radio broadcasts was WQSR-FM "Quad 102 1/2" in Sarasota, Florida. Throughout most of the 1970s this station broadcast a signal which could be tuned as two separate stations with conventional stereo receivers. In addition, San Francisco classical music station KKHI broadcast the San Francisco Opera in 'compatible' (that is, matrix encoded) quadraphonic format during the 1970s.) <http://en.wikipedia.org/wiki/Quadraphonic>

- **1970** \_\_ **Radical Software** (Radical Software was the name used for an early video journal started in 1970 in New York City; at the time this referred to the content of information. The founders of Radical Software video journal were Phyllis Gershuny and Beryl Korot. The video journal was begun with a questionnaire sent to a wide variety of interested people. The first issue was a creative editing of the answers to the questionnaire plus some additional special articles. The most outstanding element of Radical Software video journal was the style and emphasis used in editing. The content itself was a call to pay attention to the way information itself is disseminated. And it was a call to encourage a grassroots involvement in creating an information environment exclusive of broadcast and corporate media. It became immediately important and popular as it grasped fully what a lot of people had been concerned with and thinking about; giving its introduction a synchronicity of the ideas of the day. Radical Software's focus on early politically and socially concerned videos gave way to video art, which is where it remains today. The historic video magazine Radical Software was started by Beryl Korot, Phyllis Gershuny, and Ira Schneider and first appeared in Spring of 1970, soon after low-cost portable video equipment became available to artists and other potential videomakers. Issues included contributions by Nam June Paik, Douglas Davis, Paul Ryan, Frank Gillette, Beryl Korot, Charles Bensinger, Ira Schneider, Ann Tyng, R. Buckminster Fuller, Gregory Bateson, Gene Youngblood, Parry Teasdale, Ant Farm, and many others. Eleven issues of Radical Software were published from 1970 to 1974, first by the Raindance Corporation and then by the Raindance Foundation with Gordon and Breach Publishers. The late 60s and early 70s was a time of major social upheaval - and like most such periods, a time not fully understood by those living it. One thing the team did understand was that the development and increasing availability of revolutionary new video hardware could play an important role in accelerating the social change they desired. As Marcuseans, they understood that change would only occur by increasing the level of social pressure. They understood, through their reading of Buckminster Fuller, Gregory Bateson and Marshall McLuhan, that what needed changing was not the machines, but the instructions used to operate them. The social implications were evident: radical hardware was fine but what was critically needed was Radical Software. The idea for this journal came about in the fall of 1969, right after the Woodstock festival. The Viet Nam war was raging; a previously powerless and voiceless generation in the US and abroad found that they could no longer trust their governments or the newspapers and television networks to communicate any truths except those in service of the prevailing order. The killing of Martin Luther King exacerbated the feeling that race war seemed inevitable. The toxic Nixon presidency amplified feelings of alienation and despair, but also compelled many to imagine alternatives to the soulless, murderous culture in which they believed they found themselves. The urge to create new cultural structures was a genuine attempt to help lead a generation out of the wasteland in which many felt entrapped. This assortment of artists, writers, musicians, and filmmakers shared a vision. They imagined a social order in which new forms of community might be formed and maintained by the development of an interlocking network of shared intelligence, a concept embodied in the thought of Teilhard de Chardin, a Jesuit priest, paleontologist, and philosopher. Gene Youngblood called this concept the Videosphere. They imagined a world in which the contest of ideas and values could take place freely and openly, outside of the existing institutional framework and in active opposition to the worldview constructed and maintained by broadcast commercial TV. They proposed not only a re-ordered power structure, but also a new information order in which the very idea of hierarchical power structure might be transformed or even eliminated. This was five years before the notion of the new world information order sought to balance first and third world consumption and production of news and other forms of mass communications. They imagined self-healing communities in which aesthetic passion, and the love of knowledge would replace the alienating forces of spectacular capital. They imagined a world in which poetic forms would serve as an antidote to the continuous barrage of commercial propaganda. Nam June Paik, would note, paraphrasing Hegel in Radical Software's first issue, that, "What is more educational is most aesthetic and what is most aesthetic is most educational." For them, Radical Software would provide a platform for the exploration of alternatives to the dominant mass media structure, and would do so in a manner that mixed the subjective style of the new journalism with the non-precious, self-published format of the Whole Earth Catalog. Readers would be encouraged to copy anything and disseminate it as they saw fit. Radical Software would not present itself self-consciously as an art magazine, but rather as a form of social activism and environmental sculpture. It would be a forum, a video craft how-to-magazine for the fearless, a rudimentary marketing and distribution system for the burgeoning community, and a journal of philosophical speculation and political opinion for all who shared their vision. (...) But even if they did not read every sign aright, there were many that they did. Following Fuller's lead they saw communications and media as ecological issues, and made media ecology a frequent topic in Radical Software, imposing a broad theoretical perspective on what could easily have been seen as a purely political issue. They explored the impact of satellite-borne, real-time communications, and the Fullertian recognition that new larger media frames of reference would contain all older forms, transforming them and allowing them to be seen as the basis for the production of art. (...) In fact, most of the issues that characterized today's debates on the proper place and impact of new media in our lives found some form of expression in the pages of Radical Software. (...) Have we managed a balance between corporate and personal forms of mass communication? Does the issue of

*the digital divide indicate that we have still a way to go to truly give voice to the world's still voiceless poor? Do we still privilege one-way communication structures, or have we truly embraced the two-way and multi-path potential of media untethered to the implicit power relationships of old media structures? All these issues, raised and debated, were the locus of critical content that was Radical Software. [David A. Ross] <http://www.radicalsoftware.org>*

- **1970** \_\_ **The Senster**, Edward Ihnatowicz (Edward Ihnatowicz created the Senster in 1970. The Senster responded to people's voices and their movements, which it detected by means of radar, and was the first sculpture to be controlled by a computer, according to *New Scientist* May 4, 1972. From 1970 to 1974, close to the Entrance of the Evoluon in Eindhoven was a magnificent robot, a cybernetic sculpture built by Edward Ihnatowicz. It was the first computer controlled piece of art. The Senster, commissioned by the electronics giant, Philips, for their permanent showplace, the Evoluon, in Eindhoven, was a much bigger and more ambitious piece of work than SAM (1968). In addition to responding to people's voices, the Senster would move toward sounds, but would shy away from loud sounds, or if you tried to touch it. It used four microphones and two radar horns to see and hear its surroundings. Its size - it was over 15 feet (4 m) long and could reach as high into the air - made the use of aluminium castings inappropriate, so it was welded out of steel tubing, with the castings employed only in the more intricate microphone positioning mechanism. Its behaviour, controlled by a computer, was much more subtle than SAM's but still fairly simple. The microphones would locate the direction of any predominant sound and home in on it, rather like SAM but much more efficiently, and the rest of the structure would follow them in stages if the sound persisted. Sudden movements or loud noises would make it shy away. The complicated acoustics of the hall and the completely unpredictable behaviour of the public made the Senster's movements seem a lot more sophisticated than they actually were. It soon became obvious that it was that behaviour and not anything in its appearance which was responsible for the impact which the Senster undoubtedly had on the audience. The Senster was controlled by the Philips P9201 computer. It was a 16 bit system with 8k core memory and paper tape for the external memory. The P9201 is actually a re-badged Honeywell DDP-416, which is a stripped down DDP-516. It's a 16-bit machine, in fact it's code compatible with the DDP-116 which was the first ever 16-bit mini-computer. The program to drive the Senster was written by Edward Ihnatowicz himself, but Peter Lundahl, the Evoluon sysadmin, added many refinements to the software over the years, so that ultimately the Senster reacted almost lifelike to its surroundings.) <http://www.senster.com> <http://www.evoluon.org>

- **1970** \_\_ « **The Wired Nation** », Ralph Lee Smith, *The Nation*, May 18, 1970 ("As cable systems are installed in major U.S. cities and metropolitan areas, the stage is being set for a communications revolution—a revolution that some experts call "The Wired Nation." In addition to the telephone and to the radio and television programs now available, there can come into homes and into business places audio, video and facsimile transmissions that will provide newspapers, mail service, banking and shipping facilities, data from libraries and other storage centers, school curricula and other forms of information too numerous to specify. In short, every home and office will contain a communications center of a breadth and flexibility to influence every aspect of private and community life. (...) In the 1960s, the nation provided large federal subsidies for a new interstate highway system to facilitate and modernize the flow of automotive traffic in the United States. In the 1970s it should make a similar national commitment for an electronic highway system, to facilitate the exchange of information and ideas.")

## 1971

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- **1971** \_\_ **ARPANET** (23 computer hosts are connected by the Net (Zakon 1998). The ARPANET begins the year with 14 nodes in operation. BBN modifies and streamlines the IMP design so it can be moved to a less cumbersome platform than the DDP-516. BBN also develops a new platform, called a Terminal Interface Processor (TIP) which is capable of supporting input from multiple hosts or terminals. The Network Working Group completes the Telnet protocol and makes progress on the file transfer protocol (FTP) standard. At the end of the year, the ARPANET contains 19 nodes as planned. Many small projects are carried out across the new network, including the demonstration of an aircraft-carrier landing simulator. However, the overall traffic is far lighter than the network's capacity. Something needs to stimulate the kind of collaborative and interactive atmosphere consistent with the original vision. Larry Roberts and Bob Kahn decide that it is time for a public demonstration of the ARPANET. They choose to hold this demonstration at the International Conference on Computer Communication (ICCC) to be held in Washington, DC, in October 1972.)

- **1971** \_\_ « **The Art of Existence. Three Extra-Visual Artists : Works in Process** », Robert Morris (In "The Art of Existence," Morris deftly and humorously invents three artists, who in their movement away from object-art and toward the extra-visual, reveal the limits and conditions of modern sculpture. Morris published his most duchampian text. Superficially a description of a number of visits he made to three young West Coast 'environmental' artists, the narrative documents their work and Morris's perceptual and emotional response as he experiences various forms of sensory assault from the 'dampness and ... slight chill' of

Marvin Blaine's underground passage, designed to maximize the visual effect of the summer solstice, to Jason Taub's sound transmissions, 'similar to what one experiences when one hears a ringing in one's ears', ending with a 'retrospective gassing' in the 'Gas Mixing and Compression Chamber' of the manically sinister Robert Dayton. Interweaving documentary and fictional narratives styles, Morris's spurious account has sufficient detail and proximity to existing artists and works to function as an ironic meta-text on the dominant theme and ideologies of post-Minimalist art. These include the status of the object 'qua' object, the claims for art as a scientific-like inquiry, (there was much interest in Thomas Kuhn's book 'The Structure of Scientific Revolution'), art as shamanistic ritual, or the experimental self as a body open to the physical world. That Morris himself touched upon all of these themes in his practice and theory was not an impediment to the process of critical reflection and ironic subversion. If in these fictional encounters he was projecting himself into a number of imaginary haptic situations, then the retrospective provided the context for their actual realization in the three sections of his installation. On reflection, the exhibition would appear to have allowed Morris the opportunity to combine a number of practical and theoretical interests : his commitment to the social and political character of art-making, a growing scepticism towards the museum or gallery as a neutral space for the encounter between spectator and work, an emphasis upon the semiological structure of the art system with the object functioning as a sign of value in the reception and circulation of meanings, and a shift from the making of art as a metaphor for other (alienated) forms of labour to art as play - a metonym for the embodied subject in a tactile and libidinal relation to the world. [Jon Bird - Minding the Body : Robert Morris's 1971 Tate Gallery Retrospective] *The Art of Existence* was published in *Artforum*, New York, IX, n°5, janvier 1971, pp. 28-33) ("Morris descreve as obras do californiano Jason Taub, que trabalha com radiofrequências e seus impactos extra-sonoros. Auto-referindo-se como artista, suas obras compõem-se de câmeras em que o visitante é exposto a ondas sonoras tendo sensações físicas mais ou menos agradáveis (curiosamente, o sobrenome Taub significa "surdo" em alemão). Percebe-se que esses artistas – Marvin Blaine, que trabalha com Land Art, Jason Taub, que trabalha com arte ambiental, e Robert Dayton, espécie de "cientista-gênio-maluco" – são amplamente descritos, assim como suas obras que proporcionam o tipo de experiência definida na primeira parte do texto. E como descrever obras que só podem ser apreendidas por meio da experiência direta?" [Camila Santoro Maroja - TECENDO O LABIRINTO - O trabalho de Robert Morris nas décadas de 1960-1970])

- **1971** \_\_ **Corticalart**, Roger Lafosse, Pierre Henry (*Live improvisations recorded Feb. 15-21, 1971 at Musée d'art moderne de la ville de Paris (France) by Pierre Henry from Roger Lafosse's Corticalart device, allowing to transcribe the electric cortex waves in electronic signals for further raw manipulations. In France, scientist Roger Lafosse was doing research into brainwave systems and proposed, along with musique concrète pioneer Pierre Henry, a sophisticated live performance system known as Corticalart (art from the cerebral cortex). In a series of free performances done in 1971, along with generated electronic sounds, one saw a television image of Henry in dark sunglasses with electrodes hanging from his head, projected so that the content of his brainwaves changed the colour of the image according to his brainwave patterns. [Andrew Brouse, A Young Person's Guide to Brainwave Music] (Le Corticalart (littéralement : l'art du cortex) est un appareil imaginé et mis au point par le chercheur et musicien Roger Lafosse, pionnier de l'action culturelle d'avant-garde, fondateur, directeur et animateur du turbulent festival Sigma de Bordeaux. Le Corticalart est composé d'un dispositif complexe destiné à traduire les ondes électriques du cerveau en sons électroniques. Le système d'électrodes semblable à celui employé dans l'électro-encéphalogramme est fixé directement en contact avec le cuir chevelu de Pierre Henry. Ces électrodes captent alors trois sortes de signaux électriques traduisant l'activité caractéristique de certaines zones du cortex cérébral. Les ondes Alpha sur l'arrière du crâne (état de relaxation, de détente, de repos), les ondes Bêta sur le devant du crâne (état d'éveil, d'attention, d'activité) et les signaux de l'arte fact liés à l'activité du globe oculaire. Ces différents signaux électriques de très faible voltage étant reliés à sept générateurs de sons électroniques, Pierre Henry devait intervenir manuellement sous forme d'improvisations musicales, grâce à des variations, manipulations et amplifications diverses. Etrange système où l'interprète est également l'élément de base et la matière sonore des compositions. Des enregistrements furent réalisés en direct lors des concerts donnés au Musée d'Art Moderne de la ville de Paris entre le 15 et le 21 février 1971 et attestent de l'intérêt de Pierre Henry pour l'événementiel, le cérémonial et la démesure. Voici, les propos de Michel Chion concernant les premières séances de 1971 au Musée d'art moderne de la ville de Paris : "La première expérience du Corticalart amène beaucoup de public au musée d'Art moderne, dans ses séances gratuites. On y voit un Pierre Henry titubant, concentré, des électrodes sur la tête, des lunettes noires sur les yeux, entrer dans une cage grillagée et s'activer sur ses appareils. Un écran de télévision retransmet l'image de son visage, teinté en bleu pour les ondes Alpha, en rouge pour les ondes Bêta, avec les nuances intermédiaires. Et ce sont de grandes improvisations rythmiques, sur un flux sonore bouillant et obstiné.") <http://sonhors.free.fr/kronik/corticalart.htm> <http://www.mindmodulations.com/mindmods/general/a-young-persons-guide-to-brainwave-music.html>*

- **1971** \_\_ **Kenbak-1** (*The Kenbak-1 is considered by the Computer History Museum and the American Computer Museum to be the world's first "personal computer" (however, the Datapoint 2200 may have been invented first, sold first, or both; the exact dates have not been established). Little information is recorded regarding the Kenbak-1, as around only 40 machines were ever built and sold. It was designed and invented by John Blankenbaker of Kenbak Corporation in 1970, and was first sold in early 1971. Since the Kenbak-1 was invented before the first microprocessor, the machine didn't have a one-chip CPU but instead was based purely on discrete TTL chips. The 8-bit machine offered 256 bytes of memory (≈1/4000 megabyte). The instruction cycle time was 1 microsecond (equivalent to an instruction clock speed of 1 Mhz). To use the machine, one had to program it with a series of buttons*

and switches, using pure machine code. Output consisted of a series of lights.) <http://www.kenbak-1.net> <http://www.oldcomputers.net>

- **1971** \_\_ **NET Manifesto**, Jaroslaw Kozłowski and Andrzej Kostolowski (Piotr Rypson, a Polish artist, states : “Alternative to the existing establishment naturally meant something fundamentally different than in the West : there could have been no discussion or strategy aimed against the art market and its institutions, since no real market of that kind existed (thus the point of departure of Conceptual Art in USA and Western Europe has been largely missed in Eastern Europe in the late sixties and seventies). Instead of capitalist reality - and the art object-as-commodity-discourse - it was the communist state and communist ideology that provided the framework for most of [sic] alternative art practices”. One manner in which Polish artists challenged the state through the establishment of alternative galleries. Starting in the mid-1960s, these so-called “authors’ galleries” not only existed to challenge communist ideology but served as bridges in networking with other like-minded artists both nationally and internationally. It is from this milieu that an important manifesto was published that outlined networking for alternative artists. Titled NET, it was written by Jaroslaw Kozłowski and Andrzej Kostolowski, respectively a Polish director of an alternative gallery and a critic. Published in 1971, it was reissued in 1972 and mailed to 189 international artists who were “invited to be co-curators of the NET”. It states : 1/ A NET is open and uncommercial, 2/ Points of NET are : private homes, studios and any other places where propositions are articulated, 3/ These propositions are presented to persons interested in them, 4/ Propositions may be accompanied by editions in form of prints, tapes, slides, photographs, catalogues, books, films, handbills, letters, manuscripts, etc., 5/ NET has no central point and any coordination, 6/ Points of NET are everywhere, 7/ All points of NET are in contact among themselves and exchange concepts, propositions, projects and other forms of articulation, 8/ The idea of NET is not new and in this moment it stops to be an authorized idea, 9/ NET can be arbitrarily developed and copied. NET’s insistence upon a noncommodified exchange, and its promotion of an antihierarchical communication model that positioned networking as a central nature of its open strategy, marks it as a defining statement in the search for new models in the construction of alternative cultures. [Stephen Perkins]. The creation of an unrestricted dialogue space, uncontrolled, anarchic growth, risk-taking and confidence in place of institutional rituals were the principles of Andrzej Kostolowski and Jaroslaw Kozłowski’s project SIEĆ / NET. In 1972, over three hundred artists, art critics in Poland, Eastern and Western Europe received a letter with the NET manifesto encouraging for cooperation and unrestricted exchange of artistic facts. Expanding with the use of mail, anti-institutional or maybe rather ainstitutional NET could be formed and developed in a uncontrolled manner - grow like a plant, unpredictable and random, eluding any outside control. The text of the manifesto, like an office document, was not signed but rather undersigned by its authors, who sending it worldwide relinquished any copyrights as to their project. The negation of authorship came along with rejection of any center: NET was to function as a perfectly homogenic system, where every element is equally important, autonomous, bearing the same potential. Everybody joining the project could become a co-creator, and the artistic propositions existing within the NET could be presented anywhere in the world. The NET in its total rejection of any hierarchy enabled a direct and disinterested artistic contact, a dialogue, confrontation of attitudes, free flow of ideas. The NET, as Piotr Piotrowski observes, became ground for opening the ainstitutional Akumulatory 2 gallery in 1973. Akumulatory 2 gallery, a platform of polemics between artists associated with conceptualism, confronted the works of Central and Western European artists functioning against the Iron Curtain, “in defiance of the artistic institution and market system, almost on the exclusive basis of private contacts.” [Luiza Nader) [http://www.culture.pl/en/culture/artykuly/es\\_sztuka\\_konceptualna](http://www.culture.pl/en/culture/artykuly/es_sztuka_konceptualna)

- **1971** \_\_ **Participation in a work**, Guy Brett (Guy Brett in The Times 11th of May :” The invitation to “participate” in a work of art is an invitation to explore sensory experiences, but the implications of participation, the relationships it creates, obviously spread out into life in general. It places art in a social context. And it makes what happens in an exhibition, even if it takes a wrong turning and becomes destructive”.)

- **1971** \_\_ **Konstantin Raudive** (In 1971, the chief engineers of Pye Records Ltd. decided to do a controlled experiment with Konstantin Raudive. They invited him to their sound lab and installed special equipment to block out any radio and television signals. They would not allow Raudive to touch any of the equipment. Raudive used one tape recorder which was monitored by a control tape recorder. All he could do was speak into a microphone. They taped Raudive’s voice for eighteen minutes and none of the experimenters heard any other sounds. But when the scientists played back the tape, to their amazement, they heard over two hundred voices on it. Experimenting in the electronic voice phenomenon (EVP) became very popular in Europe in the 60’s and 70’s. Many individuals and groups collected voices over their home tape recorders. [Mark H. Macy, The Phenomenal History and Future of ITC Research])

- **1971** \_\_ « **Signature, Event, Context** », Jacques Derrida, Communication au Congrès international des Sociétés de philosophie de langue française (Montréal, août 1971) (“We also speak of different or remote places communicating with each other by means of a passage or opening. What takes place, in this sense, what is transmitted, communicated, does not involve phenomena of meaning or signification. In such cases we are dealing neither with a semantic or conceptual content, nor with a semiotic operation, and even less with a linguistic exchange. (...) One must even acknowledge it as a powerful means of

communication which extends very far, if not infinitely, the field of oral or gestural communication. This is banally self-evident, and agreement on the matter seems easy. I will not describe all the modes of this extension in time and in space. On the other hand I will pause over the value of extension to which I have just had recourse. When we say that writing extends the field and powers of a locutionary or gestural communication, are we not presupposing a kind of homogenous space of communication? The range of the voice or of gesture certainly appears to encounter a factual limit here, an empirical boundary in the form of space and time; and writing, within the same time, within the same space, manages to loosen the limits, to open the same field to a much greater range. Meaning, the content of the semantic message, is thus transmitted, communicated, by different means, by technically more powerful mediations, over a much greater distance, but within a milieu that fundamentally continuous and equal to itself, within a homogenous element across which the unity and integrity of meaning is not affected in an essential way. Here, all affection is accidental. (...) Having placed in evidence the motif of the economic, homogenous, and mechanical reduction, let us now come back to the notion of absence that I noted in Condillac's text. How is it determined? 1. First, it is the absence of the addressee. One writes in order to communicate something to those who are absent. The absence of the sender, the addressor, from the marks that he abandons, which are cut off from him and continue to produce effects beyond his presence and beyond the present actuality of his meaning, that is, beyond his life itself, this absence, which however belongs to the structure of all writing and I will add, further on, of all language in general this absence is never examined by Condillac. 2. The absence of which Condillac speaks is determined in the most classical fashion as a continuous modification, a progressive extenuation of presence. Representation regularly supplements presence. (...) A written sign is proffered in the absence of the addressee. How is this absence to be qualified? One might say that at the moment when I write, the addressee may be absent from my field of present perception. But is not this absence only a presence that is distant, delayed, or in one form or another idealized in its representation? It does not seem so, or at very least this distance, division, delay, *différence* must be capable of being brought to a certain absolute degree of absence for the structure of writing, supposing that writing exists, to be constituted. It is here that *différence* as writing could no longer (be) an (ontological) modification of presence. My "written communication" must, if you will, remain legible despite the absolute appearance of every determined addressee in general for it to function as writing, that is, for it to be legible. It must be repeatable in the absolute absence of the addressee or of the empirically determinable set of addressees. This iterability (iter, once again, comes from itara, other in Sanskrit, and everything that follows may be read as the exploitation of the logic which links repetition to alterity), structures the mark of writing itself, and does so moreover for no matter what type of writing (pictographic, hieroglyphic, ideographic, phonetic, alphabetic, to use the old categories). A writing that was not structurally legible beyond the death of the addressee would not be writing.") (Est-il assuré qu'au mot de communication corresponde un concept unique, univoque, - rigoureusement maîtrisable et transmissible: communicable? Selon une étrange figure du discours, on doit donc se demander d'abord si le mot ou le signifiant «communication» communique un contenu déterminé, un sens identifiable, une valeur descriptive. Mais, pour articuler et proposer cette question, il a déjà fallu que j'anticipe sur le sens du mot communication: j'ai dû prédéterminer la communication comme le véhicule, le transport ou le lieu de passage d'un sens et d'un sens un. Si communication avait plusieurs sens et si telle pluralité ne se laissait pas réduire, il ne serait pas d'emblée justifié de définir la communication comme la transmission d'un sens, à supposer même que nous soyons en état de nous entendre sur chacun de ces mots (transmission, sens, etc. ). Or le mot communication, que rien ne nous autorise initialement à négliger en tant que mot et à appauvrir en tant que mot polysémique, ouvre un champ sémantique qui précisément ne se limite pas à la sémantique, à la sémiotique, encore moins à la linguistique. Il appartient au champ sémantique du mot communication qu'il désigne aussi des mouvements non sémantiques. Ici un recours au moins provisoire au langage ordinaire et aux équivoques de la langue naturelle nous enseigne qu'on peut par exemple communiquer un mouvement ou qu'un ébranlement, un choc, un déplacement de force peut être communiqué — entendons, propagé, transmis. On dit aussi que des lieux différents ou éloignés peuvent communiquer entre eux par tel passage ou telle ouverture. Ce qui se passe alors, ce qui est transmis, communiqué, ce ne sont pas des phénomènes de sens ou de signification. On n'a affaire dans ces cas ni à un contenu sémantique ou conceptuel, ni à une opération sémiotique, encore moins à un échange linguistique. Y a-t-il un concept rigoureux et scientifique du contexte? La notion de contexte n'abrite-t-elle pas, derrière une certaine confusion, des pré-suppositions philosophiques très déterminées? Pour le dire dès maintenant de la façon la plus sommaire, je voudrais démontrer pourquoi un contexte n'est jamais absolument déterminable ou plutôt en quoi sa détermination n'est jamais assurée ou saturée. Cette non-saturation structurelle aurait pour double effet: 1) de marquer l'insuffisance théorique du concept courant de contexte (linguistique ou non linguistique) tel qu'il est reçu dans de nombreux domaines de recherches, avec tous les concepts auxquels il est systématiquement associé; 2) de rendre nécessaires une certaine généralisation et un certain déplacement du concept d'écriture. Celui-ci ne saurait plus dès lors être compris sous la catégorie de communication, si du moins on l'entend au sens restreint de transmission du sens. Inversement, c'est dans le champ général de l'écriture ainsi définie que les effets de communication sémantique pourront être déterminés comme effets particuliers, secondaires, inscrits, supplémentaires. Si l'on reçoit la notion d'écriture dans son acception courante — ce qui ne veut surtout pas dire innocente, primitive ou naturelle —, il faut bien y voir un moyen de communication. On doit même y reconnaître un puissant moyen de communication qui étend très loin, sinon infiniment, le champ de la communication orale ou gestuelle. C'est là une sorte d'évidence banale sur laquelle l'accord semble facile. Je ne décrirai pas tous les modes de cette extension dans le temps et dans l'espace. Je m'arrêterai en revanche sur cette valeur d'extension à laquelle je viens d'avoir recours. Dire que l'écriture étend le champ et les pouvoirs d'une communication locutoire ou gestuelle, n'est-ce pas presupposer une sorte d'espace homogène de la communication? La portée de la voix ou du geste y rencontreraient certes une limite factuelle, une borne empirique dans la forme de

*l'espace et du temps; et l'écriture viendrait, dans le même temps, dans le même espace, desserrer les limites, ouvrir le même champ à une très longue portée. Le sens, le contenu du message sémantique serait transmis, communiqué, par des moyens différents, des médiations techniquement plus puissantes, à une distance beaucoup plus grande, mais dans un milieu foncièrement continu et égal à lui-même, dans un élément homogène à travers lequel l'unité, l'intégrité du sens ne serait pas essentiellement affectée. Toute affection ici serait accidentelle. (...) Ayant mis en évidence ce motif de la réduction économique, homogène et mécanique, revenons maintenant sur cette notion d'absence que j'ai marquée au passage dans le texte de Condillac. Comment y est-elle déterminée? 1) Elle est d'abord l'absence du destinataire. On écrit pour communiquer quelque chose à des absents. L'absence de l'émetteur, du destinataire, à la marque qu'il abandonne, qui se coupe de lui et continue de produire des effets au-delà de sa présence et de l'actualité présente de son vouloir-dire, voire au-delà de sa vie même, cette absence qui appartient pourtant à la structure de toute écriture — et, j'ajouterais plus loin, de tout langage en général —, cette absence n'est pas interrogée par Condillac. 2) L'absence dont parle Condillac est déterminée de la façon la plus classique comme une modification continue, une exténuation progressive de la présence. La représentation supplée régulièrement la présence. (...) Un signe écrit s'avance en l'absence du destinataire. Comment qualifier cette absence? On pourra dire qu'au moment où j'écris, le destinataire peut être absent de mon champ de perception présente. Mais cette absence n'est-elle pas seulement une présence lointaine, retardée ou, sous une forme ou sous une autre, idéalisée dans sa représentation? Il ne le semble pas, ou du moins cette distance, cet écart, ce retard, cette différence doivent pouvoir être portés à un certain absolu de l'absence pour que la structure d'écriture, à supposer que l'écriture existe, se constitue. C'est là que la différence comme écriture ne saurait plus (être) une modification (ontologique) de la présence. Il faut, si vous voulez, que ma « communication écrite » reste lisible malgré la disparition absolue de tout destinataire déterminé en général pour qu'elle ait sa fonction d'écriture, c'est-à-dire sa lisibilité. Il faut qu'elle soit répétable — itérable — en l'absence absolue du destinataire ou de l'ensemble empiriquement déterminable des destinataires. Cette itérabilité — (iter, derechef, viendrait de itara, autre en sanskrit, et tout ce qui suit peut être lu comme l'exploitation de cette logique qui lie la répétition à l'altérité) structure la marque d'écriture elle-même, quel que soit d'ailleurs le type d'écriture (pictographie, hiéroglyphique, idéographique, phonétique, alphabétique, pour se servir de ces vieilles catégories). Une écriture qui ne serait pas structurellement lisible — itérable — par-delà la mort du destinataire ne serait pas une écriture. (...) Ce qui vaut du destinataire vaut aussi, pour les mêmes raisons, de l'émetteur ou du producteur. Ecrire, c'est produire une marque qui constituera une sorte de machine à son tour productrice, que ma disparition future n'empêchera pas principiellement de fonctionner et de donner, de se donner à lire et à réécrire. Quand je dis « ma disparition future », c'est pour rendre cette proposition plus immédiatement acceptable. Je dois pouvoir dire ma disparition tout court, ma non-présence en général, et par exemple la non-présence de mon vouloir-dire, de mon intention-de-signification, de mon vouloir-communiquer-çeci, à l'émission ou à la production de la marque... Pour qu'un écrit soit un écrit, il faut qu'il continue à « agir » et être lisible même si ce qu'on appelle l'auteur de l'écrit ne répond plus de ce qu'il a écrit, de ce qu'il semble avoir signé, qu'il soit provisoirement absent, qu'il soit mort ou qu'en général il n'ait pas soutenu de son intention ou attention absolument actuelle et présente, de la plénitude de son vouloir-dire, cela même qui semble s'être écrit « en son nom ».) <http://www.hydra.umn.edu/derrida/sec.html> <http://www.jacquesderrida.com.ar/frances/signature.htm>*

- **1971** \_\_ « **Lo Sciopero dei Telefoni** » (In "60 raccontati"), Dino Buzzati (Une histoire courte, publiée en 1955 préconise quelques problématiques liées à la liberté de communication, au voyeurisme, à la censure et au contrôle, qui sont devenues actuelles avec l'arrivée du Internet. Pendant une grève du service public des téléphones, le réseau reste ouvert à toutes les conversations, plutôt qu'isolé les couples de points de connexion. Le début du texte explore des dérives qui ont lieu, au début à l'échelle locale : voyeurisme, gossip, bouche à oreille, détournements entre respectabilité publique et indécence privée. Vers la moitié du texte, un personnage mystérieux entre en scène. Il semble connaître parfaitement tous les protagonistes de cette chat line ante-litteram, mais il est un étranger. Le nouvel arrivé (précurseur des omnipotents modérateurs de forums? Big Eye analogique? une divinité qui voit tout?) impose le silence aux participants les plus ennuyeux, distrait la foule en chantant une chanson, que tous écoutent en silence religieux, et termine en convaincant (ou hypnotisant) tous à quitter le réseau téléphonique, pour rester seul en conversation avec une demoiselle. Et il termine en coup de théâtre, en épouvantant à mort le narrateur : il lui fait comprendre que sa présence, même si muette et extrêmement discrète avait été remarquée (le narrateur était toujours resté à écouter en silence - et nous avec lui). Le narrateur accroche immédiatement, et l'histoire finit. [paru dans Il Nuovo Corriere della Sera le 14 Avril 1955, et après dans Sessanta Racconti, Arnoldo Mondadori Editore, Milano, 1958]) <http://www.mclink.it/personal/MC5920/buzzati.htm>

- **1971** \_\_ **Synchromy**, Norman McLaren (I found the combination of animated visuals and space age sounds incredibly fascinating and entertaining. "Synchromy" was a visual that correlated directly to the sounds produced. The visual was basically vertical lines with flashing blocks. Wider blocks represented lower tones and more blocks and vertical lines were added as the piece continued. The piece to me was very enjoyable and made me feel like I was seeing the notes I was hearing. [Adam Marcus]. Here are pyrotechnics of the keyboard, but with only a camera to "play the tune." To make this film, Norman McLaren employed novel optical techniques to compose the piano rhythms of the sound track. These he then moved, in multicolor, onto the picture area of the screen so that, in effect, you see what you hear. It is synchronization of image and sound in the truest sense of the word. [National Film Board of Canada])

- **1971 \_\_ Utopia: Telex Q&A**, E.A.T. (As with Conceptual Art, the majority of records remaining from E.A.T.'s undertakings consist primarily of documents that track the circulation of ideas. Indeed, many of E.A.T.'s projects used channels of communication, from satellites to Telex machines, to transmit ideas. With these projects, art occurs in the transaction between input and output, and the virtual transmission primarily leaves a paper trail from which to conjecture. "Utopia: Telex Q&A," a second project that employed the Telex machine (and by default generated reams of paper) may be read through this communication residue. "Utopia: Telex Q&A" staged an intercultural communication fest through the transmission of questions and answers between four cities. Held in 1971 as part of the "Utopia and Visions" exhibit at the Moderna Museet in Stockholm, the project consisted of public terminals set up for telex communication between New York, Tokyo, Bombay and Stockholm. The objective was for individuals to pose questions and answers about what the year 1981—ten years in the future—would bring. Four hundred and fifty questions in total were transmitted between the four locations. Klüver initiated the event with a message that expanded upon the possibilities of the telex event with a text that seems caught in the maw of an excitable machine: OUR HOPE IS THAT THIS PROJECT WILL CONTRIBUTE TO THE RECOGNITION OF AND CONTACT BETWEEN DIFFERENT CULTURES. WE HAVE CHOSEN A MEDIUM WHICH WAS INVENTED IN 1846, WHICH IS ESSENTIALLY MECHNAICAL, (SIC) AND WHICH WAS NOT DEVELOPED SINCE THE LATE NINETEENTH CETXX (SIC) CENTURY. LIKE PRINT, ITS VERY SIMPLICITY PROVIDED ACCESS. WE BELIECXXX (SIC) WE BELIEVE THAT THIS IS THE FIRST WORLD WIDE PXXXXX (SIC) PEOPLE TO PEOPLE PROJECT, IMAGING TEHEIR (SIC) FUTURE. UTOPIATK TK4411...T. [Jennifer Gabrys]) <http://www.fondation-langlois.org/html/e/page.php?NumPage=523>

- **1971 \_\_ WAPX**, John Giorno and Abbie Hoffman (WPAX, Giorno and Abbie Hoffman recorded radio shows in New York, for broadcast on Radio Hanoi to the American troops fighting in South Vietnam.)

## 1972

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- **1972 \_\_ Blue Boxes**, Steve Wozniak (Steve Wozniak begins his career by building one of the best-known 'blue boxes;' tone generators that enable long-distance dialing while bypassing the phone company's billing equipment.) [http://www.computerhistory.org/internet\\_history/internet\\_history\\_70s.shtml](http://www.computerhistory.org/internet_history/internet_history_70s.shtml)

- **1972 \_\_ Brainwave Music** (Throughout most of the 1970s there was a burst of activity in brainwave music and art. Parallel to the work in Toronto, the Montréal group SONDE, along with Charles de Mestral, did some brainwave performances. At Logos in Ghent, Belgium, real-time brainwave triggered concerts were presented in 1972 and 1973. In Baltimore the Peabody Electronic Music Consort did performances. Rosenboom and others continued their work at Mills College. Toward the end of the 1970s, biofeedback and brainwave research fell into a period of quiescence due to many factors, primarily a lack of funding and of sufficiently powerful computers. Almost nothing happened in the field for about ten years. [Andrew Brouse, A Young Person's Guide to Brainwave Music]) <http://www.mindmodulations.com/mindmods/general/a-young-persons-guide-to-brainwave-music.html>

- **1972 \_\_ Le Capitole**, Fred Forest (This work is an early example of the artist's lifelong interest in alternative media network hybrids and long-distance agency. Working in teams with information provided via closed-circuit television and by telephone correspondents, 5 groups of people are each asked to come up with a fictional narrative involving individuals who happen to find themselves together in a compartment of "Le Capitole," the Paris-Toulouse express train that is about to leave the station in Paris. To complete their work they must link their narratives to stories reported in the morning newspapers and contend with the artist's provocative voice-over interventions on closed-circuit television, and ultimately act out their narratives.) <http://fredforest.org>

- **1972 \_\_ Center for Contemporary Music**, Jim Horton, Tom Zahuranec, Roger Kent, Mills College (« I suggested to Tom Zahuranec and he convinced a somewhat skeptical Robert Ashley that we should hook all of the electronic music equipment at the Center for Contemporary Music (San Francisco Tape Music Center) together and invite music fans to come to Mills and play the system. Announcements were made over KPFA and the CCM studios and hallways were packed with participants. Tom did the mix for the live remote radio broadcast. Roger Kent made tape loops of phone calls which were immediately put on the air. I played Buchla synthesizer when I wasn't trouble shooting. People spontaneously gathered around microphones to chant "Om." ») <http://www.o-art.org/history/LongDur/JimHorton/jh-music1.html>

- **1972 \_\_ Construction of a Traditional Rural Oven for Making Bread**, Victor Grippo (Just as scientists now debate the merits of ethanol fuels derived from sugarcane, sugar beets, switch grass, sorghum, or corn, the Argentine chemist-turned-artist Victor Grippo (1936-2002) proposed potato-powered products. As a young boy, Grippo (no relationship to Grippo Potato Chips) had already

rigged a radio to run on potatoes, a feat he repeated in 1972 as art, twelve years before Joseph Beuys's lemon-powered light bulb. Potatoes were not his only edible source of inspiration. In 1972, the police destroyed the traditional rural earth oven built by Grippo, Jorge Gamarra, and A. Rossi to bake bread, which they served to nearly 5,000 passersby for free. Its accompanying pamphlet instructed readers how to build such an oven, which could double as a bomb shelter, anti-nuclear bunker, or home. Even though curator Jorge Klugsberg had obtained official permission to hold an open-air event on this busy Buenos Aires plaza, the bakers' generosity apparently threatened the government, perhaps because the gift's popularity reiterated hunger's prevalence.)

- **1972** \_\_ **ELIZA and PARRY** (An exchange between ELIZA (a chatterbot simulating a Rogerian therapist) and PARRY (a simulation of a paranoid schizophrenic patient) occurs at the ICCC, where PARRY and ELIZA are hooked up over ARPANET and "talk" to each other. ELIZA is a computer program by Joseph Weizenbaum, designed in 1966, which parodied a Rogerian therapist, largely by rephrasing many of the patient's statements as questions and posing them to the patient. Thus, for example, the response to "My head hurts" might be "Why do you say your head hurts?" The response to "My mother hates me" might be "Who else in your family hates you?" ELIZA was named after Eliza Doolittle, a working-class character in George Bernard Shaw's play *Pygmalion*, who is taught to speak with an upper class accent. PARRY is, besides ELIZA, the other famous early chatterbot. PARRY was written in 1972 by psychiatrist Kenneth Colby, then at Stanford University. While ELIZA was a tongue-in-cheek simulation of a Rogerian therapist, PARRY attempted to simulate a paranoid schizophrenic. The program implemented a crude model of the behavior of a paranoid schizophrenic based on concepts, conceptualizations, and beliefs (judgements about conceptualizations: accept, reject, neutral). It also embodied a conversational strategy, and as such was a much more serious and advanced program than ELIZA. PARRY and ELIZA (also known as "the Doctor") "met" several times. The most famous of these exchanges occurred at the ICCC 1972, where PARRY and ELIZA were hooked up over ARPANET and "talked" to each other.) <http://www-ai.ijs.si/eliza/eliza.html> <http://jerz.setonhill.edu/if/canon/eliza.htm>

- **1972** \_\_ **LMA, Laboratoire de Mécanique et d'Acoustique**, Marseille (En 1972, Jean-Claude Risset crée le "laboratoire d'informatique et d'acoustique musicale" qui sera hébergé en 1978 au Laboratoire de mécanique et d'acoustique du CNRS (Département des sciences pour l'ingénieur).) <http://www.lma.cnrs-mrs.fr>

- **1972** \_\_ **München Projekt / Munich Project Olympic Games '72 – ORF Projekt Zugangsröhre / ORF Project Entrance Tube**, Bernhard Leitner (« The practical investigations started in the spring of 1971. They were based on the concepts and the theoretical projects which I had developed from 1968 on and which were originally published in *ArtForum*, March 1971. In a large hall in NYC, structures were set up to test various motions of sound in space, such as : a vertically descending line of sound, sound crossing below and above a moving person, the guiding characteristics of a horizontal motion, various degrees of inclination of straight lines of sound, sound moving toward a person, sound moving away from a person, loopylines in horizontal and vertical grids of loudspeakers. Initially very simple sounds were used to define spaces in order to minimize any suggestions of conventional musical experience : rolling beats of percussion instruments ; fast, low, short beats produced with a synthesizer ; and recorded instrumental sounds such as a cello tone or a horn tone of constant frequency levels. (...) An electronic switching device, built to my specifications, permits the programming of sound sequences for any number between two and forty loudspeakers. The space program is recorded on a punched tape. In some cases an additional programming feature leaves it up to the participating audience to select manually the speed and intensity of the spatial program : self-adjustable feedback between person and space. » [Bernhard Leitner, *Sound : Space*, New York University Press, 1978]) <http://www.bernhardleitner.at/>

- **1972** \_\_ **People's Computer Company Newsletters** (Produced by Bob Albrecht & George Firedrake in Menlo Park, California from the early 70s onward, the People's Computer Center, the People's Computer Company Newsletters, and DragonSmoke were a vital early spark that helped ignite the culture of people having a personal and creative relationship with computers. Each issue has a dragon theme on the cover or somewhere within especially in the classic DragonSmoke pieces found in most issues. Excerpt of People's Computer Company Issue #1 - October 1972 : "Computers are mostly used against people instead of fro people, used to control people instead of to free them, time to change all of that -") <http://www.digibarn.com/collections/newsletters/peoples-computer/index.html>

- **1972** \_\_ **Space-Media**, Fred Forest (The passive environments maintained by unilateral media are turned into interactive spaces through the introduction of "parasitical" elements by the artist. The experiment began with a work called "150cm2 of Newspaper" — a small blank square appearing in "Le Monde" that readers were invited to fill with their own artwork and send to the artist for inclusion in a subsequent public exhibition. This was followed 10 days later by the artist's appearance on the midday news on national television to ask viewers to observe a moment of silence designed to help them make sense of their lives. Both experiments were later repeated in newspapers and on radio in television in locations ranging from Belgium to Brazil.) <http://fredforest.org>

- **1972** \_\_ **The Spring Recordings**, David Tremlett (Recorded ambient noises in every county in Britain. .) Each audio cassette is labeled with a green labelmaker label, is fifteen minutes long and features a description by Tremlett. He names the county, the time of

day and the weather, etc.) <http://www.tate.org.uk/servlet/ViewWork?cgroupid=99999875&workid=14420&searchid=11843>

- **1972 \_\_ Talk Out !**, Douglas Davis (*Three-hour interactive telethon co-sponsored by the Everson Museum and WCNY-PBS. "A live, phone-in, broadcast television performance work -- in which viewers participated in the creation of a collaborative text by phoning into the artist who, live, and on camera, literally typed their responses to his text onto the screen in a continuous, superimposed text roll." "We went on at 11 P.M. and didn't stop until 2:30 A.M. It was the first art telethon. Calls from everywhere . . . all over the country . . . Some of the New York City callers seeing the same tapes we were playing on Sterling Manhattan Cable, public access channel. . . phones backed up all the time . . . getting some calls and statements printed out on character generator, the words floating across the bottom of the screen . . . radio stations plugging in, passing out the number to their listeners . . . very complex and dense layering of communication, live from start to finish." "It was an authentic dialogue . . . the callers, every one, bright and alert and on the point . . . the audience is better than the people who pretend it is stupid . . . diverse inputs . . . mind to city . . . better than Socratic dialogue . . . most of all immediate . . . at the end I played my last tape, Studies in Color Videotape II, very quiet and minimal in image, and we watched the responses come in, printed over the image, the last message coming from two kids, as Talk-Out! ended, saying: WE LIKE YOUR SHOW — WE ARE ELEVEN. Scott Byrid and Sam Jacopole." [Douglas Davis, in: Radical Software] <http://www.afsnitp.dk/udefra/1/dd/home.html> [http://www.radicalsoftware.org/volume2nr4/pdf/VOLUME2NR4\\_0053.pdf](http://www.radicalsoftware.org/volume2nr4/pdf/VOLUME2NR4_0053.pdf)*

- **1972 \_\_ Turenas**, John Chowning (John Chowning's Turenas (an anagram of the word "natures"), from 1972, was the first piece to create the illusion of moving sound sources in a 360-degree space, by precisely calculating the Doppler shift (amplitude, phase, frequency, and delay shifts) of each sound via computer. At the onset, tiny bells gradually modulate into deep gongs as the listening space changes from mono and two-dimensional to distant in all directions. Specific waveforms, quasi-acoustic instruments, are studied in detail, always maintaining an equally charming and mysterious quality. ["Blue" Gene Tyranny])

- **1972 \_\_ Voltage swings** (On August 2, 1972, the Bureau of Reclamation power station in Watertown, South Dakota was subjected to large swings in power line voltages up to 25,000 volts. Similar voltage swings were reported by Wisconsin Power and Light, Madison Gas and Electric, and Wisconsin Public Service Corporation. A 230,000-volt transformer at the British Columbia Hydro and Power Authority exploded, and Manitoba Hydro in Canada recorded power drops from 164 to 44 megawatts in a matter of a few minutes, in the power it was supplying to Minnesota. There is a long list of satellites that have been confirmed to have been directly affected by solar storms and the enhanced particle fluxes the satellites intercept. It is also this category of impacts that seems to contain the greatest controversies among satellite designers, insurance companies, and scientists working behind the scenes. A solar wind blasts across Earth's magnetic field, creating ripples of energy that jostle satellites and disrupt electrical systems. Satellite data about the storm are downlinked through Goddard Space Flight Center in Greenbelt, Maryland, passed on to a supercomputer center, and uploaded by NSF-funded physicists at the University of Maryland and at Dartmouth College in Hanover, New Hampshire. Using the Internet, researchers work from their own offices, jointly creating computer images of these events, which will lead to better space-weather forecasting systems.) <http://www.nsf.gov/about/history/nsf0050/internet/opportunities.htm>

## 1973

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- **1973 \_\_ Ambisonics - Periphony** (Ambisonics is a series of recording and replay techniques using multichannel mixing technology that can be used live or in the studio. Any number of speakers in any physical arrangement can be used to recreate a sound field. With 6 or more speakers arranged around a listener, a 3-dimensional ("periphonic", or full-sphere) sound field can be presented. Ambisonics was invented by Michael Gerzon and others. By encoding and decoding sound information on a number of channels, a 2-dimensional ("planar", or horizontal-only) or 3-dimensional ("periphonic", or full-sphere) sound field can be presented. Ambisonics was invented by Michael Gerzon of the Mathematical Institute, Oxford, who – with Professor Peter Fellgett of the University of Reading, David Brown, John Wright and John Hayes of IME, and building on the work of other researchers – developed the theoretical and practical aspects of the system in the early 1970s. In Ambisonics the term "periphony" (literally, "sound (around) the edge") is frequently used to denote full-sphere, with-height, 3-dimensional surround – note that in a periphonic system virtual sources can be localised anywhere within the sphere, not only at its surface. Strictly speaking, we should define a difference between "with-height" and "periphony". The former implies the ability to (re)create a sensation of sounds coming from above the listener, and/or a sensation of space above the listener. "Periphony", however, strictly denotes full-sphere reproduction, which includes height and depth, providing the ability to place sounds in any direction including below the plane of the listener. References : Michael A. Gerzon, Periphony: With-Height Sound Reproduction. *Journal of the Audio Engineering Society*, 1973, 21(1):2–10. Peter Fellgett,

*Ambisonics. Part One: General System Description, Studio Sound, August 1975, 1:20–22,40.)* <http://en.wikipedia.org/wiki/Ambisonics>

- **1973** \_\_ **ARPANET** (35 computer hosts are connected by the Net (Zakon 1998). Thirty institutions are connected to the ARPANET. The network users range from industrial installations and consulting firms like BBN, Xerox PARC and the MITRE Corporation, to government sites like NASA's Ames Research Laboratories, the National Bureau of Standards, and Air Force research facilities. Two new programs begin: Packet Radio sites are modeled on the ALOHA experiment at the University of Hawaii designed by Norm Abramson, connecting seven computers on four islands; and a satellite connection enables linking to two foreign sites in Norway and the UK. The problem is that ARPANET, radio-based PRnet, and SATNET all have different interfaces, packet sizes, labeling, conventions and transmission rates. Linking them together is very difficult. Bob Kahn and Vint Cerf set about designing a net-to-net connection protocol. Cerf leads the newly formed International Network Working Group. In September 1973, the two give their first paper on the new Transmission Control Protocol (TCP) at an INWG meeting at the University of Sussex in England. Meanwhile, at Xerox PARC, Bob Metcalfe is working on a wire-based system modeled on ALOHA protocols for Local Area Networks (LANs). It will become Ethernet.)

- **1973** \_\_ « **Autopoiesis** », Francisco Varela (Autopoiesis literally means "auto (self)-creation" (from the Greek: auto - αυτό for self and poiesis - ποιησις for creation or production), and expresses a fundamental dialectic between structure and function. The term was originally introduced by Chilean biologists Humberto Maturana and Francisco Varela in 1973 : "An autopoietic machine is a machine organized (defined as a unity) as a network of processes of production (transformation and destruction) of components which: (i) through their interactions and transformations continuously regenerate and realize the network of processes (relations) that produced them; and (ii) constitute it (the machine) as a concrete unity in space in which they (the components) exist by specifying the topological domain of its realization as such a network.")

- **1973** \_\_ **Birds Hotel Embarcadero San Francisco**, Bernhard Leitner (« These spaces have no boundaries that can be simultaneously experienced, nor are they 'fluid-dynamic' in the customary sense. They wax and wane. Space here is a succession of spatial occurrences – essentially a temporal event. Space is developed in time, repeated and altered. ») <http://www.bernhardleitner.at/>

- **1973** \_\_ **Brain-Computer Interface**, Jacques Vidal (Jacques Vidal, a computer science researcher at UCLA, was working to develop the first direct brain-computer interface (BCI) using a batch-processing IBM computer. In 1973, he published *Toward Direct Brain-Computer Communication* (Annual Review of Biophysics and Bioengineering Vol. 2). Incidentally, the computer used in Vidal's research was one of the nodes on the nascent Arpanet, precursor to the Internet. Vidal has recently revisited this field in his speculative 1998 article *Cyberspace Bionics*. ([www.cs.ucla.edu/~vidal/bionics.html](http://www.cs.ucla.edu/~vidal/bionics.html)) [Andrew Brouse, *A Young Person's Guide to Brainwave Music*] <http://www.mindmodulations.com/mindmods/general/a-young-persons-guide-to-brainwave-music.html>

- **1973** \_\_ « **Community Memory** », Lee Felsenstein (Community Memory was the world's first public computerized bulletin board system (ASR-33 Teletype, in acoustic-shielding enclosure, at the entrance to Leopold's Records in Berkeley, connected by 110-baud line to XDS-940 host in San Francisco. Anyone could Add a message, attach keywords to it, and Find messages). It was created by Efre Lipkin, Mark Szpakowski, and Lee Felsenstein, acting as the Community Memory Project, inspired by "Tools for Conviviality" by Ivan Illich (1973). Lee took care of hardware, Efre software, and Mark user interface and information husbandry. A second incarnation of Community Memory, aimed at creating a global information network, appeared in the later seventies. Its major players were Efre Lipkin and Ken Colstad. Community Memory ran off an XDS-940 timesharing computer located in Resource One in San Francisco. The first terminal was an ASR-33 Teletype at the top of the stairs leading to Leopold's Records in Berkeley. You could leave messages and attach keywords to them. Other people could then find messages by those keywords. The line from San Francisco to Berkeley ran at 110 baud - 10 characters per second. The teletype was noisy, so it was encased in a cardboard box, with a transparent plastic top so you could see what was being printed out, and holes for your hands so you could type. It made for some magic moments with the Allman Brothers' "Blue Sky" playing in the record store. Musicians loved it - they ended up generating a monthly printout of fusion rock bassists seeking raga lead guitars. And out of it also emerged the first net.personality - Benway, as he called himself. An excerpt from the mimeographed *Guide To Using The Community Memory* (ca 1972): "COMMUNITY MEMORY is a kind of electronic bulletin board, an information flea market. You can put your notices into the Community Memory, and you can look through the memory for the notice you want." Flyer, Loving Grace Cybernetics, ca 1972 : "COMMUNITY MEMORY is the name we give to this experimental information service. It is an attempt to harness the power of the computer in the service of the community. We hope to do this by providing a sort of super bulletin board where people can post notices of all sorts and can find the notices posted by others rapidly. We are Loving Grace Cybernetics, a group of Berkeley people operating out of Resource One Inc., a non-profit collective located in Project One in S.F. Resource One grew out of the San Francisco Switchboard and has managed to obtain control of a computer (XDS 940) for use in communications. While we're setting up, using

the system will be free, but it must be able to support itself in a way that keeps it available to everyone. So we will experiment with various ways of doing this. Initially, we'll charge for adding and finding items in which money changes hands, and hope this supports free use of the system for informational services. Our intention is to introduce COMMUNITY MEMORY into neighborhoods and communities in this area, and make it available for them to live with it, play with it, and shape its growth and development. The idea is to work with a process whereby technological tools, like computers, are used by the people themselves to shape their own lives and communities in sane and liberating ways. In this case the computer enables the creation of a communal memory bank, accessible to anyone in the community. With this, we can work on providing the information, services, skills, education, and economic strength our community needs. We have a powerful tool -- a genie -- at our disposal; the question is whether we can integrate it into our lives, support it, and use it to improve our own lives and survival capabilities. We invite your participation and suggestions. Loving Grace Cybernetics) <http://oldeee.see.ed.ac.uk/online/internaut/internaut-01/comm.html> <http://www.well.com/~szpak/cm/>

- 1973 — **Corticalart III**, Pierre Henry (In the first two weeks of september, 1973 an international group of electroencephalography and neurophysiology professionals gathered in marseilles; the group was led by its president professor gastaut and a significant number of doctors and researchers. Due to their experience and knowledge, on september 5th the members of the congress were convened to attend a concert at the saint victor abbey by composer pierre henry, they were to witness a recently perfected instrument that tapped into the cerebral electricity of its user: the corticalart, on which pierre henry improvised that evening, creating nearly one hour of music straight from his brain. those who were lucky enough to witness pierre henry's improvisation on corticalart (besides those who'd been privy to his performance at the musée d'art modern in paris in 1971 and at the winter circus in 1972) in an intense state of cerebral concentration, would never forget it. a great adventure into a world of audio hitherto unexplored, this exercise was a fascinating spectacle. it is important that we can discuss it without fear of speaking of hypnosis, catalepsy, "black mass" or séances. however, cortical art is only one instrument like others (or, almost like them), that uses all the resources of modern technology with regards to electronics, but fundamentally no more cumbersome than a pedal organ. cortical art uses alpha-rays, a hundred-year-old discovery, whose existence was proven by german, hans berger, to a musical end. It is composed of an electric wave of variable frequency (between 8 and 12 cycles per second), emitted in the occipital-temporal regions of the human brain by two symmetrical generators, oscillating at about the same rate. the waves' rate seem to vary within the subject, and can be collected directly on cranium using electrodes. the waves are identified as either alpha waves (slow rate/rhythm, corresponding with a state of inattentiveness, relaxation and rest) or beta waves (a fast rate, implying alertness, attentiveness and activity) according to their frequency. on the front of the subject one can collect signals known as artifact which are related to the muscular activity of the eye. Let us now transform this electric transmission into audio signals: the individual, the musician, becomes at once his own material and the material's own interpreter. it was in the hope of implementing the school of thought (fanatical identification on the philosophical level) that musician and researcher roger lafosse came to imagine, and then to build with the technical assistance of the groupe artec de bordeaux a preliminary version of the cortical art. the instrument was then developed and improved for a richer and more flexible use. Whereas Pierre Henry combined his preceding "mises-in-musique du cortical art" with mixtures of pre-recorded sequences made using studio equipment, the instrument alone is what is experienced here. its music has a brut, incomparable, "prehistoric" force. each moment of the improvisation, its beginning which resembles a dawn, its increasingly loud sound pushes, its glorious efflorescence, its baroque summits, holds its own, but as a whole it appears welded together by its extraordinary dramatic progression, perhaps related to the fight of the composer to go down increasingly deep into himself. [Anne Rey]) (5 septembre 1973, Improvisations en public lors du concert d'inauguration du 8<sup>e</sup> congrès international d'Electro-encéphalographie et de Neurophysiologie clinique à l'Abbaye Saint-Victor de Marseille. À titre d'expérience et d'information les congressistes devaient découvrir à cette occasion une version récemment perfectionnée d'un ensemble d'appareils fonctionnant à partir de l'électricité cérébrale de son utilisateur: le corticalart, sur lequel Pierre Henry improvisa ce soir-là près d'une heure de musique en direct de son cerveau. Les ondes alpha, bêta et arte-fact : qui a eu la chance d'entendre et de voir pierre henry improviser sur le corticalart, lors des précédentes expériences, au musée d'art moderne de paris en 1971 \*, et au cirque d'hiver en 1972, en état d'intense concentration cérébrale, ne saurait l'oublier. car cette expérience, grand départ à l'aventure dans un monde sonore jusqu'alors inexploré, constitue un spectacle fascinant. ce qui explique qu'on ait beaucoup brodé sur elle, sans crainte de parler d'hypnose, de catalepsie, de "messe noire" ou de séance initiatique. le cortical art n'est pourtant qu'un instrument comme les autres (ou presque), utilisant sans doute toutes les ressources de la technologie moderne en matière d'électronique, mais finalement pas plus encombrant qu'un orgue positif. Il utilise à des fins musicales une découverte vieille de cent ans, celle des rayons alpha, dont l'existence a été mise en évidence par l'allemand hans berger. Il s'agit d'une onde électrique de fréquence variable (entre 8 et 12 cycles à la seconde), émise dans les régions occipito-pariéto-temporales du cerveau humain par deux générateurs symétriques, oscillant à peu près au même rythme. cette onde dont le rythme varie, semble-t-il, avec les dispositions intérieures du sujet, peut être captée directement sur le crâne à l'aide d'électrodes. selon sa fréquence, on la désigne par les noms d'onde alpha (rythme lent, correspondent aux états d'inattention, de relaxation et de repos) et d'onde beta (rythme rapide signalant l'éveil, l'attention et l'activité). on recueille également, sur la partie frontale de l'individu, des signaux dits arte-fact et qui sont liés à l'activité musculaire de l'oeil. Transformons en signaux sonores cette émission électrique : l'individu, le musicien, devient à la fois son propre matériau et son propre interprète. c'est dans l'espoir de réaliser cette identification de l'outil à la pensée (identification passionnante sur le plan philosophique) que roger lafosse (musicien et

chercheur) en vint à imaginer, puis à construire avec l'aide technique du groupe artec de bordeaux une première version du corticalart. L'instrument fut ensuite développé et perfectionné en vue d'une utilisation plus riche et plus souple. Alors que pierre henry combinait ses précédentes "mises en musique du corticalart" avec des mélanges de séquences préalablement enregistrées avec l'appareil en studio, on découvrira ici l'instrument seul, et sa musique à l'état brut, incomparable, "pré-historique". chaque moment de l'improvisation, son début qui ressemble à une aurore, ses poussées sonores de plus en plus vivaces, ses efflorescences glorieuses, ses sommets baroques, vaut en soi, mais l'ensemble paraît soudé en tout par son extraordinaire progression dramatique, peut-être liée à la lutte du compositeur pour descendre de plus en plus profond en lui-même. [Anne Rey]

- **1973 \_\_ Cybernéphone, Gmebaphone, GMEB Bourges** (*The Gmebaphone is an instrumentarium consisting of amplifiers, sound-treatment systems, loudspeakers, a console, and a processing system designed and built for live diffusion and performance. The specifications for the instrument were dictated by musical criteria. The musical interpretation of a work is based on analysis of the work and on analysis of its physical signals. Thus, the instrument is able to provide a pertinent acoustic rendering of a work's sonic complexities (in terms of timbre, time, and space) directly under the performer's control, thereby allowing transparent and expressive interpretations. The Gmebaphone is a processor/simulator of sonic electroacoustic space, as well as a polyphonic acoustic synthesizer of musical spaces. It is an instrument comprised of the hierarchical combination of a control system with memory, tablatures, and combinatory modes of play that give rise to a rich and workable system of interpretation and expression. [Christian Clozier, "The Gmebaphone Concept and the Cybernephone Instrument", Computer Music Journal - Volume 25, Number 4, Winter 2001]*) (L'Institut International de Musique Electroacoustique / Bourges (IMEB) a été créé en 1970 sous l'appellation GMEB jusqu'en 1994, par les compositeurs Françoise Barrière et Christian Clozier qui en assurent aujourd'hui la direction. Le Gmebaphone / Cybernéphone est un instrument (console et système-processeur) et un instrumentarium (amplis, traitements, haut-parleurs) conçus pour l'interprétation-diffusion de la musique électroacoustique en concert. Ce sont les principes d'un concept musical qui définissent le cahier des charges et modélisèrent l'instrument. Ce concept porte sur l'interprétation musicale basée sur l'analyse de l'oeuvre et sur celle des signaux physiques. Ce faisant, il pose et propose de la musique électroacoustique une lecture acoustique pertinente des complexités sonores (timbre, temps, espace) et une mise en relief musical, contrôlées et jouées par l'exécution et le jeu d'interprétation qui expriment et transmettent lisible l'oeuvre au public. C'est un processeur-simulateur d'espaces électroacoustiques sonores et un synthétiseur polyphonique acoustique d'espaces musicaux. C'est un générateur de timbres, de temps et d'espaces. C'est un instrument constitué d'un ensemble hiérarchisé de systèmes, accès, et opérateurs, et doté d'une mémoire, de tablatures, d'une combinatoire et de règles et modes de jeu fondant une rhétorique de l'interprétation et de l'expression. Sept modèles ont été réalisés. Le premier (analogique) a été inauguré au 3e Festival en juin 1973. La version actuelle (la septième) date de 2005. Ces instruments de diffusion ont tous été conçus et construits/développés à et par l'IMEB. Jusqu'en 1997, il porta le nom de Gmebaphone et aujourd'hui celui de Cybernéphone.) <http://www.imeb.net>

- **1973 \_\_ Cybersonic Cantilevers, Gordon Mumma** (*Cybersonic Cantilevers (1973) extends them to include the active participation of audience members, many of them children and teenagers who were quick to grasp the artistic potential of cybersonic technology, while Conspiracy 8 (1969-70) is an early example of live interaction between performers and computer. Cybersonic Cantilevers is the first complete issue of a composition based on Mumma's daylong installation on May 19, 1973, at the Everson Museum in Syracuse, New York. The primary sound materials for the installation were contributed by museum visitors, who were invited to supply and input sounds of their own choice into microphones and cassette players at four stations. Rock and pop music, the tapping of teletypes, spoken words, and vintage radio crime dramas were among the randomly contributed sounds. These acoustical materials were relayed to cybersonic processors designed by Mumma, which periodically recycled and transformed them by processes of analog synthesis. The resulting delayed-action sound collage was then returned by loudspeakers into the museum space. Besides adding new materials to the collage, the participants were also capable of influencing the system by activating controls at their stations or by interacting with other participants. As the day progressed, the initial "sound playground" developed into an increasingly subtle sonic landscape in which the cumulative layers of reprocessed sounds became less and less identifiable. In the final hour, the participants spontaneously focused on making fine adjustments to the existing material. At this, Mumma abandoned his control console and walked through the museum space with a portable tape recorder, capturing the stunning results as the participants explored "a whole new realm of sound, floating it to see where it would go." Although Mumma greatly condensed the resulting musical materials by reducing them to a twenty-minute composition, he retained the overall architecture of the event and much of the museum's spatial acoustics. His close attention to its transitional passages gives the work a seamless continuity and a curiously integrated poetic logic. Supported by the combined interaction of chance, choice, and electronic processing, its spinning trajectories of sound suggest an analogy to cantilever structure. Its rhythmically active first part features real-world sounds, beginning with a percussive ensemble of beeps, teletype bursts, and drumset solos that resolve into a high-speed climax. Then voices enter in three variations, which combine the opening percussive materials with new sound sources from radio crime shows that had been inputted by the public. The resulting black comedy features vivid voice clips from cheap thugs and inmates on "the rock," and "canned" sound effects from the shadowy mean streets of popular radio. Then the mood gradually shifts to one of terror, in an episode of pounding drums pierced by a threatening high-pitched drone. Just as the intensity approaches the unbearable, it evaporates into the work's second part, a vast, timeless sonic space of exquisite transparency that Mumma says is "perhaps as near as I've got to*

impressionist sound-painting." This magical episode derives from the final hour of the installation (curiously, it was excised from the 1976 Folkways LP release of Cybersonic Cantilevers). It ends abruptly, however, for the composer preferred "not to impose a contrived ending on that memorable artistic and social occasion". [Michelle Fillion] <http://www.newworldrecords.org/uploads/filexbmFI.pdf>

- **1973** \_\_ **Electronic Email** (The electronic email represented in 1973 the 3/4 of the traffic on the ARPANET network. "Network email developed as an application on the ARPANET. (...) The idea of using the ARPANET as a medium for human communication was not widely recognized until the creation of network email in 1971. Before this point, ARPANET planners focused on building a network for sharing the kinds of technical resources they believed computer researchers on interactive systems would find most useful for their work: programming libraries, research data, remote procedure calls, and unique software packages available only on specific systems. The ARPANET originally developed as a medium for sharing computer programs. Ray Tomlinson sent the first email message across the ARPANET in 1971. This initial network mail experiment, with its significant implications for the future of human communications and social interaction, occurred as a relatively informal event. "The first message," Tomlinson recounts, "was sent from myself on one computer to myself on another computer and its content was completely forgettable; probably 'qwertyuiop' or 'Testing 1-2-3.'". The second message, sent out to other users of the network, was somewhat more interesting. It announced the availability of network email and gave instructions on how to address mail to users on other machines by suffixing "@<hostname>" to the user's login name. Tomlinson's email application was the first attempt to use the ARPANET as a medium for human communication. The stage had been set for a revolutionary new means of electronic interaction between ARPA researchers which would quickly become, as one ARPANET user later commented, "by far the biggest use of the Net." Tomlinson named his network mail program SNDMSG. Electronic mail on individual computers had been in existence for nearly a decade before 1971. This form of communication, referred to as "intra-computer email" to distinguish it from the "network email" arising on the ARPANET, allowed user communities on solitary, timeshared computers to trade messages with one another. Intra-computer email did not proliferate over any kind of network; it was limited to serving the user population of a single machine. (...) The PLANET computer conferencing package, conceived and designed by Jacques Vallee of the Institute for the Future, serviced the ARPANET for a series of studies starting in 1973. Conference participants could use PLANET's software from anywhere on the network by means of remote login. Use of this system, however, was restricted to designated participants. Although ARPANET email would expand to support group interaction early on by means of mailing lists, nothing approaching the sophistication of early computer conferencing systems like PLANET was ever made widely available on the network. (...) This "great surprise" is evident in a passage written in 1976 by an early email researcher, who likened the surge of network mail usage to a phenomenon of nature:" A surprising aspect of the message service is the unplanned, unanticipated, and unsupported nature of its birth and early growth. It just happened, and its early history has seemed more like the discovery of a natural phenomenon than the deliberate development of a new technology." (Myer and Dodds, "Notes," p. 145.) [Ian R. Hardy, *The Evolution of ARPANET email*, 1996] ) ("Among the advantages of the network message services over the telephone were the fact that one could proceed immediately to the point without having to engage in small talk first, that the message services produced a preservable record, and that the sender and receiver did not have to be available at the same time." [Licklider, *Applications of information networks*, 1978,] <http://www.archive.org/details/ApplicationsOfInformationNetworks>) <http://www.ifla.org.sg/documents/internet/hari1.txt>

- **1973** \_\_ **First broadcast music concert via satellite : Elvis Presley, from Aloha Hawaii** (The first-ever such performance to be broadcast live via satellite, Presley taped a January 12 rehearsal concert performed for an audience of 6,000 people at the International Convention Center, as a fail-safe in case anything went wrong with the satellite broadcast. Over 1 billion people around the world watched the live broadcast concert on January 14, 1973. The concert was broadcast to Southeast Asia via satellite. In Europe the concert was seen in 28 countries, the day after the concert. The U.S.A. (mainland) had seen the program before April 1973. The total earnings of the concert, being \$ 75,000 were donated to the Kui Lee Cancer Fund. The original estimate had only been \$ 25,000. The show was the most expensive entertainment special, up to that time, with costs of \$ 2,5 million.) [http://en.wikipedia.org/wiki/Aloha\\_from\\_Hawaii](http://en.wikipedia.org/wiki/Aloha_from_Hawaii)

- **1973** \_\_ **In An Autumn Garden**, Toru Takemitsu (In Toru Takemitsu's elegant and timbre-rich "In An Autumn Garden" (1973, 1979), 29 performers in 4 groups ("tree spirits") exchange ancient gagaku-like music for walking about in a Japanese garden. Similarly, Toshi Ichiyanagi's violin concerto *Junkansuru fukei* (Circulating Scenery) describes the same kind of garden walk. ["Blue " Gene Tyranny])

- **1973** \_\_ **Micral-N** (The Micral-N, introduced in 1973 and powered by Intel's 8008 chip, was the first commercial non-kit computer based on a microprocessor. It was conceived in France by François Gernelle and commercialised by a company called R2E in 1973. The term "microcomputer" first appeared in print in reference to the Micral-N. The Micral-N was initially developed for the I.N.R.A. (French National Institute for Agronomic Research) which didn't had sufficient budget to buy the lowest "mini" at the time (Digital Equipment PDP-8). The development began in July 1972, in a hut in Chatenay-Malabry (Paris suburbs), with F. Gernelle and 3 of his collaborators: Mr. Benchetrit (soft engineer), Alain Lacombe (electrical technician) and Jean-Claude Beckmann (in charge

of the mechanical). The first prototype was delivered January, 15th 1973 ! The Micral-N was working at 500 KHz, running approximately 50,000 instructions per second. It was set on a bus, did have a MOS memory, parallel and serial I/O cards, a real-time system. In one word, it had all the characteristics of nowadays computers.) <http://www.old-computers.com/museum/computer.asp?c=352> <http://www.oldcomputers.net>

- 1973 \_\_ « **The Music of Environment** », Robert Murray Schafer (« What is the relationship between man and the sounds of his environment and what happens when these sounds change ? Is the soundscape of the world an indeterminate composition over which we have no control or are we its composers and performers, responsible for giving it form and beauty ? (...) We must seek a way to make environmental acoustics a positive study program. (...) Schizophonia. The Greek prefix schizo means split, separated. Schizophonia refers to the split between an original sound and its electroacoustical transmission or reproduction. (...) Since the invention of electroacoustical equipment for the transmission and storage of sound, any sound, no matter how tiny, can be blown up and shot around the world, or packaged on tape or record for the generations of the future. We have split the sound from the maker of the sound. Sounds have been torn from their natural sockets and given an amplified and independent existence. Vocal sound, for instance, is no longer tied to a hole in the head but is free to issue from anywhere in the landscape. In the same instant it may issue from millions of holes in millions of public and private places around the world. The twentieth century has given us the ability to dislocate sounds in time as well as in space. » [in *The Music of Environment*, Vienna, Universal Edition, 1973])

- 1973 \_\_ « **The Network City** », Paul Craven & Barry Wellman (The network approach is characterized by its analytical emphasis on "the primacy of structures of interpersonal linkages, rather than the classification of social units according to their individual characteristics. (...) It gives priority to the way of social life is organized, through empirically observable systems of interaction and reliance, systems of resource allocation, and systems of integration and co-ordination.")

- 1973 \_\_ **Pygmy Gamelan**, Paul DeMarinis (Five to ten little electronic circuits respond to electrical fluctuations in the galaxy by improvising around five-note phrases.) <http://www.stanford.edu/~demarini/exhibitions.htm>

- 1973 \_\_ **PLANET, Planning Network**, Jacques Vallée (The Planning Network (PLANET) was the first ARPANET chat system, predating the Internet. PLANET was developed by Jacques Vallee, Roy Amara, Robert Johansen, and others from the Institute of the Future in 1973. It was the first chat program designed for the ARPANET, and enabled anybody on the network to log into the system. PLANET was used in a series of evaluation studies, and had a considerable influence on those that used it and later research.) <http://www.jacquesvallee.net>

- 1973 \_\_ **Carl Sagan** (The science fiction novel *Contact* by Carl Sagan explored in some depth how a message might be constructed to allow communication with an alien civilization, using the prime numbers as a starting point, followed by various universal principles and facts of mathematics and science. Sagan also wrote a non-fiction book on the subject. (Sagan, Carl. *Communication with Extraterrestrial Intelligence*. MIT Press, 1973))

- 1973 \_\_ **Scelbi-8H** (SCELBI (SCientific ELectronic BIological, pronounced "sell-bee") Computer Consulting was a personal-computer hardware and software manufacturer located in Milford, Connecticut. It was founded in 1973 by Nat Wadsworth and Bob Findley. Initially, they sold hardware (called the SCELBI-8H) based on the first 8-bit microprocessor from Intel, the 8008. The 8H came with 1K of random-access memory and was available either fully assembled or in a kit (consisting of circuit boards, power supply, etc that the purchaser assembled)) <http://userwww.sfsu.edu/~hl/c.Scelbi8H.html> <http://www.oldcomputers.net>

- 1973 \_\_ « **Senza chiedere permesso; come rivoluzionare l'informazione** » (without asking permission; how to revolutionize information), Roberto Faenza (In Italy it is Roberto Faenza who after a stay of two years in the United States writes the book 'Senza chiedere permesso; come rivoluzionare l'informazione' (without asking permission; how to revolutionize information), published in 1973 by Feltrinelli and translated in a few other languages. The author wants to "unmask the authoritarian use of the mass media and to accelerate the taking over of these by the masses" Although the cover of the book showed a long haired person equipped with a shotgun and a portable video camera Faenza did not envisage revolutionary action like occupying television studios. The other extreme, to participate in the existing structures of the media and to try to change them from within is also rejected by him. Faenza wants to use video on grass root level in schools, factories, hospitals, in the street and by local cable networks. He speaks about "horizontal communication" whereby the "receiver of the news also can pass on news himself".)

- 1973 \_\_ « **Six Years : The Dematerialization of the Art Object from 1966 to 1972** », Lucy Lippard (In *Six Years* Lucy R. Lippard documents the chaotic network of ideas that has been labeled conceptual art. The book is arranged as an annotated chronology, into which is woven a rich collection of original documents including texts by and taped discussions among and with the artists involved and by Lippard, who has also provided a new preface for this edition. The result is a book with the character of a lively contemporary forum that provides an invaluable record of the thinking of the artists - an historical survey and essential

reference book for the period.)

- **1973** \_\_ « **Social Sculpture** », Joseph Beuys (It was during the 1960s that Beuys formulated his central theoretical concepts concerning the social, cultural and political function and potential of art. Indebted to Romantic writers such as Novalis and Schiller, Beuys was motivated by a utopian belief in the power of universal human creativity and was confident in the potential for art to bring about revolutionary change. This translated into Beuys's formulation of the concept of Social Sculpture, in which society as a whole was to be regarded as one great work of art (the Wagnerian Gesamtkunstwerk) to which each person can contribute creatively (perhaps Beuys's most famous phrase, borrowed from Novalis, is 'Everyone is an artist'). In 1973, Beuys wrote: "Only on condition of a radical widening of definitions will it be possible for art and activities related to art [to] provide evidence that art is now the only evolutionary-revolutionary power. Only art is capable of dismantling the repressive effects of a senile social system that continues to totter along the deathline: to dismantle in order to build 'A SOCIAL ORGANISM AS A WORK OF ART'... EVERY HUMAN BEING IS AN ARTIST who – from his state of freedom – the position of freedom that he experiences at first-hand – learns to determine the other positions of the TOTAL ART WORK OF THE FUTURE SOCIAL ORDER." (Beuys statement dated 1973, first published in English in Caroline Tisdall: *Art into Society, Society into Art* (ICA, London, 1974), p.48.) Beuys founded (or co-founded) the following political organisations: German Student Party (1967), Organization for Direct Democracy Through Referendum (1971), and Free International University for Creativity and Interdisciplinary Research (1974). He was a vigorous and original proponent of Rudolf Steiner's social ideas. The term 'social sculpture' was coined by Joseph Beuys in the mid 1970s to describe his 'expanded conception of art'. The evolution of the concept can nevertheless be traced through all Beuys' work -from his understanding of drawing as thinking to his work with the invisible materials of speech, thought and discussion in the Honey Pump and in the Free International University. In its transdisciplinary perspectives and practices social sculpture is however coming to be understood as even more challenging and radical than it was then. But social sculpture has roots further back than Beuys. In addition to Beuys' influence in this expanded field, social sculpture is part of a stream of questions and experiments undertaken by thinkers, poets and investigators like Goethe, Schiller, Wilhelm Schmundt and Rudolf Steiner. As we go deeper into Beuys' work we encounter his intensive engagement with the work of such explorers and come to understand the significance of their work in shaping his social sculpture insights and proposals. In one of the last lectures that Beuys gave (when he received the Lehbruck prize in 1986) he spoke about the need to "protect the flame" that had inspired and led to this expanded conception of art. "I see social sculpture as the ultimate participatory live artwork, where there is not one artist/expert creating, and the passive audience watching, but all of us creating together. Social sculpture appeals to me politically for its leaderless-ness and its challenge of equality and co-operation. It appeals to me as art for its' contextuality, and that it reinstates art as an inclusive arena of creativity". (David Logan - "Piece of Many Voices". "Social Sculpture Colloquium". c/o Shelley Sacks. The school of Art, Publishing and Music, Oxford Brookes University. Glasgow 1995. Pages 43.). "Beuys uses the term 'Social Art' and 'Social Sculpture' as synonyms for a Discipline concerned with creative forming and shaping, a discipline which see its' task. Social Art is the new creative forming discipline and social organism is the material. But the social organism, the society, the whole social body – in contrast to his forces and substances of nature – is non-physical material, and its form necessitates perpetual re-shaping and development" (Peter Schata - "Social Sculpture: Every Human Being is an Artist". "Social Sculpture Colloquium". c/o Shelley Sacks. The school of Art, Publishing and Music, Oxford Brookes University. Glasgow 1995. Pages 12-13). <http://www.beuys.org> <http://www.social-sculpture.org>

- **1973** \_\_ **Sociological Walk in Brooklyn**, Fred Forest (Through advertisements placed in the national press, the artist recruits participants in a "sociological promenade" through the working class district of Brooklyn on the outskirts of the city, during the course of which he comments on aspects of the urban environment and interviews merchants and residents about the social conditions in which they live.) <http://fredforest.org>

- **1973** \_\_ « **The Sociology of Community** », Jessie Bernard ("Improvements in communication, especially the mass media, and most especially television, as well as in transportation, have profoundly changed the significance of space for human relationships. (...) Once individual mobility has reached a certain point, once speed and feasibility of communication have reached a certain level, and once economic and political integration have reached a certain level, we do not need the concept of community at all to understand how a society operates.")

- **1973** \_\_ **Sound Field Insertion**, Bill Viola (Four microphones are set up in a space and live transmitted on 4 loudspeakers in another space. Syracuse University, Syracuse, N.Y.) [http://media.macm.org/biobiblio/viola\\_b/2violaeouvres.htm](http://media.macm.org/biobiblio/viola_b/2violaeouvres.htm)

- **1973** \_\_ **Through the Night Softly**, Chris Burden (Chris Burden produced provocative, often shocking conceptual performance pieces in the early 1970s. In *Through the Night Softly*, Burden arms tied behind his naked torso, drags himself over shards of broken glass. Burden purchased a series of commercial slots on a local cable channel to broadcast this performance documentation which manifested in an on-air intervention for the general viewing public.) <http://www.free103point9.org/studycenter/historicaltransmissionworks>

- **1973** \_\_ *Walkthrough* (1973-1975), Max Neuhaus ("In Walkthrough [1973-77], I was interested in making a work that would be anonymous. After I stopped performing I was no longer required to be a celebrity. The other part of the idea was that it would be discoverable, that anybody had the opportunity to find it. This was a transient space, but not a passage because people moved in diverse ways. The work was subtle, but it was also very clear once you heard it. It also had this idea from Fan Music of connecting to its environment. Here it was sensitive to wind speed, light intensity, temperature and humidity. Connecting it to the weather made it flex. There was also this other idea about working with a fine level of subtlety. I thought I could do it here because we notice change, even very small changes in a very familiar environment, one we encounter daily. This was a piece for the people who went in and out of that subway entrance every day; it wasn't meant for the art world, as such." [Max Neuhaus])

- **1973** \_\_ « **World Music - WeltMusik - Au-delà de la polyphonie du village global / Beyond Global Village Polyphony** », Karlheinz Stockhausen ("The intermingling and integration of all the earth's musical cultures will be followed by the opening of a second where – just like a mounting spiral whose windings constantly bring it to the same point one level higher – a powerful trend opposing the move towards uniformity will establish itself. After a time when conservation predominates, the emphasis in individual spheres of culture will once again be on developing original forms as a contribution to harmony between all cultural groups. There will even be created a kind of artificial new folklore, utilizing electronic equipment and heaven only knows what other technical apparatus. (In this context, for once "artificial" really means "artfully made.") ("La possibilité de téléphoner en Afrique pour commander un enregistrement sur bande, dont je combine ensuite certaines parties avec des sons électroniques que je produis à Tokyo, est un état des choses sans précédent, qui rend possible la création de relations complètement inconnues à ce jour. Auparavant, il était uniquement possible d'écouter de la musique africaine en partant voyager là-bas - mais qui disposait d'une telle possibilité ?")

[http://www.stockhausen.org/world\\_music.pdf](http://www.stockhausen.org/world_music.pdf)

- **1973** \_\_ *The World Soundscape Project* (The World Soundscape Project (WSP) was established as an educational and research group by R. Murray Schafer at Simon Fraser University during the late 1960s and early 1970s. It grew out of Schafer's initial attempt to draw attention to the sonic environment through a course in noise pollution, as well as from his personal distaste for the more raucous aspects of Vancouver's rapidly changing soundscape. This work resulted in two small educational booklets, *The New Soundscape* and *The Book of Noise*, plus a compendium of Canadian noise bylaws. However, the negative approach that noise pollution inevitably fosters suggested that a more positive approach had to be found, the first attempt being an extended essay by Schafer (in 1973) called 'The Music of the Environment,' in which he describes examples of acoustic design, good and bad, drawing largely on examples from literature. Schafer's call for the establishment of the WSP was answered by a group of highly motivated young composers and students, and, supported by The Donner Canadian Foundation, the group embarked first on a detailed study of the immediate locale, published as *The Vancouver Soundscape*, and in 1973, on a cross-Canada recording tour by Bruce Davis and Peter Huse, the recordings from which formed the basis of the CBC Ideas radio series *Soundscapes of Canada*. In 1975, Schafer led a larger group on a European tour that included lectures and workshops in several major cities, and a research project that made detailed investigations of the soundscape of five villages, one in each of Sweden, Germany, Italy, France and Scotland. The tour completed the WSP's analogue tape library which includes more than 300 tapes recorded in Canada and Europe with a stereo Nagra. The work also produced two publications, a narrative account of the trip called *European Sound Diary* and a detailed soundscape analysis called *Five Village Soundscapes*. Schafer's definitive soundscape text, *The Tuning of the World* published in 1977, and Barry Truax's reference work for acoustic and soundscape terminology, the *Handbook for Acoustic Ecology* published in 1978, completed the publication phase of the original project.) <http://www.sfu.ca/%7etruax/wsp.html>

## 1974

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- **1974** \_\_ *Acousmonium*, Groupe de Recherche Musicales (In 1966 composer and technician Francois Bayle was placed in charge of the Groupe de Recherches Musicales and in 1975, GRM was integrated with the new Institut national de l'audiovisuel (INA - Audiovisual National Institute) with Bayle as its head. In taking the lead on work that began in the early 1950s, with Jacques Poullin's potentiomètre d'espace, a system designed to move monophonic sound sources across four speakers, Bayle and the engineer Jean-Claude Lallemand created an orchestra of loudspeakers (un orchestre de haut-parleurs) known as the Acousmonium in 1974. An inaugural concert took place at the Espace Pierre Cardin in Paris with a presentation of Bayle's *Experience acoustique* (Gayou, E. (2007), *The GRM: landmarks on a historic route*, *Organised Sound* 12(3): 203–211, 2007 Cambridge University Press.). The Acousmonium is a specialised sound reinforcement system consisting of between 50 and 100 loudspeakers, depending on the character of the concert, of varying shape and size. The system was designed specifically for the concert presentation of musiques concrete based works but with the added enhancement of sound spatialisation. Loudspeakers are placed both on stage and at positions throughout the performance space (Gayou 2007: 209) and a mixing console is used to manipulate the placement of acousmatic

material across the speaker array, using a performative technique known as sound diffusion (Austin, L. & Smalley, D. (2000), *Sound Diffusion in Composition and Performance: An Interview with Denis Smalley*, *Computer Music Journal*, 24:2, pp. 10–21, Summer 2000, MIT). Bayle has commented that the purpose of the Acousmonium is to "substitute a momentary classical disposition of sound making, which diffuses the sound from the circumference towards the centre of the hall, by a group of sound projectors which form an 'orchestration' of the acoustic image" (Bayle, F. (1993), *Musique acousmatique, propositions...positions*, Paris: INA-GRM Buche/Chastel.)

- **1974** \_\_ **The Arecibo message** (On November 16, 1974, the Arecibo Observatory transmitted at 2380 MHz at an effective bandwidth of 10 Hz a message directed at the globular cluster M13. The message consists of a 1679-bit picture portraying a counting scheme, five biologically significant atoms (H, C, O, N, and P), the genetic structure of the four purines and pyrimidine bases of DNA; a schematic of the DNA double helix with an order-of-magnitude estimate of the number of base pairs; a representation of a human being and his or her dimensions; a depiction of the solar system with an indication that human beings inhabit the third planet and an estimate of the human population of the Earth; and finally, a schematic representation of the Arecibo Observatory and a description of its dimensions.) <http://www.physics.utah.edu/~cassiday/p1080/lec06.html> [http://en.wikipedia.org/wiki/Arecibo\\_message](http://en.wikipedia.org/wiki/Arecibo_message)

- **1974** \_\_ **Audio Transmission via IP** (Efforts in transmitting audio over the Internet protocols IP and ST-II. August 1974: Realtime Packet Voice demonstrated between USC/ISI and MIT/LL, using CVSD and NVP.) <http://www.cs.columbia.edu/~hgs/rtp/history.html>

- **1974** \_\_ **EMS, Experimental Music Studio MIT MediaLab** (The EMS was one of the great innovating studios in the field, and it was responsible for developing or significantly improving technologies such as real-time digital synthesis, live keyboard input, graphical score editing, graphical patching languages, synchronization between natural and synthetic sound in composition, and advanced music languages. In 1976, the EMS hosted the First International Conference on Computer Music; in 1981, Professor Vercoe's support encouraged the MIT Press to take over publication of the *Computer Music Journal* beginning with Volume 4. In 1985, the EMS was integrated into the new MIT Media Laboratory, to carry on its work in a new, cross-disciplinary context of multimedia research. At the Media Lab, Professor Vercoe has directed research groups on Music and Cognition, Synthetic Listeners and Performers, and Machine Listening. His own publications span many fields of research, from music theory, to signal processing, to music perception, to audio coding. His students from the EMS and the Media Lab have seeded the academic and industrial worlds of computer music and music technology. [Barry Vercoe]) <http://sound.media.mit.edu/resources/EMS/> <http://www.media.mit.edu/events/EMS/bv-interview.html>

- **1974** \_\_ **Green Music**, John Lifton (One of the first people to become interested in the impact of information technologies on architecture, in 1968 Lifton was involved in the creation of the international Computer Arts Society, and exhibited in the landmark *Cybernetic Serendipity* exhibition at the Institute for Contemporary Arts in London (later shown in Washington DC and San Francisco). The following year he was a founder of the London New Arts Lab and the Institute for Research in Art and Technology, a base for experimental performance and mixed media work, where he set up the first free computer facility specifically for artists. His work *Green Music*, in which music is generated algorithmically in real-time from the natural electricity in plants, was shown at the Edinburgh Festival in 1975, Muzicki Biennale Zagreb in 1977, and, installed in the conservatory in Golden Gate Park, San Francisco. Over four days in late June 1976, while open to the public, six large plants in the center of the glass Plant Conservatory in San Francisco's Golden Gate Park, produced an audible, live digital music score, based on bio-electric sensing of their responses to light, temperature, movement and other physio-environmental factors (using gold needle electrodes at the base of the stem and root). Amid the 'tropical garden' stood a five foot high rack of audio and digital processing systems, including the just purchased, Altair 8800, which John was constantly (re)programming in Machine Language.) <http://www.psychobotany.com/projects/John%20Lifton.htm>

- **1974** \_\_ **Internet TCP** (Vinton Cerf and Robert Kahn developed the first description of the TCP protocols during 1973 and published a paper on the subject in May 1974. Use of the term "Internet" to describe a single global TCP/IP network originated in December 1974 with the publication of RFC 675, the first full specification of TCP that was written by Vinton Cerf, Yogen Dalal and Carl Sunshine, then at Stanford University. During the next nine years, work proceeded to refine the protocols and to implement them on a wide range of operating systems. The Internet is a global system of interconnected computer networks that interchange data by packet switching using the standardized Internet Protocol Suite (TCP/IP). It is a "network of networks" that consists of millions of private and public, academic, business, and government networks of local to global scope that are linked by copper wires, fiber-optic cables, wireless connections, and other technologies. The terms Internet and World Wide Web are often used in every-day speech without much distinction. However, the Internet and the World Wide Web are not one and the same. The Internet is a global data communications system. It is a hardware and software infrastructure that provides connectivity between computers. In contrast, the Web is one of the services communicated via the Internet. It is a collection of interconnected documents and other

resources, linked by hyperlinks and URLs. The opening of the network to commercial interests began in 1988. The US Federal Networking Council approved the interconnection of the NSFNET to the commercial MCI Mail system in that year and the link was made in the summer of 1989. Other commercial electronic e-mail services were soon connected, including OnTyme, Telemail and Compuserve. In that same year, three commercial Internet service providers (ISP) were created: UUNET, PSINET and CERFNET. Important, separate networks that offered gateways into, then later merged with, the Internet include Usenet and BITNET. Various other commercial and educational networks, such as Telenet, Tymnet, Compuserve and JANET were interconnected with the growing Internet. Telenet (later called Sprintnet) was a large privately funded national computer network with free dial-up access in cities throughout the U.S. that had been in operation since the 1970s. This network was eventually interconnected with the others in the 1980s as the TCP/IP protocol became increasingly popular. The ability of TCP/IP to work over virtually any pre-existing communication networks allowed for a great ease of growth, although the rapid growth of the Internet was due primarily to the availability of commercial routers from companies such as Cisco Systems, Proteon and Juniper, the availability of commercial Ethernet equipment for local-area networking, and the widespread implementation of TCP/IP on the UNIX operating system.) <http://www.nsf.gov/about/history/nsf0050/internet/internet.htm>

- **1974** \_\_ **Mark-8** (The Mark-8 is a microcomputer design from 1974, based on the Intel 8008 CPU (which was the world's first 8-bit microprocessor). The Mark-8 was designed by graduate student Jonathan Titus and announced as a 'loose kit' in the July 1974 issue of Radio-Electronics ("R-E") magazine. The Mark-8 was introduced as a 'build it yourself' project in R-E's July 1974 cover article, offering a US\$5 booklet containing circuit board layouts and DIY construction project descriptions, with Titus himself arranging for \$50 circuit board sets to be made by a New Jersey company for delivery to hobbyists. Prospective Mark-8 builders had to gather the various electronics parts themselves from a number of different sources. The article and the Mark-8 computer lit a fire in the hobbyist world. Clubs and newsletters were spawned, mostly to exchange software, hints, and construction tips. The Mark-8 was introduced in R-E as "Your Personal Minicomputer". This may be readily understood considering that the 'microcomputer revolution' had yet to happen; the word 'microcomputer' was still far from being common fare. Thus, in their announcement of their computer kit, the editors quite naturally placed the Mark-8 in the same category as the era's other 'minimize' computers. Although not very commercially successful, the Mark-8 prompted the editors of Popular Electronics magazine to consider publishing a similar but more easily accessible microcomputer project, and just six months later, in January 1975, they went through with their plans announcing the Altair 8800. The Mark 8 was not offered as a complete kit; this was a real do-it-yourself project! The only thing offered was a board set, scrounging of parts was entirely up to the builder. The Mark 8 also proved too challenging a project for many builders who ran out of skill before the computer was completed. It was a very complicated machine from a hobbyist standpoint, and required of the builder a skillful ability to read and follow schematics in order to connect all the boards (this information was not included with the plans!). Further, the boards did not have plated-through holes on the circuit boards. This required builders to solder numerous connections on both sides of each board. Many who have emailed me to tell their Mark 8 stories, never got their machines to run. I suspect that a lot of Mark 8 computers were abandoned, half finished, or cannibalized for parts. Too bad, because the Mark 8 is a soundly designed and beautiful machine.) [http://www.bytecollector.com/mark\\_8.htm](http://www.bytecollector.com/mark_8.htm) <http://www.oldcomputers.net>

- **1974** \_\_ « **La Production de l'Espace** » (The Production of Space), Henri Lefebvre (Lefebvre has dedicated a great deal of his philosophical writings to understanding the importance of (the production of) space in what he called the reproduction of social relations of production. This idea is the central argument in the book *The Survival of Capitalism*, written as a sort of prelude to *La production de l'espace* (1974) (*The Production of Space*). These works have deeply influenced current urban theory, mainly within human geography, as seen in the current work of authors such as David Harvey and Edward Soja. In *The Production of Space*, Lefebvre contends that there are different levels of space, from very crude, natural space ('absolute space') to more complex spatialities whose significance is socially produced ('social space'). Lefebvre's argument in *The Production of Space* is that space is a social product, or a complex social construction (based on values, and the social production of meanings) which affects spatial practices and perceptions. As a Marxist philosopher (but highly critical of the economicist structuralism that dominated the academic discourse in his period), Lefebvre argues that this social production of urban space is fundamental to the reproduction of society, hence of capitalism itself. Therefore, the notion of hegemony as proposed by Antonio Gramsci is used as a reference to show how the social production of space is commanded by a hegemonic class as a tool to reproduce its dominance. "Social space is a social product - the space produced in a certain manner serves as a tool of thought and action. It is not only a means of production but also a means of control, and hence of domination/power." Lefebvre argued that every society - and therefore every mode of production - produces a certain space, its own space. The city of the ancient world cannot be understood as a simple agglomeration of people and things in space - it had its own spatial practice, making its own space (which was suitable for itself - Lefebvre argues that the intellectual climate of the city in the ancient world was very much related to the social production of its spatiality). Then if every society produces its own space, any "social existence" aspiring to be or declaring itself to be real, but not producing its own space, would be a strange entity, a very peculiar abstraction incapable of escaping the ideological or even cultural spheres. Based on this argument, Lefebvre criticized Soviet urban planners, on the basis that they failed to produce a socialist space, having just reproduced the modernist model of urban design (interventions on physical space, which were insufficient to grasp social space) and applied it onto that context. "Silence itself, in a place of worship, has its music. In cloister or cathedral, space is measured by the ear: the sounds, voices and

singing reverberate in an interplay analogous to that between the most basic sounds and tones; analogous also to the interplay set up when a reading voice breathes new life into a written text. Architectural volumes ensure a correlation between the rhythms that they entertain (gaits, ritual gestures, processions, parades, etc.) and their musical resonance. It is in this way, and at this level, in the non-visible, that bodies find one another.” <http://www.notbored.org/montreal-space.html>

- **1974** \_\_ « **A Protocol for Packet Network Interconnection** », Vinton Cerf & Robert Kahn (Kahn, with Vint Cerf who was one of the main designers of the preceding protocol, conceived of “an internetworking architecture”, that is, a meta-protocol by means of which networks designed differently would be able to inter-function. The concept of an open architecture left each network totally autonomous so that it would not have to change its existing mode of operation; the meta-protocol concerned only the exchange between networks. The first principles were defined in a text published in 1974 (Cerf & Kahn, 1974: 627-641). The basic idea was similar to that chosen for the transport of goods by container: all the boxes are identical and can contain very different objects, which then circulate on different networks (train, cargo, truck). In the present case, the computer data (texts, sounds or images) are encapsulated in packets or datagrams. The detailed elaboration of the protocol mobilized Arpanauts fully for a fair amount of time. The system chosen had two parts: the Transmission Control Protocol (TCP), responsible for fragmenting messages into packets at the start and reconstituting them on arrival, detecting transmission errors and sending back missing elements, and the Internet[working] Protocol (IP), responsible for organizing the circulation of packets and providing each host machine with an address in order to organize the routing. The TCP/IP protocol was tested in 1977. In 1980 it was chosen by the Defense Ministry and on 1 January 1983 Arpanet switched to the new system which was henceforth called the Internet. [Patrice Flichy])

- **1974** \_\_ **Soundscapes of Canada**, World Soundscape Project (Soundscapes of Canada, 10 one-hour radio programs based on the sounds of Canadian acoustic environment, first presented on CBC-FM “Ideas”, October 21 to November 1, 1974, prepared by the World Soundscape Project, Sonic Research Studio, Department of Communication Studies, Simon Fraser University, R. Murray Schafer, director and host, with Howard Broomfield, Bruce Davis, Peter Huse (assistant director), Barry Truax, Adam Woog. In the fall of 1973, researchers of the World Soundscape Project undertook an extended field recording tour of Canada. Material collected during that tour forms the basis of this series of radio compositions, each of which treats the Canadian sound environment uniquely. Every programme is a special listening experience in itself, and as such often explores new dimensions of the radio medium. The idea of the “soundscape” is new; it concerns aspects of the environment not generally recognized or valued, and has considerable implications for the problem of noise pollution in Canada. These programmes are designed to stimulate listeners’ awareness of sound and its perception, in the hope that they might take positive and constructive interest in their own sound environment.) <http://www.sfu.ca/~truax/canada.html>

- **1974** \_\_ **Videotext** (The videotext system allows users to log on with a remote terminal and access sequences of pages through regular phone lines. This videotext network was a precursor to today’s Internet and functioned very much like it, with sites containing information about countless subjects. It also allowed users to send messages to one another (email). Different countries, such as UK, France, Japan, Canada, USA and Brazil, implemented different versions of the videotext concept under their own names. The UK called it Prestel. The Brazilian system was dubbed Videotexto. In Canada it was known as Telidon. In the USA the network was named Videotex.)

- **1974** \_\_ **Watergate** (The Watergate scandals were a series of American political scandals during the presidency of Richard Nixon that resulted in the indictment of several of Nixon’s closest advisors, and ultimately his resignation on August 9, 1974. The scandals began with the arrest of five men for breaking and entering into the Democratic National Committee headquarters at the Watergate Office complex in Washington, D.C. on June 17, 1972. Investigations conducted by the Federal Bureau of Investigation (FBI) and later by the Senate Watergate Committee, House Judiciary Committee and the press revealed that this burglary was one of many illegal activities authorized and carried out by Nixon’s staff. They also revealed the immense scope of crimes and abuses, which included campaign fraud, political espionage and sabotage, illegal break-ins, improper tax audits, illegal wiretapping on a massive scale, and a secret slush fund laundered in Mexico to pay those who conducted these operations. This secret fund was also used as hush money to buy the silence of the seven men who were indicted for the June 17 break-in. Nixon and his staff conspired to cover up the break-in as early as six days after it occurred. After two years of mounting evidence against the President and his staff, which included former staff members testifying against them in a Senate investigation, it was revealed that Nixon had a tape recording system in his offices and that he had recorded many conversations. Recordings from these tapes revealed that he had obstructed justice and attempted to cover up the break-in. This recorded conversation later became known as the Smoking Gun. After a series of court battles, the United States Supreme Court unanimously ruled in *United States v. Nixon* that the President had to hand over the tapes; he ultimately complied. With certainty of an impeachment in the House of Representatives and the strong possibility of a conviction in the Senate, Nixon resigned ten days later, becoming the only US President to have resigned from office. His successor, Gerald Ford, would issue a controversial pardon for any federal crimes Nixon may have committed while in office.) (1974 Richard Nixon démissionne de la présidence des États-Unis, après que des enregistrements ont révélé le scandale du Watergate. [Nicolas Vicente])

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- **1975 \_\_ 5.1 Surround Sound** (In 1975 a new wider film format became available and with it the ability to have 6 discrete tracks (one for each speaker location) placed on the edge of the wider 70mm format. This also gave rise to the addition of a special subwoofer or Low Frequency Effect track. Close Encounters was the first film to use a subwoofer channel. This channel was called the 'Baby Boom' channel. Later the 70mm format was extended to have three front channels, two surround channels and a baby boom channel. This is the same format as found in 5.1 surround sound home theaters of today. Surround sound, using multichannel audio, encompasses a range of techniques for enriching (expanding and deepening) the sound reproduction quality, of an audio source, with additional audio channels reproduced via additional, discrete speakers. The three-dimensional (3D) sphere of human hearing can be virtually achieved with audio channels above and below the listener. To that end, the multichannel surround sound application encircles the audience (left-surround, right-surround, back-surround), as opposed to "screen channels" (center, [front] left, and [front] right), i.e. ca. 360° horizontal plane, 2D). Surround Sound is almost universally acclaimed to be a more realistic experience than stereo. This applies to just about any type of program, from music to motion pictures to television. People that can't tell the difference between mono and stereo can immediately hear and appreciate the difference between surround and stereo. The Quad systems of the 70's were flawed in two ways. First of all, there was a format war that confused consumers and discouraged them from buying into Quad. Secondly, if the placement of the speakers wasn't exactly right then the listener had phantom images drifting around the room which resulted in a less than satisfying experience. The surround sound of today is built upon the premise of three speakers across the front, with the center speaker providing an anchor for the sound, which eliminates any moving phantom images and improves the imaging. There are many other widely used surround formats. Three channel (3.0 - stereo front speakers with a mono surround and no LFE channel), four channel (4.0 - three front speakers with a mono surround and no LFE channel) such as Dolby Pro Logic, five channel (5.0 - three front speakers with a stereo surround but no LFE channel), and seven channel (7.1 - the Sony SDDS format with five front speakers) all abound. . 6.1 adds a center rear channel. Surround sound is created in several ways. The first and simplest method is using a surround sound recording microphone technique, and/or mixing-in surround sound for playback on an audio system using speakers encircling the listener to play audio from different directions. A second approach is processing the audio with psychoacoustic sound localization methods to simulate a two-dimensional (2-D) sound field with headphones. A third approach, based on Huygens' principle, attempts reconstructing the recorded sound field wave fronts within the listening space; an "audio hologram" form. One form, wave field synthesis (WFS), produces a sound field with an even error field over the entire area. Commercial WFS systems, made by the Swiss companies sonic emotion and Iosono, require many loudspeakers and significant computing power. The Ambisonics form, also based on Huygens' principle, gives an exact sound reconstruction at the central point; less accurate away from center point. There are many free and commercial software available for Ambisonics, which dominates most of the consumer market, especially musicians using electronic and computer music. Moreover, Ambisonics products are the standard in surround sound hardware sold by Meridian Audio, Ltd. In its simplest form, Ambisonics consumes few resources, however this is not true for recent developments, such as Near Field Compensated Higher Order Ambisonics. Some years ago it was shown that, in the limit, WFS and Ambisonics converge. Finally, surround sound also can be achieved by mastering level, from stereophonic sources as with Penteo, which uses FFT analysis of a stereo recording to parse out individual sounds to component panorama positions, then positions them, accordingly, into a five-channel field.)

- **1975 \_\_ Altair 8800** (The MITS Altair 8800 was a microcomputer design from 1975, based on the Intel 8080 CPU and sold as a mail-order kit through advertisements in Popular Electronics, Radio-Electronics and other hobbyist magazines. The designers intended to sell only a few hundred to hobbyists, and were surprised when they sold thousands in the first month. Today the Altair is widely recognized as the spark that led to the personal computer revolution of the next few years: The computer bus designed for the Altair was to become a de facto standard in form of the S-100 bus, and the first programming language for the machine was Microsoft's founding product, Altair BASIC.) <http://www.oldcomputers.net>

- **1975 \_\_ APOLLO/SOYUZ** (Television coverage of the joint APOLLO/SOYUZ mission, the first meeting in space of American and Russian astronauts, is broadcast using the Intelsat system, providing television access for the nine-day space adventure to more than one billion people - one quarter of the world's population at that time.) <http://www.intelsat.com/about-us/history/intelsat-1970s.asp>

- **1975 \_\_ « Art - Action and Participation »**, Frank Popper (In his books 'Origins and Development of Kinetic Art' and 'Art, Action and Participation', Popper showed how Kinetic Art played an important part in pioneering the unambiguous use of optical movement and in fashioning links between science, technology, art and the environment. Popper has been a champion of the humanizing effects of such an interdisciplinary synthesis. In its most famous work, "Art, action and participation", Frank Popper

show the new relationship between the artist, work, the public. Following this inclination he took interest in the works of Piotr Kowalski, Roy Ascott and many others working with the early concept of networking. These artists confirmed his interest in spectator participation, which brought him to the late 1980s and the 1990s when immersive virtual reality and digital art began to become established. Popper began to investigate a range of works emerging in this era, including that of Shawn Brixey, Ebon Fisher and Joseph Nechvatal. To explain and illustrate the emergence of a techno-aesthetic Popper stresses the panoramic and multi-generational reach of virtual art. As regards to virtual art, openness is stressed both from the point of view of the artists and their creativity and from that of the follow-up users in their reciprocating thoughts and actions. This commitment to the teeming openness found in virtual art can be traced to the theories of Umberto Eco and other aestheticians. Recently Eco has expressed a consideration of the computer as a spiritual tool. Defining virtual art broadly as art that allows us, through an interface with technology, to immerse ourselves in computer art and interact with it, Popper identifies an aesthetic-technological logic of creation that allows artistic expression through integration with technology. After describing artistic forerunners of virtual art from 1918 to 1983 - including art that used light, movement, and electronics - Popper looks at contemporary new media art forms and artists. He surveys works that are digital based but materialized, multimedia offline works, interactive digital installations, and multimedia online works (net art) by many artists. The biographical details included reinforce Popper's idea that technology is humanized by art. Virtual art, he argues, offers a new model for thinking about humanist values in a technological age. Virtual art, as Popper sees it, is more than just an injection of the usual aesthetic material into a new medium, but a deep investigation into the ontological, psychological and ecological significance of such technologies. The aesthetic-technological relationship produces an unprecedented artform (London: Studio Vista, 1975). « One of the main reasons for my interest early on in the art and technology relationship was that during my studies of movement and light in art I was struck by the technical components in this art. Contrary to most, if not all, specialists in the field who put the stress on purely plastic issues and in the first place on the constructivist tradition, I was convinced that the technical and technological elements played a decisive part in this art. » <http://www.eyewithwings.net/nechvatal/popper/interviewww1.html>

- **1975** \_\_ **Art Com** (Art Com (aka La Mamelle, Inc.) was an artists' organization founded in 1975 and dedicated to new art activity. Conceptual art, performance art, correspondence art, art publishing, video art, television art, telecommunications art, artists' software were all exhibited, presented, published and/or distributed by the organization during its 20+ years of activity. Art Com itself was an art work. "I worked at Art Com from 1983-91, a period during which the organization moved away from presenting performance art and focused on publishing and distribution. The Art Com Electronic Network, an online "artists' space" exploring the interface of contemporary art and new communications technologies, was perhaps the most significant project we worked on. (...) Ideas gain validity in their practice, use and integration into the ecosystem. In the interest of representing activity as a means of reflecting, evaluating and generating ideas, following is a case study, or portrait, of the evolution of a perpetual computer networking organism forming through the creative investigation of constructs, processes and geographies of communication. Given the format of hard-copy publications, it is a fixed representation, covering the organism's evolution from 1986 to 1990. The organism is called the Art Com Electronic Network (ACEN). It was originally conceived by Carl Eugene Loeffler and Fred Truck, originally realized and structured in collaboration with Nancy Frank, Donna Hall, Darlene Tong, Lorna Truck, myself and the Whole Earth 'Lectronic Link (WELL), especially Matthew McClure and John Coate. As soon as ACEN became a working system, it became (and continues to be) defined by its users and the scope of its distribution. ACEN is an ongoing investigation of interactive electronic communications media as a means toward new culture building on a personal basis. As an art system, it questions applications of cultural hierarchy: the role of artist as individual genius, of art works (as a noun), of the public as viewers of art. It creates art as process (art works as a verb or, at least, actualized upon the users' demand), and exposes viewers as artists, artists as instigators of art applications. It strongly underscores the concept of art = communication, by definition (co = with) a participatory process." [Anna Couey] <http://www.well.com/~couey/artcom.html>

- **1975** \_\_ **The CrackleBox**, Michel Waisvisz (In the 1970ties about 4000 Crackleboxes were built and sold by STEIM in Amsterdam. The Cracklebox was probably the first commercially available portable selfpowered alternative 'keyboard' analog audio synthesizer with inbuilt loudspeaker. Nowadays many people refer to the The Cracklebox as the archetype of 'glitch' or 'circuit bending'. Since the new Cracklebox has been released in 2004 various performers are playing this instrument on stage amongst others: 'Mouse on mars' and 'Coil'. "In 1973 I joined the new STEIM foundation in Amsterdam and started working on the development of the 'Crackle' synth. Peter Beyls, Nico Bes and Johan den Biggelaar were great and inspiring engineers who contributed many of their talents to the development of the Crackle technology. In order to do this well they had to forget almost all of the technology 'moralities' that they had been taught during their education. Through the mid-seventies we realized the 'Crackle synth' and the 'Crackle box'. During this development process we started extending the concept to a hole range of theatrical instruments and playable objects. All sorts of household objects were wired and would become musical 'Crackle' instruments: One could play music by pouring tea into wired cups or by sticking connected spoons and forks in the mouth. The Crackle instruments can also be played collaboratively by touching both one part of the circuit and another person in a circle of interconnecting electronica and humans. Floors, bicycles, chairs, bed-sheets, clothes, coo-coo-clocks, books, string instruments and plants were wired and connected to 'Crackle' circuits and would be played in music theatre performances. This was in the special mid-seventies brand of Dutch music

theatre that was often initiated and performed by the pioneers of the independent improvised music theatre scene. Through STEIM we also initiated a traveling exhibition with many of these sound objects: The Crackle exhibition became a big success with children and grownups and later became the inspiration for many other similar initiatives." [Michel Waisvisz, *Crackle history*, 2004] <http://crackle.org/CrackleBox.htm>

- **1975** \_\_ **Cybernetic Sculptures**, Wen-Ying Tsai (His work *Cybernetic Sculptures*, 1975, were composed of moving fiberglass rods illuminated by strobes. The movement of the strobes responded to sounds made by people around them. The rods would move slowly when the environment was quiet, frantically when it was noisy. [Lucy Petrovich, "From Computer Art to Digital Art to New Media", 2000]) [http://www.isea2000.com/actes\\_doc/25\\_petrovitch.rtf](http://www.isea2000.com/actes_doc/25_petrovitch.rtf)

- **1975** \_\_ **Douglas Hollis** ("In the 1970s, California artist Doug Hollis created an installation for differing highway surfaces that produce alternate pitches through placement of ribbed materials. Various pitch chains (melodies) were created, their tempo determined by the car's speed." ["Blue" Gene Tyranny]. "In the early's 70's, I began working with natural phenomena and searching for new ways to talk about landscape and the forces which are constantly affecting it. This search ultimately led me to my current work with wind- and water-activated sound structures, and to the specific, environmental dynamics of sites. (...) I have continued to develop my work in sound structures and landscape, working on-site and establishing a rapport with the dynamics of the site and with the people who encounter these places. [Douglas Hollis]) <http://www.douglashollis.com>

- **1975** \_\_ **Electric Music Theatre**, Michel Waisvisz (In the mid seventies Michel Waisvisz started a series of what he than called 'electric music theatre' pieces. The image above shows an early version of 'The Electricity'. He can be seen on the left, with on the right composer/double bass player Maarten Altena. As founders and organisers of the first sound festival in Holland 'The Claxon Sound Festival' they also performed their own pieces with great intensity. Quite often the pieces were blatantly critical about the rise of High-Tech culture. This culture was portrayed here as a cardboard facade during a musical interlude. Waisvisz can be seen playing a modified Putney VCS3 synthesizer. He connected the miniature pins of the VCS3' patchbay with touchpads in order to play the synthesizer directly - without the keyboard - with his bare fingers. Also one can see that the backlid has been removed so that he could also touch/play the inner wires using skin-conductivity as well.) <http://crackle.org/Electric%20Music%20theatre.htm>

- **1975** \_\_ **Experiment with loudspeaker phase displacement**, Jim Horton (« I bought two columns of Polyplaner speakers from Don Buchla that I put on their sides, one on top of the other and played monophonic music through them for a "wall of sound." I attached slowly revolving cardboard and balsawood blades to a small motor that I placed in front of the speakers. Different components of the sound seemed to move independently around the room. ») <http://www.o-art.org/history/LongDur/JimHorton/jh-music2.html>

- **1975** \_\_ **An Instructional Game for 1 to many musicians**, Click Nilson (Each performer maintains one or more lists of instructions: they begin with just the one below. Each minute, as reckoned by their poor sense of human long-term timing, they must follow one instruction per list in their possession. 1. (CHANGE) You may add a new instruction to your list or modify an existing one. 2. (DELETE) You may delete one instruction from your list. 3. (EXCHANGE) Exchange one instruction list with another player of your choice; they must defer but may choose which set to exchange with you if they have more than one. 4. (PROLIFERATE DUTIES) You may make a copy of an existing instruction set and henceforth proceed with this set too at the next calculation stage. 5. (SONIFICATION). During the next minute using your instrument or voice you may play the musical phrases embodied by instructions on one list in your possession. You will utilise timing, pitch and timbre as best you can to convey the spoken form of the instructions. 6. (TERMINATION). If you have four instruction sets or have exchanged four or more times you may finish playing the game. Notes- modern versions of this game may find a photocopier or computer assistance helpful for copying and exchanging. It has also been found propitious to utilise projection of instruction sets to enable an audience to see the state of play- alternatively, the audience may wander amongst the performers and act as observers and arbiters of disputes. Computer modeling of the game itself has been successfully demonstrated by some advanced performance groups. Performers may wish to set a practical time limit too- rumour has it that Nilson is still playing after losing instructions 1 and 6.) [http://www.toplap.org/index.php/Click\\_Nilson%27s\\_text\\_piece](http://www.toplap.org/index.php/Click_Nilson%27s_text_piece)

- **1975** \_\_ **New Media 1**, Fred Forest (This work anticipates many of the spatial and temporal themes that the artist and Mario Costa were to develop in the 1980s in the context of the *Esthetics of Communication* including the unpredictability of real time processes, long-distance presence, and contingent relationships between parallel spheres of reality. The installation involves two closed-circuit television monitors. The first displays non-stop live footage of a tree in the public square outside the museum. Visitors inside the museum are given a hand-held video camera and are told to recreate the exact point of view of the outside camera that is the source of the tree footage. The output of the hand-held camera is displayed on the screen of the second monitor on the surface of which the outline key elements of the outside landscape (buildings, lamp posts, billboards, etc.) have been traced.) <http://fredforest.org>

- **1975 \_\_ The Performing Arts and the Future of Television**, Mark Schubin (*For veteran broadcast engineer, consultant and industry historian Mark Schubin, involvement in commercial satellite projects began in 1973. For the past 30 years, he's also been media consultant for New York's Lincoln Center. « Back when TV was typically transmitted by satellite only to 100-foot-diameter dishes, Westinghouse had 3-meter earth stations for the high-power NASA Applications Technology Satellite-6. I borrowed one from Westinghouse, and ATS-6 from NASA, for an exhibition I put together in January 1975 called 'The Performing Arts and the Future of Television.' The idea was to set up an earth station on Lincoln Center Plaza and pick up images of the Colorado Concert Ballet performing live in Denver. A regisseur [dance master] in New York would critique the dancers and his comments would be sent back to them. We set up the earth station and got nothing. We checked the pointing with NASA and still got nothing. The NASA person asked if I'd used a compass or an architect's benchmark. I said I'd used the compass. He did a quick calculation of magnetic deviation and then said, 'Give it a good swift kick to the left.' I did, and the pictures locked right in! » [Mark Schubin]. Ballet master Michael Katcharoff, gave a master class from NY, with his voice sent to dancers via telephone line to reduce latency. Katcharoff kept forgetting there was no return video link, so he would say things like, "No, you must do it like THIS!" The dancers then asked, "Like what?" [Culled from Jeremy Cooperstock]) <http://www.mail-archive.com/medianews@twiar.org/msg05514.html> <http://www.cim.mcgill.ca/sre/projects/rtnm/history.html>*

- **1975 \_\_ Pneumatic dispatch**, Jacques Lacan (*Between 1975 to 1979, Jacques Lacan used pneumatic dispatch in order to mail to Pierre Soury and Michel Thomé. "Petits Bleus" or "pneumatiques" - those instant communiqués, the faxes of their times - crisscross the City in vacuum tubes. 22 Sept 1975 : "L'un ou l'autre Ayez la bonté de m'appeler si vous le pouvez : aujourd'hui, pour que nous parlions du papier d'il y a 4 jours." 10 March 1976: "J'aimerais vous entendre. Appelez quand vous voulez". ["Lacan's Oriental Language of the Unconscious", Richard Serrano, in SubStance, Vol. 26, No. 3, Issue 84 (1997), pp. 90-106].) (Ces télégrammes étaient nommés "petits bleus" (la couleur de l'enveloppe était bleue) : ils étaient envoyés par réseau pneumatique aux habitants de Paris au moyen de canalisations souterraines, et arrivaient chez le destinataire en quelques minutes (une grande partie des lettres de Proust, « écrites au galop », ont la même fonction que nos courriers électroniques : demandes, réponses, poursuite d'une conversation orale, etc., elles ont une fonction relationnelle privée – et ne sont pas destinées, à l'inverse des lettres de la marquise de Sévigné ou de Bayle, à être lues dans les salons.) . Le 30 mars 1984, suppression par les PTT des "petits bleus", système qui existait depuis 117 ans.) [http://www.lutecium.org/aejcpp.free.fr/lacan/textes\\_lacan2.htm](http://www.lutecium.org/aejcpp.free.fr/lacan/textes_lacan2.htm)*

- **1975 \_\_ Scanners**, Keith Sonnier (*Originally titled Quad Scan, Scanners involves six to eight radio scanning devices arranged in the gallery and tuned to varying frequencies. Each scanner continually emits a random assortment of real-time sounds, including snatches of private telephone conversations, ship to shore calls, police and cellular transmissions.*) <http://www.free103point9.org/studycenter/historicaltransmissionworks>

- **1975 \_\_ Virtual acoustic-space system**, Ron William (*« Played synth many times w/ Ron Heglin, Paul Kalbach and Tom Zahuranec at Paul Kalbach's studio in Oakland, and several times w/ Ron William's virtual acoustic-space system. Ron had built tiny microphones that he wore in his ears and [he] acted as a roving listener for others in the band and audience. By wearing earphones we could hear from his position and subjective "point of view." He moved little bells and rattles around his head as he went from one place to another. The effect sometimes was of the listener's consciousness instantly being displaced across the room! »*) <http://www.o-art.org/history/LongDur/JimHorton/jh-music2.html>

## 1976

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- **1976 \_\_ Apple I** (*The Apple I, also known as the Apple-1, was an early personal computer. They were designed and hand-built by Steve Wozniak. Wozniak's friend Steve Jobs had the idea of selling the computer. The Apple I was Apple's first product, demonstrated in April 1976 at the Homebrew Computer Club in Palo Alto, California. It went on sale in July 1976 at a price of \$666.66, because Wozniak liked repeating digits[4] and because they originally sold it to a local shop for \$500 and added a one-third markup. About 200 units were produced. Unlike other hobbyist computers of its day, which were sold as kits, the Apple I was a fully assembled circuit board containing about 30 chips. However, to make a working computer, users still had to add a case, power supply, keyboard, and display. An optional board providing a cassette interface for storage was later released at a cost of \$75. The Apple I is sometimes credited as the first personal computer to be sold in fully assembled form; however, some argue that the honor rightfully belongs to other machines, such as the MOS Technology KIM-1, Datapoint 2200, or more commonly the Altair 8800 (which could be bought in kit or assembled form at extra cost). One major difference sets the Apple I apart — it was the first personal computer to use a keyboard. The Apple I's built-in computer terminal circuitry was distinctive. All one needed was a keyboard and an inexpensive video monitor. Competing machines such as the Altair 8800 generally were programmed with front-mounted toggle switches and used indicator lights (red LEDs, most commonly) for output, and had to be extended with separate hardware to allow connection to*

computer terminal or a teletype machine. This made the Apple I an innovative machine for its day.) <http://www.oldcomputers.net>

- **1976** \_\_ **Children and Communication**, Robert Whitman, E.A.T (1972?) (Whitman constructed low-ceilinged, tent-like environments, meant primarily for children, in three boroughs of New York City. They were interconnected via facsimile machines, telexes, and telephones. Telex turned out to be the most popular medium for chats between children who didn't know one another, proving less abrupt than the phone and more intuitive than the facsimile machine. Perhaps telex also appealed in a way akin to email: one is given time to consider a question before replying. In any case, all three technologies were framed in an intimate way, positioning the audience as a willing and active participant. Excerpted from Robert Whitman's Telecommunication Projects by Bettina Funcke. Originally printed in Printed Project 01: There Once was a West, Sarah Pierce, Guest editor, Dublin: Sculptors' Society of Ireland, 2003.) <http://www.free103point9.org/studycenter/historicaltransmissionworks>

- **1976** \_\_ **Crackle Family**, Michel Waisvisz (In the mid-seventies the development of the Crackle Box led to the construction of a vast range of music theater instruments. All these instruments were based on analogue electronics; combining soundproducing circuits with finger contacts in various ways. On the photograph of the Crackle Family one can see spoons and forks as finger contacts. These visitors of the Crackle exhibition made music by eating out of empty plates. The sounds came from the loudspeakers in the pots. Changes of sound were controlled by putting the spoons and forks deeper in their mouths. Their children created music by pouring tea in cups. The tea coming out of the pot connected the circuits of the pot and the cups; the amount of tea influenced the musical sounds.) <http://crackle.org/Crackle%20family.htm>

- **1976** \_\_ **The Crackle Synthesizer** (1976 - 1983), Michel Waisvisz (The Crackle Synthesizer has been developed and built after the Crackle Box, which was more a kind of game. The Crackle Synthesizer consisted of the components of 3 Crackleboxes. These could be linked by touching special conductive pads. Potentiometers were used to control the amount of controllability of this instrument. 'Minimum control' meant that the Crackle Synthesizer would easily play on its own for hours. The Crackle Synthesizer was a self-supporting instrument. With batteries, an amplifier inside and its own horn loudspeaker it could be played everywhere. Michel Waisvisz was once brought to a police station in the Ardennes after having been found playing on a clear night in the woods. The policemen thought they captured some kind of spy. They didn't believe this was music even after a short concert at the police station. He was however released. Waisvisz played his first USA tour in 1978 with this instrument. Also the LP 'Crackle' was almost entirely performed on the Crackle Synthesizer.) <http://crackle.org/Crackle%20Synth.htm> <http://crackle.org/CrackleChain.htm>

- **1976** \_\_ **Collective Actions Group**, Andrei Monastyrsky, Nikita Alexeev, Georgii Kizevalter, Nikolai Panitkov, Igor Makarevich, Elena Elagina, Sergei Romashko, Sabine Haensgen (In the totalizing media environment of the late-Soviet era, many artists from the Moscow underground sought alternative ways of being seen and heard. Samizdat poetry, performances, and self-curated archives are only a couple of the strategies unofficial artists employed in the search for new spaces of artistic practice. In their "trips outside the city," the Collective Actions group - a key grouping within the Moscow Conceptualist circle - invited audiences to travel to the fields outside Moscow to witness performances in the landscape. Documenting these performances through sound, photography, and video, the group kept a running record of its activities, and such factographic material was supplemented by interpretive essays and transcripts of group discussions - all of which was brought together in the folders of the Collective Actions archive. Under the leadership of theoretician Andrei Monastyrsky, Collective Actions has been an important influence in the development of contemporary conceptual and performance art in the Soviet Union. Formed in 1976, the Collective Actions' work was vital to the development of Conceptualism as one of the most influential movements in Soviet art. As stated by curator Joseph Backstein, "The Collective Actions group was influenced by the work of Joseph Beuys and John Cage, the peculiarity of Soviet performance lies in its attempt to demonstrate the conditional mood of the perception as such and the evolution of various stereotypes of human behavior against the background of official ideology. This ideology aimed at monopolizing the very right to interpret all manifestations of the Real including its reflections in art. Collective Actions insists on multiple interpretations." All of Collective Actions' performances took place outdoors, primarily in the country, and endure in the form of black and white photographs, video, and commentaries written by the viewers documenting their impressions of the performances. Linking performance with ritual, the Collective Actions performances were spiritual acts aimed to create an atmosphere of unanimity among the participants and to serve as a vehicle for directing consciousness outside the boundaries of intellect. The photo images document representative scenes of various performances from 1976 to 1990, recreating the atmosphere, spirit, and significance of the performative actions of the Collective Actions group. There, an empty field commonly becomes the stage for minimal activities that focus on elementary spatial and temporal structures of perception. However, these performances are not to be viewed as a naïve form of neo-Rousseauian cultural escapism, and their significance goes beyond the immediate perception of an elementary situation. To the members of the group, all visible phenomena are linked to an invisible dimension whereby the specific "living" gesture within the performance equals a new impulse in an open-ended interpretative spiral in which text and situation mutually condition each other. The aesthetic dimension of this movement is expanded beyond the scope of the performance to the textual commentary itself. After the trip out of the city the group begins to

compile a documentary volume about the performance. In my lecture I want to ask how bureaucratic techniques allow for the emergence of a documentary work of art based on the compilation of a very diverse series of genres (descriptions, photographs, diagrams, videos, narratives by the participants, theoretical speculation, discussions.). [http://officeinthestudio.org/index.php?view=article&catid=34%3AAbstracts&id=72%3AAdas-archiv-der-kollektiven-aktionen-ein-dokumentationskunstwerk&tmpl=component&print=1&page=&option=com\\_content&Itemid=54&lang=en](http://officeinthestudio.org/index.php?view=article&catid=34%3AAbstracts&id=72%3AAdas-archiv-der-kollektiven-aktionen-ein-dokumentationskunstwerk&tmpl=component&print=1&page=&option=com_content&Itemid=54&lang=en)

- 1976 — « *L'Échange Symbolique et la Mort* » (Symbolic Exchange and Death), Jean Baudrillard (A sharp critic of contemporary society, culture, and thought, Baudrillard is often seen as a major guru of French postmodern theory, although he can also be read as a thinker who combines social theory and philosophy in original and provocative ways and a writer who has developed his own style and forms of writing. He was an extremely prolific author who has published over thirty books and commented on some of the most salient cultural and sociological phenomena of the contemporary era, including the erasure of the distinctions of gender, race, and class that structured modern societies in a new postmodern consumer, media, and high tech society; the mutating roles of art and aesthetics; fundamental changes in politics, culture, and human beings; and the impact of new media, information, and cybernetic technologies in the creation of a qualitatively different social order, providing fundamental mutations of human and social life. For Lukàcs, the Frankfurt School, and Baudrillard, reification — the process whereby human beings become dominated by things and become more thinglike themselves — comes to govern social life. Conditions of labor imposed submission and standardization on human life, as well as exploiting workers and alienating them from a life of freedom and self-determination. In a media and consumer society, culture and consumption also became homogenized, depriving individuals of the possibility of cultivating individuality and self-determination. Eventually, Baudrillard will take his analysis of domination by signs and the system of objects to even more pessimistic conclusions where he concludes that the thematic of the "end of the individual" sketched by the Frankfurt School has reached its fruition in the total defeat of human subjectivity by the object world. Influenced by Mauss' theory of the gift and counter-gift, Baudrillard claimed that pre-capitalist societies were governed by laws of symbolic exchange rather than production and utility. Developing these ideas, Baudrillard sketched a fundamental dividing line in history between symbolic societies — i.e., societies fundamentally organized around premodern exchange — and productivist societies (i.e., societies organized around production and commodity exchange). In the mode of classical social theory, he systematically develops distinctions between premodern societies organized around symbolic exchange, modern societies organized around production, and postmodern societies organized around "simulation" by which he means the cultural modes of representation that "simulate" reality as in television, computer cyberspace, and virtual reality. Baudrillard's distinction between the mode of production and utility that organized modern societies and the mode of simulation that he believes is the organizing form of postmodern societies postulates a rupture between modern and postmodern societies as great as the divide between modern and premodern ones. In theorizing the epochal postmodern rupture with modernity, Baudrillard declares the "end of political economy" and of an era in which production was the organizing form of society. The discourse of "the end" signifies his announcing a postmodern break or rupture in history. People are now, Baudrillard claims, in a new era of simulation in which social reproduction (information processing, communication, and knowledge industries, and so on) replaces production as the organizing form of society. In this era, labor is no longer a force of production but is itself a "one sign amongst many". Labor is not primarily productive in this situation, but is a sign of one's social position, way of life, and mode of servitude. Wages too bear no rational relation to one's work and what one produces but to one's place within the system. But, crucially, political economy is no longer the foundation, the social determinant, or even a structural "reality" in which other phenomena can be interpreted and explained. Instead people live in the "hyperreality" of simulations in which images, spectacles, and the play of signs replace the concepts of production and class conflict as key constituents of contemporary societies. From now on, capital and political economy disappear from Baudrillard's story, or return in radically new forms. Henceforth, signs and codes proliferate and produce other signs and new sign machines in ever-expanding and spiraling cycles. Technology thus replaces capital in this story and semiurgy (interpreted by Baudrillard as proliferation of images, information, and signs) replaces production. His postmodern turn is thus connected to a form of technological determinism and a rejection of political economy as a useful explanatory principle — a move that many of his critics reject.) (Au lieu d'analyser le champ des rapports de force multiples et en variation continue, comme le fait Foucault, ou de rechercher les conditions de possibilité de tout « savoir », ou formation discursive, Baudrillard, inspiré par l'œuvre de Nietzsche, s'intéresse au contraire aux événements de l'objet et à leurs règlements ou dérèglements : « séduction », la « simulation » et l'« hyper-réalité ». L'une de ces thèses centrales, qui poursuit, d'une certaine façon, la critique de la société du spectacle entamée par Guy Debord, repose sur l'analyse de la « disparition du réel », auquel se substitue une série de simulacres qui ne cessent de s'auto-engendrer. Ces idées associent toutes le principe général selon lequel la signification, et par conséquent la valeur, deviennent auto-référentiels (interprétés, selon la sémiotique structuraliste, en termes d'absence — ainsi « chien » signifie « chien » non en raison de ce que le mot indique, mais parce qu'il n'indique pas « chat », « chèvre », « arbre » etc.). Baudrillard emploie ce principe pour soutenir l'idée que dans notre actuelle société « globale », où la technologie des communications a créé une prolifération excessive de sens, l'auto-référentiel du sens a incité à la création non pas d'un « village global » (modèle McLuhan), mais à celle d'un monde où la signification a été effacée et où la société a été réduite à une masse opaque, où le « réel » a été réduit aux seuls signes autoréférentiels de son existence. À la fin de sa vie, l'aboutissement anthropologique de son travail l'a conduit à caractériser le monde en termes d'opposition binaire, des cultures symboliques (basées sur l'échange de cadeaux) et du monde « globalisé » (basé sur l'échange de biens et signes, c'est-à-dire un monde qui n'a aucune réponse à la logique symbolique).

*Par conséquent l'opinion actuelle de Baudrillard est que l'expansion du capitalisme et du néolibéralisme (et l'extension croissante des biens financiers qui l'accompagne), sème inconsciemment les graines de ce qui réagit contre lui, en raison de son manque de compréhension de l'aspect symbolique de l'existence sociale.)*

- **1976** \_\_ **Faraway Wind Organ** (1976-1984), Alan Lamb, Great Southern outback, Western Australia (One of the more unique and innovative pieces of field recording that Australia has ever produced was recorded deep in the Western Australian outback on an abandoned stretch of land populated only with scrub and disused power lines. When he purchased the half a mile piece of land for the princely sum of \$10 in 1976, Edinburgh born though Fremantle based Biomedical Researcher Alan Lamb knew exactly what he was doing. He had first heard the magical sounds of wire music on the side of a road in Scotland and was keen to pursue this wondrous symphony of natural sound in Australia, though was discouraged to find that power lines in Perth were coated to avoid rust and general wear and tear. The lines on his outback property had been stripped by Telecom and as a result were primed for experimentation, the results of which can be heard on the mesmerizing *Primal Image* (Dorobo 1995), two dark windswept pieces filled with an incredible depth of tone and texture, that sound much more like the work of abstract electronics, manipulating feedback and undulating tones than field recordings. Recorded and edited between 1981 and 1988, it's interesting to note that with the exception of slight equalization Lamb used no additional processing, consciously attempting to document the all encompassing experience of wire music, feeling it required no electronic trickery to make an impact [Bob Baker Fish]. "An exploration of sound structures, neither musically "designed" nor of random occurrence. Such structures to possess the properties of beauty, complexity and evocation of the emotional, the spiritual and the imaginary. On the whole, sound compositions arising from these aims are not intended to possess intellectual formalism. Approaches used: /1. Aeolian sound usually generated by long wires (eg telegraph wires) which I sometimes manipulate using mechanical devices to change parameters of the system. Also addition of voice, tonal instruments and percussive devices using many techniques either at the time of recording or later in studio. These systems are often designed with a sculptural aesthetic (eg Spring 8 Wire Installation, below). /2. Improvised electronic devices (Infinite Music Machines), designed to explore the more patterned and beautiful sounds derived from chaos (classical). Circuits are usually designed and built with a visual sculptural aesthetic. /3. Mechanical sound-making devices (eg tuned bicycle wheels) as sound sources for stochastic, chaotic, and nature-based movements through mechanical linkages. For aeolian systems I usually use long wires (up to a kilometer) supported in spans (50 to 300 meters) between massive rigid supports. The wires are preferably of high tensile steel 2.5 to 3.2mm in diameter. Tensions are kept high (approx 200 Kilogram) but well within the elastic limits of the steel to allow for unexpected forces and impacts. These dimensions appear to produce the optimal ranges and complexities of sounds which are effectively infinite over time. Big open spaces are needed where the winds can flow without obstruction or turbulence. I use a multitude of attached devices for interacting with the wires depending on aesthetic requirements. Among my favorites are eg 1. polystyrene foam "singing boxes" which make the vibrations of the wires audible and allow voice, instruments and percussion to be played into the wires to add by improvisation to the sound complexes 2. Devices for varying wire tensions 3. Nylon strings a few centimeters to a couple of meters long tied Electronic and mechanical systems are designed to respond chaotically to a variety of chance and deliberate actions mediated by all sorts of sensors to whatever seems appropriate using standard installation techniques. The aim is to produce unpredictable sound complexes which cannot be repeated. All my aeolian systems have been outdoors though I can imagine that "indoor" locations such as liftshafts, rail tunnels could be fascinating. Urban locations are almost impossible usually because of local government red tape. My most successful systems have been rural, wilderness and outback, and one urban, a vertical system hanging from a 50 meter lighting tower in a railway shunting yard in Fremantle. My preferred approach is to seek a "perfect" location (open, accessible, ease of fastening wires, free from acoustic interference, safe for people who may wander unknowingly onto the site, unlikely to be subject to vandalism or at least where "vandal-proofing" has a chance). Private land is preferable to minimise red tape. Even better is to own the site. I bought twelve acres, in rural Baldvies south of Perth specifically for the purpose in 1991. The multiplicity of "perfection" factors means that choosing a site takes a very long search and even then the project may be stymied by the unexpected. I always examine sites when invited, but in only two cases have such projects proceeded to completion (and one of them was almost fatally stymied, Japan, below). Whether public or private, invited or not, I take great care to examine the "feeling" of the site and to consult with everyone who may be affected by the installation. I place great importance on researching aboriginal significance of the site. In one case (Wogarno Station, midwest outback, WA), I believe the site used to have sacred importance to the aborigines before the clearances of the mid 20th century. Now "abandoned" I nevertheless used the site with the greatest possible sensitivity so that the installation could sound yet be almost invisible and interfere minimally with the land (below). In all sites the installation has to be sympathetic aesthetically and spiritually. I make quite sure the owners understand precisely what I expect the installation to look and sound like. Neighbors must also be consulted if they may be possibly affected. Without universal good will the installation will fail; the wind is alive. I try to avoid acoustic pollution. This is two way. I have received complaints from neighbors about the sounds of installations, which I have had to modify. Conversely, environmental sounds can be highly intrusive to the installation, but not always. Sometimes, noise which was anticipated to be disruptive has turned out to be surprisingly enriching. For example noise from heavy industry was especially complimentary to the nature of the lighting tower installation. On the other hand I have had to request eg that the Department of Civil Aviation redirect trainee pilots away from above my Baldvies property. Sometimes an installation may be constructed with the deliberate intent of including environmental sound, eg bird song at Wogarno." [Alan Lamb]. Other installations : 1991-2000 Baldvies site for continuous experimental wire and other

sound installations, rural, Western Australia /1988 Bickley Wire Installation, forest wilderness, Across the Valley, Bickley, Western Australia /1987 Westrail Lighting Tower Wire Installation, urban, vertical instrument, North Fremantle, Western Australia /1987 Murdoch University Wire Installation, semi-rural, Murdoch Campus, Perth, Western Australia /1986 Pole Farm Wind Organ, semi-rural, Darwin Institute of Technology, NT, Australia. Sound Compositions: 1999 Meditation on SPring 8, 12 minutes, SPring 8 Wind Organ /1997 Night Passage, final version, 25 minutes, Faraway Wind Organ /1988 Journeys on the Winds of Time 1, 12 minutes, Faraway Wind Organ /1988 Primal Image, final version, 29 minutes, Faraway Wind Organ /1988 New Journey, 11 minutes, Faraway Wind Organ, with Sarah Hopkins, Cello /1987 Spaces Between, 10 minutes, Murdoch Wire Installation /1987 Journeys on the Winds of Time 2, 7 minutes, Faraway Wind Organ /1986 Twins Beating at Powers of 2HZ, 10 minutes, Pole Farm Wind Organ /1986 Fiddles and Dits, 27 minutes, Pole Farm Wind Organ /1986 Mirages, 10 minutes, Faraway Wind Organ /1986 Beauty, 17 minutes, Faraway Wind Organ /1985 Sky Song, 15 minutes, Faraway Wind Organ, with Sarah Hopkins, Cello /1984 Last Anzac, 12 minutes, Faraway Wind Organ /1979 Requiem for Martin Prestige, 17 minutes, Faraway Wind Organ) <http://www.sounddesign.unimelb.edu.au/web/biogs/P000277b.htm> <http://www.rainerlinz.net/NMA/22CAC/lamb.html>

- **1976** \_\_ **Homo-Parleur**, GMEM Marseille (*The authors, Georges Bœuf & Michel Redolfi, present their new spatialisation system, two loudspeakers attached to the human body: the homo-parleur (body speaker) — a live-electronics device worn like a jacket. Through a technical description and musical remarks, they analyse the possibilities of this instrument for their future musical theatre works. (In Cahiers Recherche/Musique, no. 5. Paris: INA-GRM: 111-123, 1977) (Avec Michel Redolfi, Georges Bœuf a conçu et créé Whoops (1re version, 1976 ; 2e version, 1977), première œuvre pour « homo-parleur » (système de diffusion par haut-parleurs « greffés » sur le corps d'interprètes en action). Du Côté du Miroir - L'Homo-parleur, Théâtre Musical, avec Georges Bœuf et interprètes du GMEM, 1 août 1977, Festival d'Avignon, La Chartreuse de Villeneuve Lez Avignon (in Cahiers Recherche-Musique n°5 INA/GRM 1977)*)

- **1976** \_\_ **Kirribilli Wharf**, Bill Fontana (*"Fontana's accomplished techniques in field recording and audio relocation were developed in a series of sound sculptures dating from the 1970s and the 1980s. Kirribilli Wharf stand out as precursors to the spatial duality and contrapuntal sonic structure evident in Speeds of Time. Each emphasizes the artists innovations in sound mapping strategies and the simultaneity of sonic events as a means to represent the contemporary landscape." [Robert Riley]. "My 1976 recording of Kirribilli Wharf (on Sydney harbor) was the first time I attempted to apply sculptural thinking to the recordable listening process by making an 8 channel field recording. Kirribilli Wharf was a floating concrete pier that was in a perpetual state of automatic self performance. There were rows of small cylindrical holes going between the floor and underside to the sea below. They sounded with the percussive tones of compression waves as the holes were momentarily closed by the waves. This 8 channel recording consisted of placing microphones over the openings of eight such holes, making a real time sound map of the wave action in the sea below the pier. It was later installed as a gallery installation played from 8 loudspeakers in a space. This recording was seminal for my work because it was first time that a conceptual analysis of a natural musical process resulted in a live recording that was as genuinely musical as music; and because of the spatial complexity of 8 channels answering each other from 8 points in space, it also became genuinely sculptural .It was also sculptural in another important way, the percussive wave action at Kirribilli Wharf had continuousness and permanence about it. This 8 channel tape was not a recording of a unique moment, as with the total eclipse, but was an excerpt from a sound process that is perpetual. Twelve years after this recording was made, I returned to Kirribilli Wharf and placed microphones there which transmitted live sound to the Art Gallery of New south sales in Sydney, as part of a sound sculpture." [Bill Fontana] <http://www.resoundings.org/Pages/Resoundings.html>*)

- **1976** \_\_ « **Network Sampling some First Steps** », Mark S. Granovetter (*"The fact that not all community members have (direct) social relations with one another has become a matter of prominent theoretical focus. The metaphor most consistently chosen to represent this situation is that of the "social network" - a device for representing social structure which depicts persons as points and relations as connecting lines."*) <http://www.stat.cmu.edu/~fienberg/Stat36-835/Granovetter-AJS-1976.pdf>

- **1976** \_\_ **Seven Thoughts**, Douglas Davis (*"Seven thoughts", 1976 december 29th at Houston Astrodome using for 10 minutes Comsat satellite. I was obsessed with using satellites. It was the great unknown and therefore exotic. I wanted to use it to broadcast very avantgarde, conceptual video that no one expected or desired. At that time, no artist had gotten his or her hands on any satellite. We thought we'd be lucky to convince a TV network to allow a <live> performance or show a few minutes of video art. I decided this was tame. I thought that this was not worth all the time and boot-licking. I decided to try to get the satellite for myself, even in a tiny way. [...] We decided to rent time on the ComSat satellite for an uncompromising performance. Apparently it was the first time that any private citizen had done this. That was a wonder to me because our tax dollars created the satellite system -- then why weren't we allowed to use it? When it was sure that the whole piece would take place in Houston, I thought of the Astrodome. At that time, this was the largest roof stadium in the world. But more importantly, it was circular. The link between the satellite and the dome was most important to me. Eventually we managed to get the permission to use the Astrodome on the evening of December 29, 1976, because on this day it was empty. It was not being used, so it was cheap to rent. Otherwise it wouldn't have happened at all, since neither the museum nor I had a dime to spare. If Giuseppe Panza, the collector from Milan, hadn't given us the cash for the piece, I*

could not have uttered the «Seven Thoughts». [...] There was nobody in the Astrodome except for the people involved in the performance. But people could have picked up the signal anywhere in the world. TV and radio stations could have retrieved our signal and broadcast it. The «Seven Thoughts» were free thoughts. We sent a telegram to all ComSat receiving nodes. I offered seven very personal thoughts to the people. Stressing the privacy of the transmission mattered. I wasn't offering an imperialistic mass message, but personal contact with somebody ... with you ... wherever you were. It all began at 9:30 p.m. We could only afford to rent that huge place with its lights and its scoreboard for thirty minutes. At 9:28, just when I had to begin, a groundskeeper came in with a phone and yelled: «Bombay, India, is calling! You have to tell them what the seven thoughts are before they'll broadcast it on the radio.» But I had no time to spare: «Tell them it's a good will message for the new year», I said, and ran out on the field, to begin exactly at 9:30. That's when the silent performance began, viewed from cameras above, suspended from the dome's ceiling, I walked in circles carrying the small black box containing the seven thoughts. About 20 minutes later, I reached the middle of the Astrodome, where a microphone was lowered from above. Between 9:50 and 10:00, I spoke up through the roof of the stadium to the orbiting satellite down to the ears of the world. We only had ten minutes of direct transmission. I loved that compression and density. Then, after I had said the «Seven Thoughts» into the microphone, I locked the little black box where the thoughts remain to this day. [source: Douglas Davis, in: Tilman Baumgärtel: [net.art] New Materials towards Net art, Nürnberg 2001, pp. 54ff.)]

- 1976 \_\_ *Two Cities, Flesh, a Text, and the Devil*, Douglas Davis (Simultaneous performances/cablecasts co-sponsored by the Long Beach, Calif. Art Museum and Artist's CATV Television in San Francisco.) <http://www.afsnitp.dk/udefra/1/dd/whoisdd.html>

## 1977

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- 1977 \_\_ *Apple II* (The Apple II (often rendered or written as Apple II or Apple //) was the first highly successful mass produced microcomputer product, manufactured by Apple Computer (now Apple Inc.) and introduced in 1976. It was among the first home computers on the market, and became one of the most recognizable and successful. In terms of ease of use, features and expandability the Apple II was a major technological advancement over its predecessor, the Apple I, a limited production bare circuit board computer for electronics hobbyists which pioneered many features that made the Apple II a commercial success. Introduced at the West Coast Computer Faire in 1977, the Apple II was among the first successful personal computers and responsible for launching the Apple company into a successful business. (Competitors with the Apple II for the title of "first mass-produced microcomputer" include the IBM 5100 [sold fully assembled] and the Altair 8800 [sold in kit and assembled form, but mostly as a kit], both introduced in 1975; the winner depends on the definition of "mass-produced".) Throughout the years a number of different models were introduced and sold, with the most popular model manufactured having relatively minor changes even into the 1990s. By the end of its production in 1993, somewhere between five and six million Apple II series computers (including approximately 1.25 million Apple IIGS models) had been produced.) <http://www.oldcomputers.net>

- 1977 \_\_ « *Écoute* » (Listening), Roland Barthes (In his essay "Listening," Roland Barthes begins by differentiating between "hearing" and "listening." He writes that while "hearing is a physiological phenomenon[,] listening is a psychological act". He goes on to delineate three distinct types of listening: the first places the listener on the "alert," attempting to classify sounds according to whether they represent prey or predator; the second bespeaks a "deciphering" whereby "what the ear tries to intercept are certain signs"; the third is the listening of the psychoanalyst. (...) As Barthes demonstrates, this requires a certain risk on the part of the analyst: "Listening, then, involves a risk: it cannot be constructed under the shelter of a theoretical apparatus, the analysand is not a scientific object from whom the analyst, deep in his armchair, can protect himself with objectivity. The psychoanalytic relation is effected between two subjects. The recognition of the other's desire can therefore not be established in neutrality, kindness, or liberality: to recognize this desire implies that one enters it, ultimately finding oneself there. Listening will exist only on the condition of accepting the risk, and if it must be set aside in order for there to be analysis, it is by no means with the help of a theoretical shield." (...) The risk of listening here is the risk of active and subjective interpretation. Indeed, Barthes posits listening (as interpretation) in the same way that Benjamin says that "traces of the storyteller cling to the story the way the handprints of the potter cling to the clay vessel". Freud's explication of the unconscious desires of his patients, according to Barthes, took the form of "narrative, a mediate, delayed construction". [Joseph Schneider, "Listening/Reading: Toward A Stereophonic Hermeneutics", in *Enculturation*, Vol. 2, No. 2, Spring 1999]) ("Entendre est un phénomène physiologique, écouter est un acte psychologique. Il est possible de décrire les conditions physiques de l'audition ( ses mécanismes ), par le recours à l'acoustique et à la physiologie de l'ouïe mais l'écoute ne peut se définir que par son objet, ou, si l'on préfère, sa visée. Or, tout le long de l'échelle des vivants (la scala viventium des anciens naturalistes) et tout le long de l'histoire des hommes, l'objet de l'écoute, considéré dans son type le plus général, varie ou a varié. De là, pour simplifier à l'extrême, on proposera trois types d'écoute. Selon la première écoute, l'être vivant tend son audition ( l'exercice de sa faculté physiologique d'entendre ) vers des ; rien à ce niveau, ne distingue l'animal de l'homme: le

*loup écoute un bruit (possible) de gibier, le lièvre un bruit (possible) d'agresseur, l'enfant, l'amoureux écoutent les pas de qui s'approche et qui sont peut-être les pas de la mère ou de l'être aimé. Cette première écoute est, si l'on peut dire, une alerte. La seconde est un déchiffrement; ce qu'on essaye de capter par l'oreille, ce sont des signes. ici, sans doute, l'homme commence: j'écoute comme je lis, c'est-à-dire selon certains codes. Enfin, la troisième écoute, dont l'approche est toute moderne ce qui ne veut pas dire qu'elle supplante les deux autres) ne vise pas ou n'attend pas — des signes déterminés, classés non pas ce qui est dit, ou émis, mais qui parle, qui émet elle est censée se développer dans un espace intersubjectif, où "j'écoute" veut dire aussi "écoute-moi", ce dont elle s'empare pour le transformer et le relancer infiniment dans le jeu du transfert, c'est une "signifiante" générale, qui n'est plus concevable sans la détermination de l'inconscient. (...) Construite à partir de l'audition, l'écoute, d'un point de vue anthropologique, est le sens même de l'espace et du temps par la capture des degrés d'éloignement et des retours réguliers de excitation sonore. Pour le mammifère, son territoire est jalonné d'odeurs et de sons pour l'homme - chose souvent sous-estimée - l'appropriation de l'espace est elle aussi sonore l'espace ménager, celui de la maison, de l'appartement (équivalent approximatif du territoire animal) est un espace de bruits familiers, reconnus dont l'ensemble forme une sorte de symphonie domestique claquement différencié des portes, éclats de voix, bruits de cuisine, de tuyaux, rumeurs extérieures: Kafka a décrit avec exactitude (la littérature n'est-elle pas une réserve incomparable de savoir?) cette symphonie familière, dans une page de son journal (...). Si le fond auditif envahit tout l'espace sonore (si le bruit ambiant est trop fort) la sélection, l'intelligence de l'espace n'est plus possible, l'écoute est lésée; le phénomène écologique qu'on appelle aujourd'hui la pollution - et qui est en passe de devenir un mythe noir de notre civilisation technicienne- n'est rien d'autre que l'altération insupportable de l'espace humain en tant que l'homme lui demande de s'y reconnaître. (...) Par ses bruits, la nature frissonne de sens c'est du moins ainsi, au dire de Hegel, que les anciens Grecs l'écoutaient. Les chênes de Dodone, par la rumeur de leur feuillage, rendaient des prophéties, et dans d'autres civilisations aussi (qui relèvent plus directement de l'ethnographie), les bruits ont été les matériaux directs d'une mantique, la clédonomancie: écouter, c'est, d'une façon institutionnelle, chercher à savoir ce qui va se passer (inutile de relever toutes les traces de cette finalité archaïque dans notre vie séculière). Mais aussi, l'écoute, c'est ce qui sonde. Dès lors que la religion s'intériorise, ce qui est sondé par l'écoute, c'est l'intimité, le secret du cœur: la Faute. (...) Dans cette hôtellerie du signifiant où le sujet peut être entendu, le mouvement du corps est avant tout celui d'où s'origine la voix. La voix est, par rapport au silence, comme l'écriture (au sens graphique) sur le papier blanc. L'écoute de la voix inaugure la relation à l'autre: la voix, par laquelle on reconnaît les autres (comme l'écriture sur une enveloppe), nous indique leur manière d'être, leur joie ou leur souffrance, leur état; elle véhicule une image de leur corps et, au-delà, toute une psychologie (on parle de voix chaude, de voix blanche, etc.). (...) ce qui est écouté ici et là (principalement dans le champ de l'art, dont la fonction est souvent utopiste), ce n'est pas la venue d'un signifié, objet d'une reconnaissance ou d'un déchiffrement, c'est la dispersion même, le miroitement des signifiants, sans cesse remis dans la course d'une écoute qui en produit sans cesse des nouveaux, sans jamais arrêter le sens: ce phénomène de miroitement s'appelle la signifiante (distincte de la signification): en «écoutant» un morceau de musique classique, l'auditeur est appelé à «déchiffrer» ce morceau, c'est-à-dire à en reconnaître (par sa culture, son application, sa sensibilité) la construction, tout aussi codée (prédéterminée) que celle d'un palais à telle époque mais en «écoutant» une composition (il faut prendre le mot dans son sens étymologique) de Cage, c'est chaque son l'un après l'autre que j'écoute, non dans son extension syntagmatique, mais dans sa signifiante brute et comme verticale: en se déconstruisant, l'écoute s'extériorise, elle oblige le sujet à renoncer à son «intimité». Ceci vaut, mutatis mutandis, pour bien d'autres formes de l'art contemporain, de la «peinture» au «texte» et ceci, bien entendu, ne va pas sans déchirement car aucune loi ne peut obliger le sujet à prendre son plaisir là où il ne veut pas aller (quelles que soient les raisons de sa résistance), aucune loi n'est en mesure de contraindre notre écoute: la liberté d'écoute est aussi nécessaire que la liberté de parole. C'est pourquoi cette notion apparemment modeste l'écoute ne figure pas dans les encyclopédies passées, elle n'appartient à aucune discipline reconnue) est finalement comme un petit théâtre où s'affrontent ces deux déités modernes, l'une mauvaise et l'autre bonne: le pouvoir et le désir." [Roland Barthes] [http://enculturation.gmu.edu/2\\_2/schneider.html](http://enculturation.gmu.edu/2_2/schneider.html)*

- 1977 \_\_ **First networked concert performance**, Jim Horton, Rich Gold, Mills College (*A version of Euler Music interfaced to Gold's cartoon-language conversational micro-artificial-intelligence. The program played Leonhard Euler's (1707-1783) theory of just intonation. « I would adjust parameters for the minimum and maximum of Euler's "gradus suavitatus" aesthetic measurement on intervals and transitions between intervals. I developed a home-brew automatically playable rhythmic system based on the idea of "the long and the short". The Kim-1microcomputer board was interfaced to a (Stan) Lunetta style digital circuit of down counters and flip-flops. »*) <http://leonardo.info/lmj/horton.html>

- 1977 \_\_ **Documenta 6 - Telecast** (*In the 70's and early 80's, multi-party teleconference systems were invented, so that, in the context of Documenta 6 (1977), Joseph Beuys and Nam June Paik, from geographically remote places, both participated in the opening through a teleconference link-up, and transmitted live into more than thirty different countries. The work "The last 9 minutes, 1977"- made in the beginning of the technological experiments in art - is a potential example of how an artwork can develop a political perspective. This work, made for the Documenta 6 from Kassel, German, is the first teleconference performance in real-time that collapsed virtual geographic boundaries, and also collaboration between the artists Douglas Davis, Nam June Paik, Charlotte Moorman and Joseph Beuys where the group created a series of performances in front of a video camera, connected to more than twenty-five countries. "Paik and Moorman perform a series of collaborative works, while Davis considers the nature of the*

telecast as a medium. Beuys, who often used his exhibitions as platforms for social and political agitation, discusses his utopian theories of 'social sculpture' and his efforts to transform society through artistic activity." [Adriano Casanova - Borderlines: Digital art to produce social statements]. Paik and Charlotte Moorman are seen live from Kassel in Fluxus-inspired collaborative performances, including TV Bra, TV Cello, and TV Bed. They fuse music, performance, video and television in an homage to global communications. Also from Kassel, Joseph Beuys presents a direct address to the public, elaborating on his utopian theories of art as social sculpture," which were crucial to his conceptual project. From Caracas, Venezuela, Davis performs *The Last Nine Minutes*, a participatory piece in which he addresses the time/space distance between himself and the television viewing audience.")

- 1977 \_\_ « **Dromology** » (Speed & Politics: An Essay on Dromology), Paul Virilio ('Dromos' from the Greek word to race. Meaning: the 'science (or logic) of speed'. Dromology is important when considering the structuring of society in relation to warfare and modern media. He notes that the speed at which something happens may change its essential nature, and that that which moves with speed quickly comes to dominate that which is slower. "A second aspect of my work is movement. This, of course, I pursue through my research on speed and on my study of the organisation of the revolution of the means of transportation. For me, then, territory and movement are linked. For instance, territory is controlled by the movements of horsemen, of tanks, of planes, and so on. Thus my research on dromology, on the logic and impact of speed, necessarily implies the study of the organisation of territory. Whoever controls the territory possesses it. Possession of territory is not primarily about laws and contracts, but first and foremost a matter of movement and circulation. Hence I am always concerned with ideas of territory and movement." For Virilio, the question of technology is the question of our time and his life-work constitutes a sustained reflection on the origins, nature, and effects of the key technologies that have constituted the modern/postmodern world. In particular, Virilio carries out a radical critique of the ways that technology is transforming the contemporary world and even the human species. Resolutely rejecting the forms of economic determinism associated with Marxism, Virilio's dromology focuses on those instruments that accelerate and intensify speed and that augment the wealth and power of those groups who control them.) <http://multitudes.samizdat.net/spip.php?article566>  
<http://www.ctheory.net/articles.aspx?id=132>

- 1977 \_\_ **Four Places Two Figures One Ghost**, Whitney Museum, Douglas Davis (first live performance telecast from a New York City museum) <http://douglasdavis.blogspot.com/2005/09/first-blog.html>

- 1977 \_\_ **Golden Record, Murmurs of the Earth**, Carl Sagan (The LP he compiled, entitled "Murmurs of Earth", was stowed aboard the Voyager spacecraft in 1977 in the hope that it would be discovered in the future by some extraterrestrial listener. Today Voyager and its sonic message continue to race from our solar system at speeds of over 35,000 kph. Pioneers 10 and 11, which preceded Voyager, both carried small metal plaques identifying their time and place of origin for the benefit of any other spacefarers that might find them in the distant future. With this example before them, NASA placed a more ambitious message aboard Voyager 1 and 2-a kind of time capsule, intended to communicate a story of our world to extraterrestrials. The Voyager message is carried by a phonograph record-a 12-inch gold-plated copper disk containing sounds and images selected to portray the diversity of life and culture on Earth. The contents of the record were selected for NASA by a committee chaired by Carl Sagan of Cornell University, et. al. Dr. Sagan and his associates assembled 115 images and a variety of natural sounds, such as those made by surf, wind and thunder, birds, whales, and other animals. To this they added musical selections from different cultures and eras, and spoken greetings from Earth-people in fifty-five languages, and printed messages from President Carter and U.N. Secretary General Waldheim. Each record is encased in a protective aluminum jacket, together with a cartridge and a needle. Instructions, in symbolic language, explain the origin of the spacecraft and indicate how the record is to be played. The 115 images are encoded in analog form. The remainder of the record is in audio, designed to be played at 16-2/3 revolutions per minute. It contains the spoken greetings, beginning with Akkadian, which was spoken in Sumer about six thousand years ago, and ending with Wu, a modern Chinese dialect. Following the section on the sounds of Earth, there is an eclectic 90-minute selection of music, including both Eastern and Western classics and a variety of ethnic music. Once the Voyager spacecraft leave the solar system (by 1990, both will be beyond the orbit of Pluto), they will find themselves in empty space. It will be forty thousand years before they make a close approach to any other planetary system. As Carl Sagan has noted, "The spacecraft will be encountered and the record played only if there are advanced spacefaring civilizations in interstellar space. But the launching of this bottle into the cosmic ocean says something very hopeful about life on this planet.") <http://voyager.jpl.nasa.gov/spacecraft/goldenrec.html> [http://www.jpl.nasa.gov/multimedia/voyager\\_record/](http://www.jpl.nasa.gov/multimedia/voyager_record/)

- 1977 \_\_ **The Last 9 Minutes**, Douglas Davis (The last 9 minutes, satellite video performance, was produced by the German Hessischer Rundfunk for the opening of Dokumenta 6 1977; the 3 performances were broadcasted all over the world, inclusive the former sovjet union (transmitted to 25 countries). Nam June Paik and Charlotte Moorman were performing first, then Joseph Beuys. The last 9 minutes of the broadcasting were performed by Douglas Davis: he is looking for the frame, for his audience. Off voice and text are telling something like: wherever you are, i'll find you in 9 minutes.. put your hand on the displays. Let me hear your watch ticking. In 9 minutes we will destroy this bounding. At the end a performer in Caracas spelt the countdown in spanish while Davis is telling to the public they all have to strike against the display at 1. So the 2 performers did and crashed at the same

time against the glas. Then the live picture faded out.) <http://www.afsnitp.dk/udefra/1/dd/museum.html> <http://www.experimentalstvcenter.org/history/people/ptext.php?id=56&page=1>

- 1977 \_\_ **PALS/Action At A Distance**, Blue Gene Tyranny (*In this piece, two friends play a kind of ESP game, exchanging personal observations about each other. Their voices are accumulated electronically and trigger electronic gates which allow microphones at progressively greater distances to enter into the mix. The audience hears the space of the intimate vocal interplay as well as the multiple spaces radiating outward like ripples in water after a stone is thrown in. The total effect is a psychological illusion like the one which occurs when people are having an engaging conversation that gradually creates rich mental imagery (including premonitions and intuitions) far beyond their present circumstances. [“Blue” Gene Tyranny, “Out To The Stars, Into The Heart: Spatial Movement in Recent and Earlier Music”]*)

- 1977 \_\_ **Radio Net**, Max Neuhaus (*Neuhaus used only the sound from incoming telephone calls - inviting listeners to phone in to their local public radio station and whistle into the phone - as his material, but controlled it with completely automatic mixing desks. He also activated radio technology, in the form of the national loop used by the American NPR Broadcasting Corporation, to process this material aesthetically. Instead of merely transmitting signals from one station to the next, Neuhaus converted the whole system into a closed loop, so that sounds could circulate throughout it. . The sound would then go round the phone line network, run thru a phase shifter, and in a matter of seconds come out on the radio in a rather mysterious, layered texture of sound. In ‘Radio Net’, the mixing was done with what could be seen as a special case of time-division multiplexing. Although heard as a conventional mix of input signals, the output was actually being switched very quickly from input to input. The perceived level of an input in the mix depended on how long the output lingered on it. The technique allowed automatic mixing according to an analysis of each signal; the criterion I used here was that the highest pitched signal at any given instant won the output for that particular fraction of a second. In those days radio programs on NPR were distributed by what they called a Round Robin - telephone lines connecting all two hundred stations into a large loop stretching across the country. Any station in the system could broadcast a program on all the others by opening the loop and feeding the program around it. I saw that it was possible to make the loop itself into a sound-transformation circuit and tried a few things with it in several preliminary studies. For the broadcast I decided to configure it into five loops, one for each call-in city, all entering and leaving the NPR studios In Washington. Instead of being open loops as usual during a broadcast, though, I wanted to close them and insert a frequency shifter in each so that the sounds would circulate; it created a sound-transformation ‘box’ that was literally fifteen hundred miles wide by three thousand miles long with five ins and five outs emerging in Washington. During the broadcast, the sounds phoned into each city passed through its self-mixer and started looping. With each cross-country pass, each sound made another layer, overlapping itself at different pitches until it gradually died away.) <http://www.medienkunstnetz.de/works/radio-net/> <http://www.max-neuhaus.info/soundworks/vectors/networks/Broadcast Works and Audium.pdf> <http://www.max-neuhaus.info/>*

- 1977 \_\_ **Satellite Arts Project - A Space With No Geographical Boundaries**, Kit Galloway & Sherrie Rabinowitz (*Objective: To demonstrate for the first time, that several performing artists, separated by oceans and geography, could perform together by seeing themselves occupying the same live image - “The image as place.” Everyone would see themselves standing next to each other, able to talk with each other, and ultimately perform together. “A virtual performance space with no geographic boundaries” : two groups of dancers are interacting at two different locations, three thousand miles apart. From 1975 through 1977 artists Kit Galloway and Sherrie Rabinowitz developed a series of projects under a heading they called “Aesthetic Research in Telecommunications,” 1975. Among these projects was the Satellite Arts Project that addressed a multitude of telecollaborative arts and virtual space performance issues that had never been genuinely tested or even experienced. Central to the Satellite Arts Project idea was an aesthetic inquiry that would apply the performing arts as a mode of investigating the possibilities and limitations of various technologies to create new contexts for art, including the emergence of telecollaborative arts on a global scale. In a time when satellites were the only viable means of transmitting full-motion video across oceans in near-realtime (the global context), the artists focused equally on transmission delays over long distance networks, and performed a number of telecollaborative dance, music, and performance scores to determine what traditional genres could be supported, while exploring new genres that would emerge over time as intrinsic to these new ways of being-in-the-world. The Satellite Arts “series” of projects represents a seminal work in telecommunications art history. Not a conventional satellite broadcast of an artist/s as subject, nor a videoconference by artists. This marks the first time that the geographically dispersed electronic image was contextualized as a live immersive place, where artists, and others, could convene and co-create together on a scale that could be as culturally inclusive as desired. The first live satellite performances and satellite time-delay tests were conducted on July 26, 1977. Rehearsals with performers in simulated environments were already underway. The concluding satellite performances were November 20, 21, 22, 23, 24, 1977. “The project has a visual form or template for establishing the separate locations in California and Maryland as a split scree, which would then dissolve into an entirely new third and shared locations for four performers. The split screen, however, acted as more than a visual metaphor representing distance. It was also a device delineating “video spaces” and “remote locations” and therefore something the artists set out to deliberate destroy. The split screen was thus an “architecture” designed and scored “to be torn down, torn down in order to enter and convene together in, what was up until that time, an unexplored territory” [Sherry Rabinowitz, in “At a Distance -*

*Precursors to Art and Activism on the Internet*”. “The 1977 Satellite Arts project incorporated image processing, wireless acquisition of physiological data, and as a result of using geosynchronous satellites to test and evaluate the only existing technological context for manifesting a global real-time immersive environment, we addressed what would turn out to be issues of network latency from that time forward” [Kit Galloway, *idem*]. “Our artwork is about social spaces that accommodate the physical reality and the virtual. A major theme is mixing the real and the virtual. (...) This exploration of “being” and inhabiting virtual environments was made over a decade before philosophers would again become invested in concepts of “place” as distinct from the time / space / pace discourse dominating emergent communication technologies. More interestingly, Satellite Arts incorporated most of the elements now being argued as integral for the formation of identity in unexplored and uninhabited landscapes and for the act of emplacement to occur. The social inquiry necessary for establishing “where I am, how I am together with others, and who we will become together” was stimulated through interactions between the real (the “here”) and the virtual (the “there”). Scored improvisation allowed the fullest exploration of the “collusion of landscape and body when human beings venture beyond the confines of familiar territory”. The sensorial displacements and adjustments to the environments and the dancers’ experiences of kinesthesia are now becoming recognized as ways of “being” in environments in which common methods of orientation are disrupted or in which one’s perceptions “drift between regions”. The integration of sensory stimuli with observational assessments as a means of navigation has precedents in earlier cultures. Edward Casey, addressing not virtual space but the Pacific Ocean, cites examples of skills learned by the Puluwatan Micronesians and Islanders, who combined assessments of the night sky and distant horizons with their experience of the feel of the roll and pitch of their canoe on the waves to navigate toward what were otherwise regarded as “unknowable” destinations” [Sherrie Rabinowitz, *idem*].) <http://www.ecafe.com/museum/history/ksoverview2.html>

- **1977** \_\_ **Skydrift**, David Dunn (David Dunn’s *Skydrift* (1977) is scored for an electro-acoustic ensemble moving in an outdoors environment. One recorded performance involved 10 voices, 16 instrumentalists, and 4 channels of electronic sound generated from materials gathered at the performance site in a Southwestern desert. The instrumentalists moved outward from a central circle while their playing responded to environmental sounds; the circle became enlarged up to a half-mile from its original formation. [“Blue” Gene Tyranny])

- **1977** \_\_ **Tuchan, village N° 11350**, Luc Ferrari (Luc has always been deeply interested in society, in people one can see in the metro, in the street, in popular places. We can be aware of this interest in the majority of his works, but in addition he made several pure sound reports, in particular in Algeria. One beautiful sunny day of 1976 we spent the after-noon in the garden of friends. We were lying in the grass with our map of France and wondered where to spend some weeks in summer. As Pierre was sprinkling his young trees Luc asked him to send one water drop on our map. It fell on Tuchan we never had heard about before, so we decided immediately to go there with the wish to explore this small village in the Corbières, a vine country in the department of Aude in the southwest of France. There, we brought our sound recorder and camera and let them work. This not very spectacular, not picturesque village was politically very left-minded. We spoke with all persons who agreed easily; the wise men, the persons in charge with the political sections, the postmaster, the vine keeper, the mayor, the butcher, the freethinker, (we couldn’t meet the priest; he was never there) the policeman, the house of the young people, the firefighters, hunters, ... and sometimes we brought together persons who had been annoyed, to explain themselves. Some discussions were very ardent, particularly about hunting and politics; which was exciting for us. We became good friends with some of them, had funny picnics with a family eating snails they had caught and had roasted on a grill over a fire. Chantal belonged to this family. We promised our friends to come back the year after and to show what we had recorded. So in 1977 the cooperative winery organized this audio-visual show we gave, called “Tuchan, village N° 11350” and for which Luc had composed “Ce qu’a vu le Cers” - what the Cers has seen (the wind that blows over this area). The large hall of this place was full with people. As normally a winery has no seats, every person brought his chair from home. With Chantal we met every day in that summer 1977. We felt that she was not very happy. We asked her if she agreed to be interviewed. She did. In two afternoons she told us about her life, her troubles, her desires. My great thanks to her. [Brunhild Ferrari, June 2008]) (Spectacle audiovisuel (musique, interviews, diapositives. Une série d’entretiens tracent la vie d’un village des Corbières. Les agriculteurs y parlent des Cathares, de politique, du Front Populaire, de l’exode des jeunes, de la viticulture, de la chasse, etc. Pendant un mois, nous avons interrogé, suivi et photographié quelques-uns des habitants qui ont accepté l’expérience proposée. Reportage “symphonique” illustré par une musique originale et les bruits ambiants du village.) <http://www.lucferrari.org>

- **1977** \_\_ **Two-Way Demo - Phase II – Send/Receive Satellite Network**, Liza Bear, Willoughby Sharp & Keith Sonnier, Carl Loeffler (in collaboration with a group of San Francisco and New York artists; this was the first two-way live interactive video transmission via NASA experimental communications satellite and fifteen hour trans-continental interactive satellite work made by artists. “Two-Way Demo”, which was a collaborative project of “Send/Receive Network”, consisted of two groups of artists. One group, including of Terry Fox, Alan Scarritt and others, worked at the NASA Ames facility in San Francisco. The other group, which consisted of Keith Sonnier, Liza Bear, Duff Schweningen and myself, worked in the shadow of the World Trade Center in downtown Manhattan. NASA let us use their mobile satellite up-and-down link housed in a small polished aluminium bread truck for three days. Put into position in 1976, the NASA Satellite CTS is used for the occasion. The New York-based station, MCTV, receives a cable signal by satellite. Using this technology, and a connective infrared link that Duff and I had found to deliver the signal into

*cable TV in the New York end, we sent live interactive satellite-delivered television between New York and San Francisco. There was a split screen on the television with an artist in San Francisco appearing on one side and an artist in New York appearing on the other. As artists, we were interested in interactivity in real time, which the new communication technology provided. The Manhattan Cable Company had only delivered television programs – one way – to an audience. After “Two-Way Demo”, Manhattan Cable learned that it could also receive live television programming. Throughout the two-and-a-half hour-long broadcast, the two-way telecommunication is the central theme: texts are read, video material recorded and discussed. The broadcast reaches almost 25,000 spectators. The artists’ initiative resulted in the corporation learning something new about their own system. [Willoughby Sharp]*

- **1977** \_\_ **WorldPool**, Sharon Lovett, Fred Gaysek, Norman White, Judith Doyle, Willoughby Sharp (WorldPool group began experimenting with fax exchanges between Toronto and NYC in 1977. From 1978 to 1984, WorldPool initiated hundreds of live-to-live telexchanges between art nodes in Tokyo, New-York, Toronto, Florida, Los Angeles, Pender Island B.C., Paris and a host of other locations. Slow-scan video (a bank surveillance technology), early fax machines, Texas Instruments’ silent dam terminals (linked on the IP Sharp mail network) and other unlikely and now-obsolete telenetworking devices were borrowed from high-tech businesses.) <http://www.readingpictures.com/worldpool/>

## 1978

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- **1978** \_\_ **Ambient Music**, Brian Eno (“An ambience is defined as an atmosphere, or a surrounding influence: a tint. My intention is to produce original pieces ostensibly (but not exclusively) for particular times and situations with a view to building up a small but versatile catalogue of environmental music suited to a wide variety of moods and atmospheres... Ambient Music must be able to accommodate many levels of listening attention without enforcing one in particular; it must be as ignorable as it is interesting.” Eno appears to have blended the musical and aesthetic voices of two forerunners: Erik Satie’s *Musique d’aneublement* a type of music intended to function like an armchair or lamp and minimalism, an art movement characterized by an emphasis on repetition, reduced means, and non-narrativity. But aesthetically, these two predecessors are fundamentally opposed to one another. Satie did not want any active listening; minimalism, on the other hand, almost always presupposes engagement, sometimes very deep (even meditative) engagement with the music. Eno has a desire to have it both ways in *Music for Airports*.) <http://www.enoweb.co.uk/>

- **1978** \_\_ **CommuniTree** (In 1978 a group of people in Northern California designed a BBS that used message attachment protocols that facilitated conversations. As a metaphor for this structure they used a tree, firstly because it was based on a principle of computer science called binary tree protocol, and secondly because Northern California near Silicon Valley was a land of hot tubs, Eastern mysticism, and computer hackers, and the organicity that the word “tree” suggested was important to those hackers’ worldview. The original CommuniTree was designed with the idea that the community it facilitated would be completely free. Anyone could enter any sort of message. In fact, censorship was completely prohibited at the level of the code, of the Tree’s program. It worked this way: First, the system operator was prevented from reading messages as they arrived. Second, messages were hard to remove once they were entered. Third, anything could be entered into the system, including so-called control characters, which are not part of the standard alphanumeric set and which can be used to control the operation of the host computer. Lastly, to make sure that no system operator could tamper with the system, the code was written in language called Forth, and not documented. Now Forth is a religion unto itself, and if you know anything about Forth you recognize that this makes the system a total black box -- it’s impossible to know anything about how the code works. CommuniTree went online in 1978. The kinds of conversations they had in there were of a high intellectual and spiritual character. They talked about new philosophies and new religions for post-Enlightenment humanity, the first time such conversations had taken place online.) <http://www.flyingsnail.com/missingbbs/CommuniTree.html>

- **1978** \_\_ « **Computer Network Music - Network Instrument** », Chris Brown (“The network is the locus and a source for a new kind of music. The network provides the new technological way that representations of sounds, like other physical forms, can be manipulated collaboratively, transcending the physical boundaries of individuals. Music in Western culture since the Renaissance has been primarily a celebration of the individual as genius : composer, virtuoso, rock star. A contrasting approach is exemplified by Southeast Asian gong music traditions, like Javanese “gamelan”, in which the focus is the group, and individuals strive to blend seamlessly and anonymously within it. In a way similar to “gamelan”, computer network music is an expression of systems and architectures of connection created by individuals collaborating with each other, centering not on individual personalities, but on the cultural macroorganisms revealed in their interaction. It involves a “distancing” of the physical connection between sound and individual body. This is perhaps the original and more important meaning of “distance” within the network medium : It is less important that people are interacting from long distances with each other than that they are creating art in which physical proximity and display, the collision of their physical and personal identity, are transcended. Computer music network aims to reveal the voice of

*the system itself, the sound of the “network instrument”. (...) It favored compositions that changed with each performance, textures, that emphasized a simultaneous multiplicity of voices, and a practice based on collaborative, communal, or group-oriented activities. Another ingredient in this musical stew was the influence of the West Coast tradition of the composer as instrument builder (Harry Partch, Lou Harrison, and John Cage) that emphasized taking control of the means of making music itself, including the tuning systems and the instruments. Why not extend this approach to the new electronic technologies? Finally the lack of significant opportunities on the West Coast for the support and presentation of art music made composers in the Bay Area more likely to embrace underground, experimental aesthetics. Since the audience was so diffuse, and opportunities for career so futile, why not spend one’s efforts following the potential of fantastic ideas, rather than worrying about the practical applications of those ideas within traditional musical domains? Both the League Music Composers and the Hub came about as associations of computer music composers who were also designers and builders of their own hardware and software instruments. They approached the computer network as large, interactive musical instrument in which data-flow architecture linked independently programmed automatic music machines, producing a music that was noisy, surprising and often unpredictable and was definitely more than the sum of its parts.” [in “At a Distance: Precursors to Art and Activism on the Internet”, AnnMarie Chandler]*

- **1978 \_\_ A Dip in the Lake** — Ten Quick Steps, Sixty-one Waltzes and Fifty-six Marches for Chicago and Vicinity, John Cage (*A Dip in the Lake* is the exploration of a city by means of a ‘random’ soundmap that leads performers, listeners, or participants to places they may never have been before. The process of this work is to go to the places (in Chicago or any other city, by assembling a chance determined list of 427 addresses, grouping them in 10 groups of 2, 61 groups of 3 and 56 groups of 4) and either listen to, perform at and/or make a recording of the sounds at those locations. The score identifies up of 427 locations within a city. The ‘locations’ are either very specific (such as the intersection of two streets), or more general (such as ‘a park’ or ‘Lake Ontario’). Recordings are made at each of these locations, and divided into 10 groups of 2 (quicksteps), 61 groups of 3 (waltzes) and 56 groups of 4 (marches). These groups of recordings are then mixed live by the performers. “We decided to house this area premiere in the SS Clipper. Therefore, the environmental sounds from the specified intersections were recorded on magnetic tape. To manage the playback of these sounds, John suggested that I follow the instructions to Rozart Mix (a tape collage written for Alvin Lucier and the Rose Art Museum at Brandeis University, 1965). The directions indicate that we make tape loops after cutting the recorded tapes into numerous pieces of varying lengths (from tiny fragments up to five inches). Then: Splicing together ignorantly sometimes not ->, or <-, etc. Make only a few shortest viable lengths, make some very long —and all lengths in between, perhaps determining lengths by chance. There should be at least as many loops as there are keys on a piano. I used the I Ching to determine the lengths of the loops between ten inches and thirty feet, and we assembled them at a tape-splicing party. They are to be played simultaneously on at least twelve portable tape machines, each with a built in loudspeaker. One operator per machine maintains, repairs, and exchanges the loops, while present at an assigned station on the boat. The audience is encouraged to move about from station to station in order to experience the variety of sound collages. *A Dip in the Lake*, like the first of the city pieces, 49 Waltzes for the Five Boroughs (1977) can be transcribed for other cities by assembling new lists of local addresses.” [Peter Genal] <http://www.petergena.com/cagedip.html> [http://www.ubu.com/sound/cage\\_dip.html](http://www.ubu.com/sound/cage_dip.html)

- **1978 \_\_ GPS, Global Positioning System** (The Global Positioning System (GPS), is a satellite navigation system. More than two dozen GPS satellites are in medium Earth orbit, transmitting signals allowing GPS receivers to determine the receiver’s location, speed and direction. The first experimental satellite was launched in 1978. It was developed by the U. S. Department of Defense under the official name NAVSTAR GPS (Navigation Satellite Timing and Ranging Global Positioning System). The satellite constellation is managed by the U.S. Air Force 50th Space Wing. The cost of maintaining the system should be approximately US\$400 million per year, including the replacement of aging satellites. A GPS receiver calculates its position by measuring the distance between itself and three or more GPS satellites. Measuring the time delay between transmission and reception of each GPS radio signal gives the distance to each satellite, since the signal travels at a known speed. The signals also carry information about the satellites’ location. By determining the position of, and distance to, at least three satellites, the receiver can compute its position using trilateration. Receivers typically do not have perfectly accurate clocks and therefore track one or more additional satellites to correct the receiver’s clock error. The GPS system is made by 29 satellites (stand January 07), a network of tracking stations, a computing station, 2 injection stations, then at least the receivers. The satellites are sending signals both on the frequencies 1,2 and 1,5 GHz. The signals contain information about time and coordinates of the satellite. The 4 main tracking stations and the central computing station are situated in the U.S. Everytime the satellite orbits over the U.S. the station is able to compute its right position, feedbacking it to the satellite itself, which is communicating it to the users or GPS receivers. The system is based on the spheric positioning method which is measuring the time the signal needs to cover the distance between satellite and receiver. The coordinates of 3 or 4 satellites in orbit and the time needed by the signal to reach the receiver are the data determining the spatial positioning of the receiver. A GPS receiver can not be monitored by the satellites. Of course it is possible to connect the satellite receiver with a sender, so that the self-location can be used for surveillance aims. The time a satellite receiver needs for self-positioning is about 30-60 sec, sometimes more minutes; indoor-receiving is not really possible; the energy consumption of the receiver is quite high: these problems are the main reason for developing A-GPS, the Assisted GPS combining mobile phone networks (GMS) with GPS technology.)

- **1978 \_\_ League of Automatic Music Composers**, John Bischoff, Jim Horton, Tim Perkis, David Behrman, Paul DeMarinis, Rich Gold, Donald Day (1978 – 1982) (Computer network band. *The League was stirred to life by the advent of microcomputers in the mid 70s, which swept through the local experimental music community. Formally established in 1978, the League is generally considered the very first computer network band. In fact, the group basically had to build their own electronic maze from scratch, since one wasn't readily available that would suit their purposes. According to founding League member Jim Horton, who still composes computer-controlled "process" pieces at his Berkeley home, prior to the arrival of these affordable little machines, computer music wasn't so much performed as recorded: Composers would program their pieces on big mainframes and play back the tapes at concerts. "When microcomputers came out," says Horton, "the thing that the Mills College crowd did, including myself, was immediately get them into real-time performance by making instruments out of them and playing them live." Horton's first computer was something called a KIM-1 -- a dinky machine by today's standards, with 1K of memory -- that he bought sight-unseen through the mail. He began programming it to play music, and when his Mills compatriots saw what he was doing, they naturally had to have computers too. Inspired by the theories of avant-garde composer John Cage and his music circuses in which different compositional pieces interact, the group tried linking them together. (...) Much like the later Hub, each member would program his computer to play an autonomous program, but the computers would also take information and cues from each other, the "net" result being three or four computers playing separate-yet-interconnected pieces. All of this was run through a mixer and played for the audience -- "at a goodly volume," of course. (...) League performances would literally take hours to set up and debug, and on an aesthetic level, they were pretty odd. "Envision a table full of electronic circuits, little boxes, computers, all kinds of wires and so forth," reminisces Horton. "A typical concert would be us at this table, continually fooling around with electronics, changing parameters on the programs." The League was obsessed with the idea of artificial intelligence, so much so that their motto was something to the effect of "We get new group members by building them." At times, the computers did indeed seem to have minds of their own, sounding not unlike a group of musicians playing off each other, be it free improvisation or an almost unified consciousness. "The League is an organization that seeks to invent new members by means of its projects". "The League didn't produce network "compositions" as such, but rather whole concerts of music. We didn't give titles to these concerts - we thought of them as public occasions for shared listening. Initially, we let the networked stations run on their own performance, unattended, and retired to the sidelines to listen along with the audience. After a while it seemed more fun to perform along with the network, so we began to sit around our large table of gear, adjusting parameters on the fly in an attempts to nudge the music this way or that. League members generally adapted solo compositions for use within the band. These solos were developed independently by each composer and were typically based on algorithmic schemes of one kind or another. There was a distinctly improvisational character of many of these, as the music was different in its detail. Mathematical theories of melody, experimental tuning systems, artificial-intelligence algorithms, improvisational instrument design, and interactive performance were a few of the areas explored in these solo works. More often than not, the composer designed real-time controls so that a human player could adjust the musical behavior of the algorithm in performance. These "openings" in the algorithm became important features when the solo was being adapted within the network band context : They were natural points at which incoming data from other players could be applied. The solos, played simultaneously in the group setting, became interacting "subcompositions", each sending and receiving data pertinent to its musical functioning. In actual practice, at the start of a new project members would begin with an informal meeting over coffee at a local cafe where we would throw around ideas for linking subcompositions together. (...) Listening to the combined result, one hears independent musical processes at work - each station has its distinct musical viewpoint - along with the coordination of those processes through a real-time choreography of data flow. The whole can be seen as a kind of expanded polyphony, though in this case a polyphony of "musics" rather than "notes". And just as in traditional polyphony, the League's music makes use of many styles of vertical alignment among parts - from strictly synchronous, to closely proximate, to distantly related in time: What we noticed from the beginning was that then the computers were connected together it sounded very different from pieces just being played simultaneously. If you imagine four pieces of music together at the same time, then coincidental things will happen, and just by listening you make some musical connections. But by actually connecting the computers together, and having them share information, there seems to be an added dimension. All of a sudden the music seems not only to unify, but it seems to direct itself. It becomes independent, almost, even from us." [John Bischoff]. "The League sounded like a band of improvising musicians. You could hear the communication between the machines as they would start, stop, and change musical direction. Each program had its own way of playing. I hadn't hear much computer music at the time, but every piece I had heard was either for tape or for tape and people, and of course none of them sounded anything like this. I felt like playing, too, to see whether I could understand what these machines were saying." [George Lewis] <http://crossfade.walkerart.org/brownbischoff/> <http://crossfade.walkerart.org/brownbischoff/IndigenoustotheNetPrint.html>*

- **1978 \_\_ MUD (Multi-User Dungeon)** (In computer gaming, a MUD (Multi-User Dungeon, Domain or Dimension) is a multi-player computer game that combines elements of role-playing games, hack and slash style computer games and social chat rooms. Typical MUDs are text-driven, where players read descriptions of rooms, objects, events, other characters, and computer-controlled creatures or non-player characters (NPCs) in a virtual world. Players interact with each other and the world by typing commands that resemble a natural language. It has been argued that modern game-like MMORPGs, such as World of Warcraft, and social

virtual worlds such as Second Life can have their origins traced back to the original MUDs. Not all MUDs are games; some, more typically those referred to as MOOs, are used in distance education or for virtual conferences. MUDs have attracted the interest of academic scholars from many fields, including communications, sociology, law, and synthetic economies. Most MUDs are run as hobbies and are free to players; some may accept donations or allow players to "purchase" in-game items, while others charge a monthly subscription fee. MUDs can be accessed via standard telnet clients, or specialized MUD clients which are designed to improve the user experience. , created in 1975 by Will Crowther on a DEC PDP-10 computer, was the first widely used adventure game. The game was significantly expanded in 1976 by Don Woods. Adventure contained many D&D features and references, including a computer controlled dungeon master. Inspired by Adventure, a group of students at MIT, wrote a game called Zork in the summer of 1977 for the PDP-10 minicomputer which became quite popular on the ARPANET. Zork was ported under the name Dungeon to FORTRAN by a programmer working at DEC in 1978. In 1978 Roy Trubshaw, a student at Essex University in the UK, started working on a multi-user adventure game in the MACRO-10 assembly language for a DEC PDP-10. He named the game MUD (Multi-User Dungeon), in tribute to the Dungeon variant of Zork, which Trubshaw had greatly enjoyed playing. Trubshaw converted MUD to BCPL (the predecessor of C), before handing over development to Richard Bartle, a fellow student at Essex University, in 1980.) <http://en.wikipedia.org/wiki/MUD>

- 1978 \_\_ **Multi interactive computer music** (A MICROCOMPUTER NETWORK BAND), Rich Gold, David Behrman, John Bischoff, Jim Horton, (League of Automatic Music Composers) Blind Lemon/New Works, Nov. 26th (« On this concert we started the net and sat down to let it play ». - David Behrman - plays: timbre sensing, computer controlled hi-q filters sends: digital pitch info to Jim Horton receives: audio signals from Rich Gold and Jim Horton state flag from John Bischoff / - John Bischoff - plays: harmonic interval finder & chord producer sends: digital tuning info to Rich Gold state flag to David Behrman receives: audio signals from Rich Gold and Jim Horton / - Rich Gold - plays: circular readings of 3-D landscape sends: audio signal to David Behrman and John Bischoff receives: digital tuning info from John Bischoff and Jim Horton / - Jim Horton - plays: just-intoned melody producing algorithm sends: audio signal to David Behrman and John Bischoff digital tuning info to Rich Gold receives: digital pitch info from David Behrman.) <http://www.o-art.org/history/LongDur/JimHorton/jh-music3.html>

- 1978 \_\_ **Perfect Lives - Computer Illusions**, Robert Ashley (One of Robert Ashley's "Computer Illusions" involves the construction of a room with proximity detectors that constantly calculate the position of a moving listener. A sound broadcast in the room draws the attention of the listener who looks for the source of the sound, but no matter how close he or she may approach the walls, the computer maintains that sound at a constant, unreachable distance. Ideally, the listener can't be certain whether the sound is "out there" or in his or her head. This may be regarded as an anti-space or flat surface effect. A visual analog of this illusion is described in Ashley's opera-for-TV "Perfect Lives" in a scene where Bedouins quickly approaching on their camels maintain a constant apparent distance. A similar illusion is found in James Tenney's tape piece "For Ann (Rising)" (1969) which uses glissandi but to create an audio version called the Shepard effect. This is a sound analog of the persistence-of-motion visual effect (for example, when a train has come to a stop but still seems to be moving to a passenger on board). In Tenney's piece, tones seem to continually ascend in pitch but get nowhere ... until the final ascension at the end. ["Blue" Gene Tyranny]) <http://www.robertashley.org>

- 1978 \_\_ « **The Network Nation: Human Communication Via Computer** », Starr Roxanne Hiltz & Murray Turoff ("What makes these exchanges worthy as investigation is that though they have been under way for several months now, the individuals involved have never been in the same place at the same time. Some are participating from their homes as well as from their offices. These conferences are "computerized conferences", a new form of communication utilizing the computer. We believe that it will eventually be as omnipresent as the telephone and as revolutionary, in terms of facilitating the growth and emergence of vast networks of geographically dispersed persons who are nevertheless able to work and communicate with one another at no greater cost than if they were located a few blocks from one another. (...) As people have begun to play many roles (belong to many groups simultaneously) and as organizations have become decentralized in many geographically separated locations, this requirement to gather at the same time and in the same place has become expensive and inconvenient. (...) Thus in place of thinking a nation or society as a collection of communities, we need to think of it as a complex set of overlapping networks of actual or potential communications and exchange [collective intelligence]. Unlike a group, not all the members of a network are directly in communication with, or even directly aware of, one another; but they are connected by communication and relationships through mutually known intermediaries, and thus, the "potential" for direct communication or exchange is there. Computerized conferencing systems offer the possibility of conveniently and cheaply communicating with large numbers of people. It is our view that these systems allow a person meaningful, frequent, and regular communications with five to ten times more people than is possible with current common communications options. (...) When such systems become widespread, potentially intense communication networks among geographically dispersed persons will become actualized. We will become the Network Nation, exchanging vast amounts of both informations and social-emotional communications with colleagues, friends and "strangers" who share similar interests, who are spread out all over the nation. Ultimately, as communication satellites and international packet-switched networks reach out to other cities and villages around the world, these social networks facilitated by computer-mediated communications will become international; we will become a "global village" whose boundaries are demarcated only by the political decisions of those governments

that choose not to become part of an international network. (...) The first computerized conferencing system was created in 1970 and the use today is limited to tens of organizations and a few thousand people." The computerized conferences can constitute public spaces, similar to the Italian squares at Sunday afternoon (or to the Viennese cafés or French salons.) <http://web.njit.edu/~turoff>

- **1978 \_\_ REAL TIME COMPUTER NETWORK MUSIC**, Rich Gold, David Behrman, John Bischoff, Jim Horton (League of Automatic Music Composers) *Blind Lemon* (The League sets up an interactive network of computers, each computer producing its own music as well as sending information to the other computers in the network. The concert is informal, the first part simply being the construction of the network. The concert is free. Traditionally, music has involved more than one person, either in its composition, in its production, or in both. In fact, it seems to be one of the most social art forms. Although there has been individually produced music as well, computer music by its nature could until recently only be individual, solitary music. However, with the introduction of microprocessors at a reasonable cost, composers can now own microcomputers, and true computer bands, free from major institutions, are possible. Though such bands can take many forms, network music seems the most suitable and contemporary. All three of us owned KIM-1 microcomputers, but aside from the fact that they simplified many of the input/output problems they were not significantly similar. Each composer had programmed his computer with a music program that was by itself able to produce music; however, the programs were also able to input data that would affect the musical content and to output data that would affect another computer's program. Each computer had its own music output, either to a digital-to-analog converter (DAC) or to digitally controlled electronics. It was decided that for the first concert a simple formation would be used. In this case, each computer sent data to one other computer and received data from one other computer, so that a circular data structure was effected. How the received data were used and what data would be sent were the individual composer's choice, though the bus structures were mutually agreed to by each pair of composers. The final musical output was mixed together and broadcast over a high-fidelity music system. The exact configuration used during the concert was the following: Bischoff sent data to Horton, Horton sent data to Gold, and Gold sent data to Bischoff.) <http://www.o-art.org/history/Computer/nets/league/LAMC.html>

- **1978 \_\_ SAT-TEL-COMP (Satellite-Telephone-Computer)**, Bill Bartlett (SAT-TEL-COMP (Satellite-Telephone-Computer): Beginnings of multi-dimensional artist networks through the connectivity of (technological) telecommunication devices and human dialogue. The history of Open Space's SAT-TEL-COMP and Bartlett's Direct Media Association (1974-2984) and other COLLABORATORY curatorial, set the groundwork for a communications network between artists, engineers, and early communication networks between artists, engineers, and early information technology systems. We have come to reassess the ideals of production and imagery through and analysis of the following: the interaction of regional and local art, Government supported networks with the international art world, new media's historical use of the satellite as a precursor to the Internet and streaming video, and the use of slow-scan television during the period of 1978 through 1981. This is ultimately where it has led us in today's world of variable media. Bartlett invented the word COLLABORATORY (Collaboration and Laboratory) for an ongoing New Media series to commence in the winter of 1977 with the Colour Xerox exhibition at the Eatons Centre in Victoria. The other Collaboratory events were to focus on: Sound, Light, Dance, Poloroids and the SAT-TEL-COMP (SATELLITE-TELEPHONE-COMPUTER) event which was to become one of Open Space's most ambitious and pioneering initiatives to date. It was one of the very first major arts initiatives on the globe that directly employed the use of cutting-edge telecommunications technology - this was long before the internet became a household name. SAT-TEL-COMP, a network utilizing technology emanating from the west coast of Canada, can be viewed as one group dialogue within the many artistically utopian networks. Looking at such developments as the massive, and massively influential Experiments in Art and Technology (E.A.T.) instigated by Bill Klüver (ex-Bell Laboratory engineer and co-founder of E.A.T.), Robert Whitman (multimedia artist, E.A.T. co-founder) and others, primarily artists based in cities throughout the world looking forengineers and the technological insight they held, one can see symbiotic relationships of art and technology. A social network, such as INTERMEDIA, SAT-TEL-COMP or the developing ARCs across Canada, especially during their early stages in 1972-76, will eventually lead to one, or more of the following: Community of Practice, Community of Action, Community of Circumstance and Community of Interest or Position and Purpose. SAT-TEL-COMP falls under a 'community of interest, position and purpose in its needs, utilizations and end product. 'Community of Practice' (CoP) as a term was first used in 1991 by Jean Lave and Etienne Wenger in relation to situated learning as part of an attempt to "rethink learning" during group linguistic experiments at the Institute for Research on Learning.) [http://www.openspace.ca/web/outerspace/outerspace\\_introduction.html](http://www.openspace.ca/web/outerspace/outerspace_introduction.html) [http://www.banffcentre.ca/bnmi/programs/archives/2005/refresh/docs/conferences/Davis\\_Turner\\_Jarvis.pdf](http://www.banffcentre.ca/bnmi/programs/archives/2005/refresh/docs/conferences/Davis_Turner_Jarvis.pdf)

- **1978 \_\_ Solo**, Joel Chadabe (In 1977, composer Joel Chadabe obtained one of the first Synclaviers off the production line and had it outfitted with special software that created melodies based on predefined parameters such as harmony and interval content. The Synclavier was interfaced with two modified theremins. One antenna controlled the tempo (note durations), while the other controlled relative volumes of four Synclavier voices (in effect, overall timbre). Chadabe wrote that performing with the system was like having, "a conversation with a clever friend." He could do things like cue clarinet sounds to play slowly; but since he did not know which pitches would play, the notes he heard then influenced his next control gesture. "Solo" (1978, revised 1981), was first performed August 30, 1978, at a UNESCO Summer Workshop in Computer Music, Aarhus, Denmark.)

- **1978 \_\_ Soundwalk - Soundwalking**, Hildegard Westercamp, Vancouver Co-operative Radio ("A form of active participation in the SOUNDSCAPE. Though the variations are many, the essential purpose of the soundwalk is to encourage the participant to listen discriminatively, and moreover, to make critical judgments about the sounds heard and their contribution to the balance or imbalance of the sonic environment [Barry Truax]. A soundwalk is any excursion whose main purpose is listening to the environment. It is exposing our ears to every sound around us no matter where we are. (...) A soundwalk can be designed in many different ways. It can be done alone or with a friend (in the latter case the listening experience is more intense and can be a lot of fun when one person wears a blindfold and is led by the other). It can also be done in small groups, in which case it is always interesting to explore the interplay between group listening and individual listening by alternating between walking at a distance from or right in the middle of the group. A soundwalk can furthermore cover a wide area or it can just centre around one particular place. No matter what form a soundwalk takes, its focus is to rediscover and reactivate our sense of hearing. (...) When attentive listening becomes a daily practice, requesting sound quality becomes a natural activity. This may be reflected in simple actions like not playing the radio all day long, using a hand lawnmower instead of a power mower, buying quiet machinery, requesting to turn off disturbing sounds wherever possible, helping to preserve quiet areas in our cities, and staying aware of our own acoustic actions and of our collective responsibility for the sonic environment. In this context it is appropriate to mention another type of soundwalk which does not only include attentive listening but also active physical participation in the music of our environment. There are many opportunities for this kind of activity in the soundscape, which children often demonstrate to us quite naturally. But to many of us adults, the idea of creating our own sounds, of composing or orchestrating our environmental music may seem silly and contrived. But surprisingly, going on a participatory soundwalk can create unexpectedly interesting dialogues between our surroundings and ourselves. [Hildegard Westercamp]) (Les soundwalks sont souvent le prétexte à une écriture : il s'agit pour le promeneur de noter les phénomènes perçus, ainsi que les impressions qu'ils génèrent. Ces notes (textuelles, graphiques ou autres), pourront servir de véritables guides d'écoute pour les écoutants suivants. Il s'agit d'une certaine forme de partage d'une écoute, qui passe non pas par la matière sonore elle-même mais par les modalités de sa réception. Bien, entendu, le décalage entre ce qui a été noté, c'est-à-dire ce qui a été perçu et choisi par le premier écoutant, et ce qui sera perçu quelque temps après (n'oublions pas qu'il n'existe pas de paysage sonore absolument statique !) de manière forcément différente, sera l'occasion d'une rencontre inter-individuelle, d'un appel à la discussion, ou à la réflexion. Barry Truax : « A soundwalk may be scored in the form of a map which the participant uses both to guide the route and draw attention to features of acoustic interest. The map may also act as a score, directing the performer's listening and soundmaking activities in a way that is not limited to a specific locale. » La compositrice canadienne Hildegard Westercamp a proposé une autre forme de Soundwalk, qui fait appel à l'écoute médiatisée. Il s'agissait d'une marche à travers le Queen Elizabeth Park, à Vancouver, au cours de laquelle Westercamp "promenait" son microphone, le rapprochant des différentes sources sonores, dessinant une trajectoire à travers le parc. Le microphone était connecté à un casque audio que portait Andra MacCartney. Celle-ci découvrait le paysage sonore en marchant, mais sans écouter directement son environnement, mais au travers des choix imposés par la main de Westercamp. « Being connected by our ears was intensely intimate: we were sharing a private, amplified perspective on the park ». Le paysage sonore créé par les mouvements de main tenant le microphone, se superposait à la chorégraphie des deux promeneuses, reliées par un cordon, matérialisation de l'écoute partagée. Le microphone est une interface d'écoute particulièrement adaptée aux milieux extérieurs. [Yannick Dauby, "Paysages Sonores Partagés"] <http://www.sfu.ca/~westerka/> <http://cec.concordia.ca/econtact/Soundwalk/Soundwalking.htm>

- **1978 \_\_ Studio 123**, Groupe de Recherche de Musique Concrète (The deferred-time programmes for Studio 123 (known in French as logiciels 123) were devised and developed from 1978 onwards by Jean-François Allouis and Benedict Mailliard. They made it possible to find, in a computer, all the functionalities of work in the studio and led to the development of new concepts in the processing of sound. Analog-to-digital and digital-to-analog converters had been specially built for the system. [Daniel Teruggi]) (Au studio 123 du GRM, Bénédicte Mailliard a développé au début des années 80 un ensemble de programmes de transformation des sons. Différents types de transformation y sont disponibles : mixage; modulation d'amplitude; spatialisation; filtrage; brassage temporel ... Pour chaque transformation, l'utilisateur répond aux questions d'une interface qui lui demande de spécifier les paramètres de la transformation désirée. Il est intéressant de noter qu'un certain nombre de ces transformations utilisent le programme Music V, mais de manière interne : l'utilisateur ne "voit" que la transformation, et il travaille donc dans des conditions plus proches de la tradition de la musique concrète. [Jean-Claude Risset])

- **1978 \_\_ The Syter system**, Groupe de Recherches Musicales (The Syter system, consisting of a real-time sound processor, a host computer and a disc for storing sounds, makes it possible to modify, in real time and by means of very simple ergonomics, the parameters of the transforming and synthesising algorithms proposed by the system and, secondly, to programme new algorithms in modular manner. The system is presented as a powerful simulator, in which most of the actions on sound we know today can be carried out. The processor with the processing cards, converter and also the software were invented and realised by Jean-François Allouis. [Daniel Teruggi])

- **1978 \_\_ Télématique / Telematics** (The name telematics is one of those inventions that comes into being when a new word is

needed to describe an object or process that has no precedent in the course of human affairs. Telematics, from the French word *Telematique*, was coined by Simon Nora in 1978 in his report to President Mitterrand of France describing the new technology which finds itself at the convergence of computers and telecommunications. Telematics describes a variety of telecommunication processes, therefore when speaking of the use of telematics in an art exchange it is important to be very specific in identifying which process of connectivity is being used, such as: networking computer to computer (phone net/modem); telefacsimile (FAX); slowscan television (SSTV); videophone, and HF (short wave Ham) or FM radio. Characteristics common to all telematic art activity are often described by using such words and phrases as: collective or dispersed authorship, off-site learning, collaboration, and inter-connectivity. Telematics creates the possibility of a new setting for interactive participation between individuals and groups giving new meaning to the use of the words collective or dispersed authorship. It removes the individual from the rigors of local systems by placing the artist in an international forum free from the constraints of parochial thinking. Telematics provides, through electronic networking, a means of instantaneous and immediate dissemination of information giving to the individual a choice between simple retrieval or intricate interactive collaborative art events. Networking creates higher levels of caring, and a sense of companionship through a global awareness resulting from the dynamic of interacting in a world community. [Bruce Breland, Digital Art Exchange Group, Jan. 1990) [http://www.digitalartexchange.net/e/txt\\_4.html](http://www.digitalartexchange.net/e/txt_4.html)

## 1979

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- **1979** \_\_ **Ars Electronica**, Linz (The first node in the network of technology, art and society was set in place in Linz on September 18, 1979 as Ars Electronica premiered as part of the International Bruckner Festival with the first Linzer Klangwolke featuring the music of Bruckner's 8th Symphony. The ORF (Austrian Broadcasting Company's Upper Austria Regional Studio) and the Brucknerhaus were the driving forces behind the festival that was one of the world's first to deal with the artistic possibilities and social consequences of digital technology. The initial public response was overwhelming, with a hundred thousand visitors thronging to the banks of the Danube to partake of an experience on a grand scale. The founding of the Prix Ars Electronica in 1987 represented another important step in the development of Ars Electronica and the medial deployment of computer technology. Another significant milestone in the history of Ars Electronica was reached in 1992 when the City of Linz decided to go ahead with construction of the Ars Electronica Center. As a Museum of the Future and a "house-in-progress," the facility was designed to function as an intermediary among the domains of art, technology and society.) <http://www.aec.at>

- **1979** \_\_ **Interplay** (a computer communications conference organised by Bill Bartlett for "Computer Culture 79" in Toronto. IP Sharp Associates (IPSA), provided free access to their world-wide computer timesharing network for participation by artists in Toronto, Vancouver, Edmonton, Houston, New York, Sydney, Canberra and Vienna. The Vienna participants were Robert Adrian and Richard Kriesche in the IPSA office and Heidi Grundmann with Gottfried Bach (IPSA manager), using a TI 745 portable terminal/printer, in an ORF radio studio. The event was broadcast live in the programme "Kunst Heute", April 1 '79 (ORF Österreich 1). Interplay was basically an 'on-line chat' and its 'product' was the printout that scrolled from the terminal/printers around the world (computer monitors were costly and rare in 1979). Bartlett contacted artists in cities around the world in which an IPSA office was located and arranged for the local offices to provide free accounts and technical assistance in order for the artists to participate in the "Interplay" on-line conference. "There were people in Vienna participating, because there was a local office of this IP Sharp firm that was quite interested in having artists working with it. These artists were Richard Kriesche? and Robert Adrian. The artists were in the office and the man who ran the IP Sharp office was in my live radio studio, trying to make the listener understand what was happening. It was a radio program really \*about\* art activities. The man was sitting there with his terminal trying to type in his messages and to participate in the project in which artists in over 10 cities around the world were connected. Meters and meters of paper were running out of the printer. We just couldn't read everything that was coming in to the listeners. We could not say, now this is from San Francisco this is from Sydney - there were just too many messages. It was extremely difficult to give the listeners any impression of what was going on. The radio studio had become one more live node in a telematic network. But what went out on the radio was just read texts... mostly in English and in between helpless attempts to explain something quite incomprehensible to most people including me. This was the first connection that I know of between live radio and a telematic project." [Heidi Grundmann] <http://alien.mur.at/rax/BIO/telecom.html>

- **1979** \_ **IPSA (IP Sharp Associates)** (I.P.Sharp Associates (IPSA) was an APL timesharing system based in Toronto but operating a world-wide network providing computer services to businesses via telephone. IPSA had offices in most major cities with local dial-in connection to the central computers in Toronto. In order to maintain contact with - and to support - their corporate clients, a computer communications (E-mail) program called Mailbox was implemented - which meant that IPSA was a kind of "mini-internet" existing outside the academic / military territory of the early internet/arpnet. These were relatively early days in the story of computer-based networking and nobody knew what the effects might be on society - aside from commercial efficiency. In the late

1970's Bob Bernecky, chief APL programmer at IPSA, being interested in art - especially in art involving technology - provided a free user-account to Toronto artist Norman White to see what an artist might do with a networked computer system. This resulted in computer networking becoming known and, in a small way, accessible to artists. The first use of the I.P.Sharp network for a world-wide artists' communications project was Interplay, a computer communications project organised by Bill Bartlett for the "Computer Culture" conference in Toronto in 1979. Bartlett contacted artists in cities around the world in which an IPSA office was located and arranged for the local offices to provide free accounts and technical assistance in order for the artists to participate in the Interplay on-line conference. The participating artists were located in Canberra, Edmonton, Houston, New York, Toronto, Sydney, Vancouver, and Vienna. Interplay used Confer, the IPSA conference program, designed to allow IPSA staff and clients to discuss system issues in a multi-user environment without the delays inherent in Mailbox (email) exchange. Interplay was therefore basically what we now know as an on-line "chat".) <http://alien.mur.at/rax/ARTEX/index.html>

- **1979** \_\_ **KIMs' network**, Finnish Hall Berkeley ("In the Spring of 1979, we set up a regular biweekly series of informal presentations under the auspices of the East Bay Center for the Performing Arts. Every other Sunday afternoon we spent a few hours setting up our network of KIMs at the Finnish Hall in Berkeley and let the network play, with tinkering here and there, for an hour or two. Audience members could come and go as they wished, ask questions, or just sit and listen. This was a community event of sorts, as other composers would show up and play or share electronic circuits they had designed and built. An interest in electronic instrument building of all kinds seemed to be "in the air". The Finnish Hall events made for quite a scene as computer-generated sonic landscapes mixed with the sounds of folk-dancing troupes rehearsing upstairs and the occasional Communist Party meeting in the back room of the venerable old building. This series lasted about five months, as I remember" [John Bischoff])

- **1979** \_\_ **Porte-Vue**, Keith Sonnier (An installation by Keith Sonnier, is presented at the Musée national d'art moderne, Centre Georges Pompidou, in Paris: four images are retransmitted on two video monitors (two images from video cameras placed inside the museum, two images from TV screens.) <http://www.newmedia-art.org/english/histoire.htm>

- **1979** \_\_ « **The Post Card** », Jacques Derrida ("You were reading a somewhat retro loveletter, the last in history. But you have not yet received it. Yes, its lack or excess of address prepares it to fall into all hands: a post card, an open letter in which the secret appears, but indecipherably. What does a post card want to say to you? On what conditions is it possible? Its destination traverses you, you no longer know who you are. At the very instant when from its address it interpellates, you, uniquely you, instead of reaching you it divides you or sets you aside, occasionally overlooks you. And you love and you do not love, it makes of you what you wish, it takes you, it leaves you, it gives you. On the other side of the card, look, a proposition is made to you, S and p, Socrates and Plato. For once the former seems to write, and with his other hand he is even scratching. But what is Plato doing with his outstretched finger in his back? While you occupy yourself with turning it around in every direction, it is the picture that turns you around like a letter, in advance it deciphers you, it preoccupies space, it procures your words and gestures, all the bodies that you believe you invent in order to determine its outline. You find yourself, you, yourself, on its path. The thick support of the card, a book heavy and light, is also the specter of this scene, the analysis between Socrates and Plato, on the program of several others. Like the soothsayer, a "fortune-telling book" watches over and speculates on that-which-must-happen, on what it indeed might mean to happen, to arrive, to have to happen or arrive, to let or to make happen or arrive, to destine, to address, to send, to legate, to inherit, etc., if it all still signifies, between here and there, the near and the far, da und fort, the one or the other. You situate the subject of the book: between the posts and the analytic movement, the pleasure principle and the history of telecommunications, the post card and the purloined letter, in a word the transference from Socrates to Freud, and beyond. This satire of epistolary literature had to be farci, stuffed with addresses, postal codes, crypted missives, anonymous letters, all of it confided to so many modes, genres, and tones. In it I also abuse dates, signatures, titles or references, language itself." "To post is to send by "counting" with a halt, a relay, or a suspensive delay, the place of a mailman, the possibility of going astray and of forgetting (not of repression, which is a moment of keeping, but of forgetting) ... As soon as there is, there is "différance" ... and there is postal maneuvering, relays, delays, anticipation, destination, telecommunicating network, the possibility, and therefore the fatal necessity of going astray, etc." For Derrida, what animated both phone calls and letters was "noncommunication and misunderstanding", along with or perhaps because of chance and luck.)

- **1979** \_\_ **Radio Lorraine Cœur d'Acier** (In France, a strong pirate radio movement emerged in the late seventies and early eighties, in two waves. The first wave was a political movement based mainly within French territory. Most of these stations were short lived. The first wave included : Radio Verte, Radio Ivre, Radio Active in Lyon 1976, Radio Lorraine Coeur d'Acier in Nancy 1978. This led to the creation of Radio Riposte by the PS in 1979 and the arrest of François Mitterrand and Laurent Fabius. Some of these stations persisted until 1981 when they became legal "Radios Libres." The second wave was a more commercial movement largely coming out of the French Riviera following the legalization by a Supreme Court decision of private radio stations in Italy. Several stations began emitting in French from Italy. While these stations were legal in Italy, the French considered them illegal. These stations include: Azur 102 (1977-1984), Radio Continental (1977-1979) broadcasting from Bordighiera, Radio Vintimille Internationale (1977-1981) broadcasting from Ventimiglia, and the late and more political Radio K (1981-1982) broadcasting from

*Bussana di San Remo. All these stations went bankrupt after the election of François Mitterrand and the legalization of private radio stations in France. Pirate radio is the unlicensed use of the radio spectrum, reserved for commercial, governmental, or public use. Shortwave radio pirates are also common in the radio world. Over in France, a tight state monopoly still had a strangle-hold on both state radio and the apparently independent 'périphériques', such as Radio Monte-Carlo, Radio Luxembourg, Europe 1 and Sud Radio. Landbased pirates such as Lorraine, Coeur d'Acier had begun to challenge this monopoly, and the election of François Mitterrand as President brought about the licensing of hundreds of private stations in 1981.) (En France en 1979, sur Radio Lorraine Cœur d'Acier, à l'initiative de la C.G.T. à Longwy, les auditeurs pouvaient « intervenir à tout moment sur l'antenne grâce au téléphone branché en direct, sans filtrage préalable des appels, ou en venant dans le studio (installé dans le hall de l'Hôtel-de-Ville) constamment ouvert à tous ». De plus, ces auditeurs pouvaient tout aussi bien être « acteurs, animateurs d'émissions, responsables de la technique ». [David Charasse])*

- **1979** \_\_ **Sounds and the Shadows of Sounds**, Paul DeMarinis (*A computer quietly listens to the sounds in the environment for a while, analyses what it hears, then plays the spectral "shadows" of its memories as slowly shifting patterns of filtered white noise from the interchannel hash of a police scanner.*) <http://www.stanford.edu/~demarini/exhibitions.htm>

- **1979** \_ **Travelon Gamelon**, Richard Lerman (*Richard Lerman's Travelon Gamelon of 1979-1982 was for a group of 25 bicyclists who hit the streets in a Promenade version of the piece with small battery-powered amplifiers and horn-type loudspeakers that amplified the sounds of the bikes. Travelon Gamelon (1978, revised 1991) is a piece amplified bicycles by Richard Lerman. The piece exists in two versions. The "Promenade" version is scored for twenty or more bicycles with riders while the "Concert" version is scored for three stationary bicycles with six performers. In the promenade version the pitches produced by struck spokes are amplified through small loudspeakers, in both versions pickups are attached near the spokes (to the screw at the center of the wheel). The resulting sound has a metallic and polyrhythmic sound similar to that of the Indonesian gamelan orchestra. As Lerman (2008) explains, "I realized that bicycles sounded similar to real Gamelan Music [sic] and was inspired to create this work. A bicycle was a gamelan that one could travel on.....". Formally, the piece consists of five sections. Each bicycle has a duet or "'solos' with different rhythmic material. A more improvisatory middle section explores many other sounds from the bicycle" (ibid) including bowing on the spokes and striking the frame. The third section is "a retrograde canon of the first section" with the parts collapsed upon each other, aligned so that the bicycles entrances and then are staggered symmetrically. Each performer's material in this final section is identical (though the number of times each pattern is repeated is reduced), creating a stronger sense of return after the dramatically timbrally different improvisatory section. However, variety is created in the pitches each performance due to differences in the bikes used and different spokes struck.) <http://www.west.asu.edu/rlerman/newwebpageshtml/frametgpage4.new.html> [http://en.wikipedia.org/wiki/User:Hyacinth/Travelon\\_Gamelon](http://en.wikipedia.org/wiki/User:Hyacinth/Travelon_Gamelon)*

- **1979** \_\_ **Usenet** (*The idea of network news was born in 1979 when two graduate students, Tom Truscott and Jim Ellis, thought of using UUCP to connect machines for the purpose of information exchange among users. They set up a small network of three machines in North Carolina. Prior to the migration of networked computers to the Internet, UNIX computers communicated over various network protocols. One of these, the UUCP program and protocol (Unix to Unix Copy Protocol), was used. During its era, UUCP spawned an application service known as Usenet. After attending a meeting where Truscott and Ellis discussed their ideas, Bellovin wrote the first version. It was comprised of 3 pages of UNIX Bourne shell scripting language. The application was designed to move files over the UUCP protocol between two computers over an modem telephone connection. The program was called "Netnews". In January 1980, Truscott and Ellis presented the Netnews idea to the USENIX conference in Boulder, Colorado. Truscott employed fellow Duke graduate student Steve Daniel to rewrite a newer version which was dubbed "Netnews Version A" (aka "A News"). As freely available public domain software with great usefulness, Netnews spread quickly throughout the UNIX/university world. It is unclear when "Usenet" replaced the name "Netnews", but the relevance of Usenet over UUCP caused the two terms to often be used interchangeably (incorrectly). In 1982 a USENIX vote resulted in Usenet (the news service) keeping its name, but the UUCP network being renamed to UUCPNET. This may explain why the term "Usenet" is a fairly ambiguous description of what is now a rather narrowly-defined Internet service. The "World Wide Web" and "Email", by contrast, are more descriptive. This is probably one reason why the Usenet retained a fairly under-the-radar following compared to these services as the Internet exploded in popularity in the mid nineties. In 1982, Matt Glickman and Mark Horton authored Netnews Version B (aka "B News") in order to deal with increasing traffic loads. In 1984, Rick Adams at the Center for Seismic Studies took over maintenance of Version B. In 1985, the Network News Transfer Protocol allowed Usenet traffic to be routed natively over TCP/IP rather than bootstrapped from UUCP, and today of course the majority of Usenet traffic is originated and distributed over the Internet. Henry Spencer and Geoff Collyer at the University of Toronto took over in 1989 to write Netnews Version C for Netnews ("C News") to obtain even greater efficiency. In the early 90's InterNetNews (INN) was developed to take greater advantage of the Usenet's continuous flow of messages made possible via NNTP vs the "store and forward" methods in use at that time. This new computer network grew extremely fast. In 1982, three years after its creation, 400 sites were linked to Usenet (Spafford, 1988). During the same period Arpanet had only 200 sites. The reason for Usenet's growth was that it catered for a potentially far larger community, Unix users, and subsequently all computer specialists since the acronym Usenet changed its meaning to "User's Network". This*

community, excluded from Arpanet, managed in spite of all to build a bridge between the two networks in 1982. "Usenautes" thus had access to the newsgroups that already existed on Arpanet. Traffic subsequently rose to about 50 texts (articles) per day. (...) Even in the groups not working on computing as such, it was never very far away. Thus, in "human-nets", "netters" talked of their own use of the network. "I think/feel that computer communications (done between humans via computers) lie somewhere between written and verbal communications in style and flavor. There is an ambience of informality and stream-of-consciousness style that pervades it but coupled with ideas that are well thought out (usually) and deeper in insight than average verbal communications" (Sends, 1981). Usenet was not only the medium of intellectual interaction between computer specialists, but also the result of continuous technical cooperation. Whereas Arpanet was financed and developed by ARPA, with the support of a group of computer scientists, Usenet was an independent initiative, a cooperative structure without its own funding. The administrators of the system were computer specialists who participated on a voluntary basis, freeing space on their computer hard disks to record messages (news) and organizing the transfer by telephone. Some machines, to which users of small sites could connect to retrieve the newsletters to which they subscribed, became the backbone of the system. The most important points in the backbone were either academics or worked for the two firms that played a key part in the development of Unix: AT&T and Digital Equipment Corporation (DEC). The activity of the site was, however, largely dependent on the person in charge of the operation, and the site would sometimes lose its importance when that person moved on. The institution left things to happen rather than initiating the operation. "Much of the netnews distribution within Bell labs is done without any explicit approval", commented a Netter (Michael Hauben & Ronda Hauben, *Netizens* : ch.10, p.16). Sometimes the heads of the operation even had to give of themselves: "when I was at cincy [Cincinnati University] we had a HARD fight to get the administration to pay the bill" (*ibid.*). Growth in the number of groups required reorganization in the hierarchy of group names. This was undertaken in 1986-87. Six main themes were selected. The first two items corresponded to academic subjects: computing – the field in which Usenet was founded – and science. The following three concerned non-professional themes: society (social and possibly political debates), recreation (leisure, hobbies) and, lastly, miscellaneous comprising mainly classified advertisements. Finally, news concerned organizational debates on Usenet itself. A seventh domain, talk, was created for debates on controversial subjects. The administrators of the servers saw this as a way of grouping together controversial forums which they would be able to censor. Thus, despite the existence of this area of free talk, the administrators could refuse to distribute certain forums. A system of parallel distribution was therefore set up. That was how the third subject domain, called 'alternative', was born. In 1987 there were 250 newsgroups, in June 1992 this figure had risen to 3,260. Usenet, because of its open organization and the diversity of subjects addressed, was to be the first computer network in the academic world to open up to the outside. The first inter-connections were made in 1988. [Patrice Flichy, *The Imaginary of Internet* ]

- 1979 \_\_ **Warc Report: Allocating the Airwaves** (After *Avalanche* ceased publication, Willoughby Sharp and Liza Bear collaborated again on a live slow-scan-cable transmission) <http://www.chelseaspace.org/archive/avalanche-pr.html>

## 1980

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- 1980 \_\_ **Artex**, Robert Adrian X (*Artex*, an electronic mail program for artists on the world-wide I.P. Sharp Associates (IPSA) timesharing network. It was initiated by Robert Adrian, Bill Bartlett and Gottfried Bach (Vienna IPSA manager) to offer artists a simple, (relatively) cheap alternative to the elegant but costly IPSA "MAILBOX" (email) program. The first version was tested in autumn '79 and became operational as "ARTBOX" in 1980. The final version, "ARTEX", was completed (by Joachim Carlson of IPSA Vienna) about 3 years later. ARTEX/ARTBOX was used as: 1) an email communication program for artists, 2) an organisation/coordination utility for on-line events 3) a medium for text-based telecommunication projects. ARTEX had a core of about 10 regular users and a fluctuating population of 30 to 40 others during its 10 years of operation. In 1989 IPSA was taken over by Reuters who shut it down in 1991. The availability of a computer network for artists was a very exciting development but it exposed a basic problem and inconsistency. For, while I.P.Sharp Associates provided access to the new electronic communications technology for the actual events (interplay and the 1980 Artists' Use of Telecommunications Conference), the organisation was still being carried out by mail and (budget permitting) telephone. This seemed to be a bit absurd so in the autumn of 1979, Robert Adrian and Gottfried Bach (IPSA manager) in Vienna and Bill Bartlett in Victoria, B.C., began to work on the implementation of a simple, cheap electronic mail program which artists could use to create a network for the organisation of communication projects. First results were reported in October and tests began in mid-1980 of ARTBOX, the prototype for ARTEX. It was operational by the end of 1980. After many mutations and modifications ARTBOX was re-launched as ARTEX in 1982. In about 1985 IPSA introduced a simpler and much cheaper version of the MAILBOX facility and ARTEX was incorporated as a "special interest group" -- where it remained until the I.P.Sharp APL network was taken over by Reuters in 1989 and terminated in 1991.) <http://alien.mur.at/rax/BIO/telecom.html> <http://alien.mur.at/rax/ARTEX/index.html>

- 1980 \_\_ **The Conference on Artist's use of Telecommunications** (Conference was a live two-way video and audio network

held at SF MOMA. Using the IP Sharp timesharing network, brought together people in 8 international cities to discuss ideas regarding satellite and slow-scan connections. Artists' Use of Telecommunications Conference, slow-scan TV and Computer communication project organised by Bill Bartlett for the San Francisco Museum of Modern Art and La Mamelle. Artists in Japan, Australia, N.America and Europe (New York, Cambridge, Toronto, Vancouver, Victoria, San Francisco, Honolulu, Tokyo and Vienna) were connected live to the SFMMA auditorium in a telephone and computer conference. The telephone voice line could be switched to send/receive slow-scan video images at most locations. The computer conference, using the IP Sharp network, was continuous on a separate telephone line. The SSTV equipment used was a "Robot 530" slow-scan video transceiver - basically a piece of radio hardware which was never approved for general use on the telephone network. The on line conference was part of the on site event organised by Carl Loeffler of La Mamelle/ArtCom for the SFMMA. In Vienna the event was organised by Robert Adrian and Grita Insam and took place in Museum des 20. Jahrhunderts as part of the "Video Made In Austria" exhibition (curator: Dieter Schrage). Participating artists in Vienna included Ernst Caramelle, Valie Export, Richard Kriesche, Peter Weibel, etc.) <http://alien.mur.at/rax/BIO/telecom.html>

- **1980** \_\_ **Hole in Space**, Kit Galloway and Sherrie Rabinowitz (HOLE-IN-SPACE was a Public Communication Sculpture. On a November evening in 1980 the unsuspecting public walking past the Lincoln Center for the Performing Arts in New York City, and "The Broadway" department store located in the open air Shopping Center in Century City (LA), had a surprising counter with each other. Suddenly head-to-toe, life-sized, television images of the people on the opposite coast appeared. They could now see, hear, and speak with each other as if encountering each other on the same sidewalk. No signs, sponsor logos, or credits were posted -- no explanation at all was offered. No self-view video monitors to distract from the phenomena of this life-size encounter. Self-view video monitors would have degraded the situation into a self-conscience videoconference. "Live satellite communications were used over three days to link unsuspecting publics in LA and NYC. Screens erected at each department store. The necessity of preserving "natural" lighting conditions at the locations and also of allowing people to see each other was achieved by using military cameras that were able to "see in the dark" and pick up ambient as well as infrared boosted light on people in front of the windows. Satellit audio delays and echoes had to be treated and carefully and continually balanced to keep the exchanges as clean and direct as possible. (...) Developed as a "social situation with no rules", and operating for between two and three hours every evening (NYC time), the event unfolded very much as the artists foreshadowed. On the first evening, people going home from work or going about their business have their attention captured by the life-size images of other people appearing in the windows. The archival footage shows groups strating to form in both places trying to figure out where the images are coming from and what's going on, and at the same time some people initiate short greetings across the link to get to know the other crowd. The environment starts to warm up quickly as people start clapping, shouting and waving at each other, while some individuals exchange personal details about themselves and their jobs to strangers in each city, much to everyone else's amusement. Everyone is having fun and sharing exchanges they would otherwise feel inhibited about in public spaces." [Kit Galloway] "People were seeing the commonality of "us"." [Sherrie Rabinowitz]) <http://www.ecafe.com/getty/HIS/>

- **1980** \_\_ **(Concert) League of Automatic Music Composers**, Shafter Avenue House Oakland, Nov. 15 ("An entire Sunday afternoon would consist of setting up our computer systems in the living room and laboriously connecting them. As we desired more flexibility in configuring interconnections between machines, we started to use "solderless socket" strips to patch our port pins together rather than hard-soldering them - an electronically dangerous method, as one misaligned connector could blow out an entire port. With wires running everywhere and our computer programs finally debugged, we would eventually get the system up and musically running. For two or three hours we played, tuning our systems, and listening intently as our machines interacted. When surprising new areas of musicality appeared, we took notes on the parameter settings of our individual programs with the hope that recalling those settings in concert would yield similar exciting results. The structural form of our concerts was essentially an agreed-upon series of such settings, the moment-to-moment details, of course, always remaining in interactive flux." [John Bischoff]. Excerpt of the flyer : "All that is not information, not redundancy, not form and not restraint - is noise, the only possible source of NEW patterns" (Gregory Bateson). The LEague presents their music not as entertainment but as an example of how nature operates when we perceive it as cooperative, democratic and musical. We have constructed a multi-computer based network of non-hierarchical, interactive, simultaneous processes that are open to information from larger environments. As these processes overlap & interact they generate mutual contexts for sonic motions, making perception of very complex patterns easy and enlightening. Sometimes when the system enters a strong interactive mode, its activities may be heard as if there is a unified mentality improvising or composing. Because the semantics of whether we can ascribe intentional acts to nonliving entities seems to be open, we can choose to consider that we have invented a (partially guided) musical artificial intelligence.")

- **1980** \_\_ « **Mille Plateaux** » (A Thousand Plateaus), Gilles Deleuze & Félix Guattari (A Thousand Plateaus (French: Mille Plateaux) (1980) is a book by the French philosopher Gilles Deleuze and the psychoanalyst Félix Guattari. It forms the second part of their Capitalism and Schizophrenia duo (the first part being Anti-Œdipus). This book is written as an accumulation of "plateaus", or fields of intensity, rather than a series of chapters. (Deleuze and Guattari derived their concept of the "plateau" from a similar concept originated by Gregory Bateson). In fact, Deleuze and Guattari argued that the entire "book" is not a "book" at all, but a

multiplicity of plateaus. Chapters and books are self-contained worlds with beginnings and ends; with climaxes that dissipate the accumulated energy. In contrast, in the act of attaining a plateau one might begin at any point (signifying the absence of a strict beginning), and the accumulated energy of the "climb" is not dissipated in a climax, but instead is experienced as one intensity among many (signifying the absence of a strict end). The work reflects Deleuze and Guattari's rejection of hierarchical (arborescent) organization in favor of less structured, "rhizomatic" organization. In *A Thousand Plateaus* they oppose the "nomadic war machine", a force of aggression or resistance that ultimately works toward preserving heterogeneity, to the "state apparatus", which strives toward homogenization and totalitarianism. In the last plateau the noosphere is invoked.)

- 1980 \_\_ « *Music for Instruments and Computer Processed Sound* » (A concert review of "Music for Instruments and Computer Processed Sound" appeared in the *Boston Globe*. Among those reviewed were Elliot D. Balaban's *In My Future* and Barry Vercoe's *Synapse*. Richard Buell wrote, "If the listener had had any preconception that computer-generated music is being written today in a single conformist "blip-blip" style, that listener soon heard otherwise.") <http://sound.media.mit.edu/resources/EMS/EMSt11.html>

- 1980 \_\_ *Music for Sound Joined Rooms*, Maryanne Amacher (*Immersive aural architectures using the echoes and resonances of an entire house coming alive with sound cascading through its rooms. In Music For Sound Joined Rooms and "Mini-Sound Series", I use the architectural features of a building to customize sound, visual, and spatial elements, creating intense and dramatic sound experiences. I produce these works in location-based installations that are built from "structure borne" sound (sound traveling through walls, floors, rooms, corridors) which acousticians distinguish from the "airborne" sound experienced with conventional loudspeaker placements. An entire building or series of rooms provides a stage for the sonic and visual sets of my installations. Immersive aural architectures are constructed, linking the main audience space sonically with adjoining rooms through specially designed multiple loudspeaker configurations, creating the effect that sounds originate from specific locations and heights rather than from the loudspeakers. The idea is to create an atmosphere similar to the drama of entering a cinematic closeup, a form of "sonic theater" in which architecture magnifies the expressive dimensions of the work. The audience enters the set and walks into the "world" of the story, exploring multi-perceptual viewpoints. As they move through new scenes being created by the "Sound Characters," they discover clues to the story distributed throughout the rooms. Places of "thematic focus" are selected to create the scenes - rooms, corridors, walls, doorways, balconies, stairways. In some episodes sound sweeps through the rooms; in others, chords, and tonalities are intricately joined between the rooms; in still others a particular sound shape is emphasized to animate sonic imaging in a distant room. Together with the architectural staging of projected visual environments, I am able to construct multi-dimensional environment-oriented experiences, anticipating virtual immersion environments. Rooms, walls, and corridors that sing. Architecture especially articulates sonic imaging in "structure borne" sound, magnifying color and spatial presence as the sound shapes interact with the structural characteristics of the rooms before reaching the listener. The rooms themselves become speakers, producing sound which is felt throughout the body as well as heard. "In "Music for Sound-Joined Rooms" I use the architectural features of a building to customize sound, visual, and spatial elements, creating intense and dramatic sound experiences that cannot be realized in home listening environments. I produce these works in location-based installations that are built from "structure-borne" sound (sound traveling through walls, floors, rooms, corridors) which acousticians distinguish from the "airborne" sound experienced with conventional loudspeakers placements. An entire building or series of rooms provides a stage for the sonic and visual sets of my installations. Architecture especially articulates sonic imagin in "structure-borne" sound, magnifying color and spatial presence as the sound shapes interact with structural characteristics of the rooms before reaching the listener. The rooms themselves become speakers, producing sound which is felt throughout the body as well as heard. Although I make the basic Sound Characters in my studio, I imagine their existence either in such expansive and interesting architectures, or in very specialized small rooms in which I carefully design the sonic world to be experienced. Because of their spatial nature I have never been interested in producing CDs of my works, where they can only be experienced as "artifacts" due to the limitations of the casual stereo listening environment.") <http://www.newmusicbox.org/page.nmbx?id=61fp00> [http://en.wikipedia.org/wiki/Maryanne\\_Amacher](http://en.wikipedia.org/wiki/Maryanne_Amacher) <http://archive.futuresonic.com/sensesonic/archive/MARYANNE/msg-0001.html>*

- 1980 \_\_ *Oscillating Steel Grids along the Cincinnati-Covington Suspension Bridge*, Bill Fontana (*This sound sculpture involved placing a sequence of 8 microphones below the steel grid roadway of the Cincinnati - Covington Suspension Bridge and transmitting the sound to a sequence of loudspeakers in the Federal Reserve Plaza, adjacent to the Contemporary Arts Center. This type of roadway produces musical, oscillating tones when traffic moves over the road surface. The faster the traffic was moving, the higher in pitch were the resulting tones. "The road surface of the Brooklyn Bridge is a studded steel grid. A car driving over this surface produces an oscillating tone, the exact frequency of which is determined by the speed of the car. The pervasive droning quality of this sound makes it musical (in the language of contemporary music). Many people in the immediate environment of the Brooklyn Bridge, such as pedestrians on the bridge's walkway or passengers in a car, respond negatively to the humming of the bridge, perhaps because the sound is so loud when heard close up. For the centenary of the Brooklyn Bridge in 1983, I wanted to take this humming sound and put it somewhere else in New York City where it would be out of context and a surprise to hear. I selected the large open plaza below the World Trade Center towers. Acoustically, this large open space has a low ambient sound level, as it is far from traffic*

sounds and is surrounded by high buildings. The World Trade Center is also a contemporary New York landmark, while the Brooklyn Bridge is a much older one. Additionally, I find that the towers of the World Trade Center have a sciencefictional quality that works well with and is shared by the humming of the Brooklyn Bridge. Loudspeakers were hidden in the facade of Tower One so that the humming sound of the bridge would become the sound of the World Trade Center towers. These humming sounds were transmitted live from the Brooklyn Bridge to the World Trade Center by means of equalized broadcast-quality telephone lines. In this architectural context, the familiar humming of the Brooklyn Bridge became an acoustic paradox. The kinesthetic sense of this humming coming from somewhere about the plaza, from "somewhere up in the struts" as the Village Voice described it, was an important formal element of the sound sculpture. The physical and spatial relationships of the humming sound to the architectural scale of the World Trade Center towers altered the acoustic scale of the humming. This alteration of scale gave the humming sound of the Brooklyn Bridge a new spectrum of possible acoustic meanings." [Bill Fontana] <http://www.resoundings.org/Pages/First American Projects.html>

- 1980 \_\_ **Pacific Rim - Slow Scan**, Peacesat users group (Visual communication link between members of the Peacesat users group, using ATS-1 NASA and 20 hours of transmission time. There was audience participation at all colocations including Rarotonga, Cook Islands, Santa Cruz California, Wellington, and Vancouver. [Eric Gidney - *The Artist's use of telecommunications : a review*, Leonardo, Vol. 16, No. 4 (Autumn, 1983), pp. 311-315])

- 1980 \_\_ **Quatre Phonographies de l'Eau**, François-Bernard Mâche (À propos de l'une de ses pièces de musique pour bande Quatre phonographies de l'eau (Regmin, Ianassa, Proteus, Spëïô) (1980), François-Bernard Mâche a employé le terme de phonographie comme l'équivalent d'une monographie sonore. Le compositeur rend compte d'une certaine réalité : celle de l'élément aquatique, telle qu'il se l'imagine ou qu'il a expérimenté. Dans le dessein d'opérer une synthèse de l'objet de son étude, Mâche s'emploie à collecter toutes les manifestations de l'eau, depuis la goutte annonçant la pluie jusqu'au torrent, et reconstitue un parcours de matières et de masses. L'anecdote côtoie l'écoute réduite : les sons de l'eau sont considérés autant pour leur qualités narratives que pour leurs spécificités morphologiques. [Yannick Dauby])

- 1980 \_\_ **Roaratorio**. an Irish Circus on Finnegans Wake, For Speaker, Irish Musicians and 62-track tape, John Cage (Using the I-Ching program, Cage determined 2293 sounds depicting locations and noises that appear in Finnegans Wake, all recorded at the places mentioned in the book. There are 15 categories of sounds: Thunderclaps, thunder rumbles and earthquake sounds - Laughing and crying (laughtears) - Loud voice sounds (shouts, etc.) - Farts - Musical instruments (short) - Bells, clocks, chimes - Guns, explosions - Wails - Animals and particular birds - Music (instrumental and singing) - Water - Birds (in general) - Singing - Places. Roaratorio: An Irish Circus on Finnegans Wake" is a 60-minute radio piece based on James Joyce's book Finnegans Wake. At its core is John Cage's text "Writing for the Second Time Through Finnegans Wake," a series of mesostics that form an objective reduction of Joyce's overwhelming text. "Roaratorio" consists of four "layers" of sounds. First is the voice of Cage himself speak-singing his text, thus providing a space-time line. Second is a collection of field recordings from the places mentioned in the book. Third is a collection of sounds mentioned in the book. Finally, Cage recorded Irish musicians (Joyce was Irish) and added their pieces to the mix, for a total of 62 tracks of constantly shifting sonic magma that live a dizzying life, just like Joyce's novel. Even though Cage used chance operations to make editing and mixing choices, the piece doesn't have the gratuitous or aleatory feel of some of his other hörspiels and is simply a fascinating (although highly complex) work.) <http://www.johncage.info/workstage/roaratorio.html>

- 1980 \_\_ « **Science Meets the Muse In The Arts of the Future** » (Washington Post story "Science Meets the Muse In The Arts of the Future" highlights the projects which would form the basis of the Media Lab, scheduled to open five years down the road. "What Vercoe has developed is essentially a communication system. His piano-style keyboard allows composers to use a language they understand and translate it into a language the computer - a sort of ultimate musical instrument - can use." [Joseph McLellan]) <http://sound.media.mit.edu/resources/EMS/EMSt11.html>

- 1980 \_\_ **Sferics**, Alvin Lucier (Sound installation and recordings of ionospheric disturbances, for large-loop antennas, tape recorder and playback system. It is a musical piece using the sounds of the ionosphere. It was 1967 when Lucier discovered a recording of a sound of atmospherics by an astrophysicist and started to get interested in the sferics, natural radio-frequency emissions in the ionosphere occurring in the human audible range. "Sferics" is the shortened term for "atmospherics," natural radio frequency emissions in the ionosphere, caused by electromagnetic energy radiated from nearby or distant lightning.) (SFERICS, d'Alvin Lucier, nous donne à entendre les sons issus de la magnétosphère. À l'aide d'un récepteur électromagnétique, une sorte de transistor radio, mais accordé sur les fréquences VLF (Very Low Frequency), c'est-à-dire les fréquences correspondant à la bande-passante de l'oreille humaine, Alvin Lucier, transcrit une activité cosmique, habituellement imperceptible, et nous livre tel quel un continuum de craquements et de déflagrations discrètes. [Yannick Dauby]) <http://www.kunstradio.at/ZEITGLEICH/CATALOG/ENGLISH/lucier-e.html>

- 1980 \_\_ **Telnet** (Telnet software introduced. Remote log-in and long-distance work (telecommuting) are now possible [Postel

1980]).

- **1980** \_\_ *Terminal Consciousness* (*Terminal Art*, First International Artists' Computer Conferencing project, Bristol), Roy Ascott (8 artists in England, Wales, and America connected with portable computer terminals linked to each other and a data bank in California. "(...) I proposed a Cybernetic Art Matrix in Behaviourist art and the cybernetic vision in 1964, which saw in worldwide communication a necessary conduit for art as it became increasingly process-based, fluid and transformational. At the end of the 1970s the National Endowment for the Arts in Washington, funded me to stage the first international telematic art project, Terminal Art, linking artists in two continents. At the same time Kit Galloway and Sherrie Rabinowitz created their historic Hole in Space (...)") [Roy Ascott]. The eight artists could search the databank they built by instructing the computer to look for keywords. They were also able to exchange ideas and images, and check the databank for inspiration by dialing into the network at any time. The experiment was intended to stimulate creativity in a way that involved active, reciprocal exchanges rather than solitary, linear activity. The system was used in various ways throughout the "conference". General 'conversation' between the participants was frequent, and the tone was relaxed even though of the artists had not met before. 'Tool of conviviality' was one assessment - participants felt that the medium was best suit to the exchange of ideas. Above all a 'community of spirit' seemed to develop. There were various attempts to produce conceptual pieces. However, the artists thought the medium too restrictive for that application. [Eric Gidney])

## 1981

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- **1981** \_\_ *BitNet* (Two east coast universities, in cooperation with IBM, launched the Bitnet network in 1981. The acronym initially stood for "Because It's There", relating to the fact that the protocol was already present on IBM computers, but was subsequently changed to "Because It's Time" (Quarterman, *The Matrix*: 364). This project was strongly supported by the association Educom. Bitnet, like Csnnet (Computer Science Research Network), developed pathways to interconnect with Arpanet. [Patrice Flichy])

- **1981** \_\_ **Canadian Coastlines: Canonic Fractals for Musicians and Computer Band**, Larry Austin (*Canadian Coastlines* was commissioned by the Canadian Broadcasting Corporation as a 'radiophonic' composition for synchronized, live radio broadcast performance on CBC Radio, May 10, 1981, from Halifax, Toronto, and Winnipeg, heard here in a recording of that original broadcast. Four voices of an eight-voice canon are performed by eight musicians, the remaining four--'the computer band'--played as digital synthesizer sequences pre-recorded on tape, each voice entering in turn in exact melodic/rhythmic imitation. However, none of the eight voices are performed in the same tempo. Instead, the musicians follow four distinct tempo click tracks, allowing different, concurrent tempos as well as gradually accelerating and decelerating tempos over relatively long spans of time. The click tracks are timed so that the eight voices come into melodic/rhythmic unison--phase--five times during the piece; i.e., the voices momentarily catch up with one another, only the next moment to continue the acceleration or deceleration, as the case may be. Fractal is a mathematical term coined by French mathematician Benoit Mandelbrot, used to describe a class of natural distribution phenomena involving the spectral density of a fluctuating quantity and its correlation. In the present piece, such fluctuating quantities are derived from freely concatenated mappings of Canadian coastlines, whose courses form coordinates on a graph and provide data for a compositional algorithm generating melodic contour, interval choice, textural density, dynamic flux, and rhythmic design: musical canonic fractals. The taped canonic voices were designed and generated with a Synclavier Digital Music System in the computer music facilities of the Center for Experimental Music and Intermedia at the University of North Texas, Denton. Computer music practitioner John Strawn wrote in the *Computer Music Journal* (Vol. 6, No. 2, 1982) that, "Canadian Coastlines...is an intriguing work for ear and mind...The work thins, thickens, cools, and occasionally warms, moves forward and then veers away, joins, separates, soothes and disturbs, and truly allows the listener to enter the process." Present at the same performance during the 1981 International Computer Music Conference in Denton, Texas, John Cage declared to Austin, "It's beautiful! I don't understand it!" [Larry Austin]) [http://cemi.music.unt.edu/larry\\_austin/LAnotes.htm](http://cemi.music.unt.edu/larry_austin/LAnotes.htm)

- **1981** \_\_ *CSNET* (Inspired by ARPANET's success, the Coordinated Experimental Research Program of the Computer Science Section of NSF's Mathematical and Physical Sciences Directorate started its own network in 1981. Called CSNET (Computer Science Network), the system provided Internet services, Model of a Galaxy Formation - click for details including electronic mail and connections to ARPANET. While CSNET itself was just a starting point, it served well. "Its most important contribution was to bring together the U.S. computer science community and to create the environment that fostered the Internet," explains Larry Landweber, a professor at the University of Wisconsin and a CSNET principal investigator. In addition, CSNET was responsible for the first Internet gateways between the United States and many countries in Europe and Asia.)

- **1981** \_\_ « **Computers Turn Artistic and the Artists Like It** » (The New York Times article, "Computers Turn Artistic and the Artists Like It," mentioned the EMS, Experimental Music Studio MIT MediaLab, in an analysis of how computers are shaping art. "Computers go a step further, creating sounds that instruments cannot even imitate. One of Professor Vercoe's compositions, for example, includes the sound a gong would make if it were to shrink in size during the course of the note. Computers can also play notes faster than human musicians and maintain more complex rhythms without tiring and without error." [Andrew Pollack]. The New Yorker reviewed several EMS concerts and commented upon the status of electronic music. "Today, at the Massachusetts Institute of Technology Experimental Music Studio, a composer with little experience of the medium can, after a few classes and some private instruction, sit at a computer linked to a digital synthesizer, choose timbres and textures with immense precision from the computer's huge resources, and create a composition." [Nicholas Kenyon]) <http://sound.media.mit.edu/resources/EMS/EMSt11.html>

- **1981** \_\_ **Double Entendre**, Douglas Davis (satellite video-radio performance, Whitney Museum-Centre Pompidou, Paris. A performer was in each city. Pre-recorded clips were mixed into the live performance.) <http://www.afsnitp.dk/udefra/1/dd/home.html>

- **1981** \_\_ **First Symphony**, Glenn Branca (Branca's First Symphony was premiered in 1981, and it began a series of works for his extended guitar ensemble that culminated in 1988's Symphony #6 - Devil Choirs at the Gates of Heaven. This period was also kicked off by Indeterminate Activity of Resultant Masses, the one that gave John Cage problems and reputedly one of Branca's great "lost" works, in that it has never had a successful recording. Cage's main objection to the music is the way in which the band of musicians are required rigorously to follow the will of the composer / conductor (Branca) in order to produce music which appears to consist of a sustained climax, an overwhelming statement of pure, awesome power, which the audience can only submit themselves to. His objection ignores the whole point of Indeterminate Activity, which lies in the unpredictable sonic side-effects that the dense mass of guitars produces, and in the potential both for active participation by the listeners in identifying these sounds and for more straightforward entrancement. The sustained hypnotic quality of Branca's music places it firmly in the minimalist tradition, and Branca is full of admiration for Glass, Reich, La Monte Young and others. But while it shares their taste for simple processes, his music often possesses a beauty that eludes the likes of Reich. This trend in his music for simplicity and purity culminates, for me, in the second movement of Symphony #6, one of those rare recordings that I have had to turn off because it was just too much, too affectingly intense. Since 1986 Branca has been working more and more with conventional instrumentation, particularly the orchestra. His contribution to Peter Greenaway's The Belly of an Architect soundtrack was orchestral, as was his Symphony #7. His Ninth also employed the orchestra, but this time adding a chorus, although in places the voices are almost indistinguishable from the instruments. "I love La Monte Young and I think what he's doing is incredibly important and his music will be listened to for hundreds of years. But he concentrated his energies completely on the tuning system and on demonstrating that system. It's very beautiful, but what I'm concentrating on is what I think of as rigorous composition. This is the point that I am selling, and that I try to get every young composer I meet to understand. Maybe the trend now is in that direction and doesn't need any more help from me. I don't think we've heard rigorous composition since the beginning of the century. It was dropped for effects, and for systems, and for processes - everything but composition. It's such hard work, and I'm certainly not patting myself on the back, I don't think I've come anywhere near to achieving it." [Brian Duguid]) <http://media.hyperreal.org/zines/est/intervs/branca.html>

- **1981** \_\_ **Landscape Sculpture with Fog Horns**, Bill Fontana (Microphones were installed at 8 different positions around the bay in order to hear the multiple acoustic delays from the fog horns on the Golden Gate Bridge. Sounds were broadcast to the facade of Pier 2, at Fort Mason Center along the San Francisco waterfront. At the site, listeners walked along the 600 foot pier towards Angel Island. At the end of the pier, all of San Francisco Bay is visible. For 300 feet of this walk, listeners would pass under a sequence of eight loudspeakers. Each of these played a live broadcast of ambient sounds from each of eight different and distant microphone locations around San Francisco Bay. All these locations can hear various combinations of the same foghorns. Because of the distance sound must travel between microphones, a complex configuration of echo patterns and sound delays was created and acoustically mixed in real time with fog horn sounds that were part of the normal ambience of Pier 1.) [http://www.resoundings.org/Pages/musical\\_networks.html](http://www.resoundings.org/Pages/musical_networks.html)

- **1981** \_\_ **LexsSor**, Steve s'Soreff (The LexsSor was first presented as a concept for both an artwork and communication system in 1981 in New York City, by artist Steve s'Soreff, editor of Avant-Garde Art Review (AGAR). s'Soreff felt that one problem that both artists and philosophers must face in the relationship between permanence and change. The system described in AGAR, connecting a data bank to book-sized video receivers, could potentially transmit artists' books, page by page, in color. As easily as telephoning, LexsSor owners could dial any of the 9500 artists' books in the archive. The LexsSor receiver would permit the reader to peruse, skim, back-up, or flip the page images. The unit's 'turn-scan' image-changing system closely approximates the visual experience of normal page-turning. The LexsSor concept suggests the permanence, i.e. books, and change, i.e. telecommunications, can be "merged". Future expansion of the concept would put all books in a central world archive, accessible anywhere at the press of a button [Eric Gidney].)

- 1981 \_\_ *Listserv* (*Listserv mailing list software* (Zakon 1998). *Online knowledge-groups and virtual seminars are formed.*)

- 1981 \_\_ **Light Transition**, Kit Galloway & Sherrie Rabinowitz (Developed in 1981, this project is as yet unrealized. *Light Transition is about remote viewing and observation. Throughout the day, a series of live composite-image compositions of both the Atlantic and Pacific shorelines of the U.S., concluding with the observation of a simultaneous moonrise over the Atlantic Ocean and sunset into the Pacific Ocean. Designed as a high definition satellite broadcast over a national cable television network, and/or a low resolution version cybercast over the internet. Light Transition uses live multi-site remote imaging as a poetic observation and homage to one aspect of the sidereal dynamics. It was through the observation of the night time sky that inspired the invention of the calendar, and astral navigation that started western civilization on a never ending technological binge. Cameras are positioned at the beach on both coasts, bringing the oceans together in a live split-screen image. Light Transition begins when the light is even over both coasts. Each transmission builds incrementally upon those previous, disclosing to our gaze those great cyclical patterns of shadow and gravity that marks the aspect and orbit of our planet through its circle of hours. When the project reaches its dramatic conclusion it becomes obvious that all the technology has been synchronized to observe a simultaneous moonrise over the Atlantic Ocean and sunset into the Pacific Ocean. With the help of computer scientists and astronomers at the Jet Propulsion Laboratory (JPL) Light Transition was precisely calculated to capture in its final transmission the celestial event. Supported by National Endowment For The Arts, Western States Media Award. Light Transition is a spin-off project of a larger Solstice Observation project that would broadcast the solar alignments and light projections at sacred sites and ancient stone observatories around the world.*) <http://www.ecafe.com/museum/history/ksoverview2.html>

- 1981 \_\_ **Maritime Rites**, Alvin Curran (MARITIME RITES (1981-2), supported by a grant from National Public Radio (USA), was an ambitious project that led me and my producer Melissa Gould to record all the significant maritime sounds on the entire Eastern seaboard of the U.S. These sounds (fog horns, ship horns, bells, buoys, wind activated signals, birds and voices of fishermen, lobstermen and women lighthouse keepers etc) were edited and composed according to geographical location into 10 fourteen-minute taped soundscapes over each of which I assigned one composer/performer (John Cage, Pauline Oliveros, Malcolm Goldstein, Steve Lacy, George Lewis, Leo Smith, Joe Celli, Jon Gibson, Clark Coolidge and myself) to contribute an independent improvised music - which by agreement I could integrate freely in any way I desired. This approach loosely paralleled my own solo performances over the previous decade using voice, flugelhorn, synthesizers and keyboards over complex mixes of taped natural sounds. Here however, I was manipulating the playing of my friends and colleagues as one would do today through sampling techniques. But again as in my own solo style, one could not tell where the foreground and background of either soloist or real recorded place/site was. for example a simple score of John Cage's five looped words in hocketed counterpoint with a most extraordinary fog horn on the Nantucket Lightship, now a museum. To record this sound the coastguard had to move the boat from its birth in the Boston Harbour to a location some miles off shore, since its two tone sequential sound G-Eflat plays automatically every 60 seconds at around 140 dB - said to be the loudest instrument in the world. This series was broadcast by over 50 public radio stations in the USA and Canada and while never released on disc has accumulated a notable underground reputation." [Alvin Curran - Published, in German, in Positionen, issue 42 ("Orte"), February 2000]) <http://www.alvincurran.com/writings/out%20of%20place.html>

- 1981 \_\_ **Negativland - Over the Edge - radio programme** (Since 1981, *Negativland* and an evolving cast of characters have operated "Over The Edge," a weekly radio show on KPFA FM in Berkeley, California. "Over The Edge" continues to broadcast three hours of live, found sound mixing every Thursday at midnight, West Coast time, with online access. "From the beginning, we would mix spoken dialogue, often captured from popular media, over various music by us or others, which has remained a *Negativland* style of collage music. (...) Our use of the telephone on radio was intentionally atypical of broadcast phone etiquette then or since. We saw public access to our ongoing mix via telephone as a way for listeners to anonymously contribute to that mix, which doesn't stop when we punch them into it anytime, without warning to them or anyone else. Our motto is "When your phone stops ringing, you're on the air. Don't say hello". We actually don't respond or converse with most callers as "hosts", preferring not to set up the phone access aspect as any kind of content channeling or subject guidance that hosting always manages to imply, and our phones are unscreened and undelayed, which makes simultaneous playing along with the broadcast from the phone possible. No delay is simply necessary for real-time musical phone participation. We recommend that callers wear headphones tuned to KPFA for the actual stereo mix and turn their phone upside down and use it like a microphone." [Don Joyce, "An Unsuspected Future in Broadcasting : *Negativland*"]) <http://www.negativland.com>

- 1981 \_\_ **Satellite Radio Poets**, John Giorno

- 1981 \_\_ « **Simulacres et Simulations** » (*Simulation and Simulacra*), Jean Baudrillard (For Baudrillard, modern societies are organized around the production and consumption of commodities, while postmodern societies are organized around simulation and the play of images and signs, denoting a situation in which codes, models, and signs are the organizing forms of a new social order where simulation rules. In the society of simulation, identities are constructed by the appropriation of images, and codes and models

determine how individuals perceive themselves and relate to other people. Economics, politics, social life, and culture are all governed by the mode of simulation, whereby codes and models determine how goods are consumed and used, politics unfold, culture is produced and consumed, and everyday life is lived. In addition, his postmodern universe is one of hyperreality in which entertainment, information, and communication technologies provide experiences more intense and involving than the scenes of banal everyday life, as well as the codes and models that structure everyday life. The realm of the hyperreal (e.g., media simulations of reality, Disneyland and amusement parks, malls and consumer fantasylands, TV sports, and other excursions into ideal worlds) is more real than real, whereby the models, images, and codes of the hyperreal come to control thought and behavior. Yet determination itself is aleatory in a non-linear world where it is impossible to chart causal mechanisms in a situation in which individuals are confronted with an overwhelming flux of images, codes, and models, any of which may shape an individual's thought or behavior. In this postmodern world, individuals flee from the "desert of the real" for the ecstasies of hyperreality and the new realm of computer, media, and technological experience. In this universe, subjectivities are fragmented and lost, and a new terrain of experience appears that for Baudrillard renders previous social theories and politics obsolete and irrelevant. Tracing the vicissitudes of the subject in present-day society, Baudrillard claims that contemporary subjects are no longer afflicted with modern pathologies like hysteria or paranoia. Rather, they exist in "a state of terror which is characteristic of the schizophrenic, an over-proximity of all things, a foul promiscuity of all things which beleaguers and penetrates him, meeting with no resistance, and no halo, no aura, not even the aura of his own body protects him. In spite of himself the schizophrenic is open to everything and lives in the most extreme confusion". For Baudrillard, the "ecstasy of communication" means that the subject is in close proximity to instantaneous images and information, in an overexposed and transparent world. In this situation, the subject "becomes a pure screen a pure absorption and re-absorption surface of the influent networks". In other words, an individual in a postmodern world becomes merely an entity influenced by media, technological experience, and the hyperreal. In a similar fashion, Baudrillard, a "strong simulacrist," claims that in the media and consumer society, people are caught up in the play of images, spectacles, and simulacra, that have less and less relationship to an outside, to an external "reality," to such an extent that the very concepts of the social, political, or even "reality" no longer seem to have any meaning. And the narcotized and mesmerized (some of Baudrillard's metaphors) media-saturated consciousness is in such a state of fascination with image and spectacle that the concept of meaning itself (which depends on stable boundaries, fixed structures, shared consensus) dissolves. In this alarming and novel postmodern situation, the referent, the behind and the outside, along with depth, essence, and reality all disappear, and with their disappearance, the possibility of all potential opposition vanishes as well. As simulations proliferate, they come to refer only to themselves: a carnival of mirrors reflecting images projected from other mirrors onto the omnipresent television and computer screen and the screen of consciousness, which in turn refers the image to its previous storehouse of images also produced by simulatory mirrors. Caught up in the universe of simulations, the "masses" are "bathed in a media massage" without messages or meaning, a mass age where classes disappear, and politics is dead, as are the grand dreams of disalienation, liberation, and revolution. Baudrillard claims that henceforth the masses seek spectacle and not meaning. They implode into a "silent majority," signifying "the end of the social". Nonetheless, he claims, at this point in his trajectory (i.e., the late 1970s and early 1980s) that refusal of meaning and participation by the masses is a form of resistance. Hovering between nostalgia and nihilism, Baudrillard at once exterminates modern ideas (e.g., the subject, meaning, truth, reality, society, socialism, and emancipation) and affirms a mode of symbolic exchange which appears to manifest a nostalgic desire to return to premodern cultural forms. Baudrillard thus concludes that the "catastrophe has happened," that the destruction of modernity and modern theory which he noted in the mid-1970s, has been completed by the development of capitalist society itself, that modernity has disappeared and a new social situation has taken its place. Against traditional strategies of rebellion and revolution, Baudrillard begins to champion what he calls "fatal strategies" that push the values of the system to the extreme in the hopes of collapse or reversal, and eventually adopts a style of highly ironic metaphysical discourse that renounces emancipation and the discourse and hopes of progressive social transformation.) (Le développement du travail de Baudrillard, tout au long des années 1980, se dégage des théories axées sur la critique de l'économie des signes, au profit de considérations sur la médiation et la communication des masses. Baudrillard a de plus en plus tourné son attention vers les théories de Marshall McLuhan, développant des idées au sujet de la façon dont la nature des relations sociales est déterminée par les formes de communication qu'une société utilise. De manière notoire, il soutient — dans le livre *L'Échange symbolique et la mort*, 1976 — que les sociétés occidentales ont subi une « précession de simulacre ». La précession, selon Baudrillard, a pris la forme d'arrangement de simulacres, depuis l'ère de l'original, jusqu'à la contrefaçon, à la copie produite et mécanique (cf. Walter Benjamin, « L'œuvre d'art à l'ère de la reproduction mécanique »), et à travers « le troisième ordre de simulacre » par lequel la copie remplace l'original. Baudrillard distingue néanmoins le simulacre de la copie, en ce que la copie demeure dans un rapport de référence par rapport à l'original (une copie d'un tableau ne prend son sens qu'à l'égard du tableau original), tandis que le simulacre ne fait que simuler d'autres simulacres : toute notion d'une œuvre originale, d'un événement authentique, d'une réalité première a disparu, pour ne laisser plus la place qu'au jeu des simulacres. Se référant à une fable de Borges — qui lui-même a pu écrire une nouvelle sous le nom de Suarez Miranda, et remettait en cause aussi bien la notion classique de l'auteur, que celle de la chronologie nécessaire à toute histoire des idées (ses nouvelles posaient ainsi la possibilité qu'un auteur déterminé ait pu influencer un auteur antérieur) - Baudrillard a affirmé que dans notre société actuelle, le simulacre ait remplacé l'original, ainsi que dans une nouvelle de Borges la carte de l'Empire se substituait au territoire lui-même. Baudrillard a éprouvé, en particulier dans les années 1990, ses théories à l'aune, non pas du réel puisque celui-ci a disparu, mais des événements médiatiques successifs. Ainsi, dans son livre *La Guerre du Golfe n'aura pas lieu*, il écrit que le simulacre de la guerre a précédé le

conflit réel. Bien qu'il ait été lourdement attaqué, aussi bien au sein du système universitaire français que par des auteurs se posant en défenseur de l'héritage des Lumières, l'analyse de Baudrillard n'annihile pas pour autant, malgré ses apparences, toute notion de réalité ou de politique. Pourtant, il écrivait, dès *Simulacres et simulation*, que la simulation précède le réel, possédant ainsi une valeur productrice. En aucun cas cela signifie-t-il donc que ce que nous avons coutume d'appeler « le réel » ne possède plus aucune valeur et que Baudrillard se soit fourvoyé dans une sorte de nihilisme ou de cynisme conservateur. Sa réflexion sur le statut des singularités en est le témoin. Reprenant en partie la critique situationniste de l'urbanisme, il a pu prendre l'exemple des aménagements urbains qui prétendent ôter la possibilité même de la « délinquance » en modélisant le territoire et en effaçant tout lieu susceptible de fonctionner comme lieu public de rassemblement (bref, « la rue »). En utilisant cette ligne du raisonnement, Baudrillard en vient à caractériser l'époque actuelle - en poursuivant et en modifiant radicalement la critique de l'idéologie de Ludwig Feuerbach et celle de la société du spectacle de Guy Debord - en tant que « hyper-réalité » où le vrai en vient à être effacé ou remplacé par les signes de son existence. Une telle affirmation — celle pour laquelle Baudrillard a le plus contribué et a été le plus lourdement critiqué — est typique des « stratégies fatales » consistant à formuler des théories sur le monde social, au delà d'elles-mêmes, à travers le langage. Baudrillard a pu affirmer que ce qui était important, c'était de formuler des « théories intéressantes », et non pas vraies, ce qui a prêté l'occasion de plusieurs dénonciations de son supposé « cynisme ». De même plutôt que d'argumenter — d'une façon semblable à Susan Sontag dans son livre *Sur la photographie* — que la notion de la réalité a été embrouillée par la profusion de ses images, Baudrillard en est venu à affirmer que : « le réel n'existe plus ». Ce faisant Baudrillard caractérisa, dans *Le crime parfait*, son défi philosophique comme n'étant plus la question de Leibniz « Pourquoi y a-t-il quelque chose plutôt que rien ? », mais plutôt : « Pourquoi y a-t-il rien plutôt que quelque chose ? ».) <http://plato.stanford.edu/entries/baudrillard/>

- **1981 \_\_ De Slungels** (The Gawks), Michel Waisvisz ('The Slungels' had its premiere in the 1981 Holland Festival. 'The Slungels' was performed by robots claiming human rights and humans behaving like robots. The fact that the audience was watching robot actors in a cyberplay avant-la-lettre for about one and a half hour caused a riot in the respectable Holland Festival. After the Holland Festival performances Waisvisz took the robots on the road as his band. The Slungels performed in many European cities. One of the memorable presentations took place in the Wroclaw theater festival just before marshal law was declared in Poland. The audience consisted mainly of nuns and military people and some civilians. They probably came to check out their more western oriented future.) <http://crackle.org/The%20Slungels.htm>

- **1981 \_\_ Slungels in the street**, Michel Waisvisz (In 1981, he was performing the first part of a concert of Brian Eno in Bologna. He thought he couldn't compete so he unleashed a robot among the public on the Piazza Maggiore. The robot was running around and transmitting music among the audience. Waisvisz theatrical robots did not only perform in the established theaters. Here one of the Slungels, 'The Puntkop' (point-head) is challenging the audience on the Piazza Maggiore in Bologna. This happened after a concert that Waisvisz and Brian Eno shared during an art- and performance festival in the Palace on the main square. For many hours after the concert the people played, sung, teased and sometimes had to run with and for the robot.) <http://crackle.org/Slungels%20in%20the%20street.htm>

- **1981 \_\_ Teletel project** (the precursor of Minitel, starts in France (Gillies and Cailliau 2000:317).)

- **1981 \_\_ Underwater Music - Musique Subaquatique**, Michel Redolfi (Over the years, Michel Redolfi has revealed our astounding auditory capacities in the water as the pioneer of underwater concerts, where music is electronically broadcast under the surface of the sea or pools to be enjoyed by floating listeners. In the late 70s and early 80s Redolfi, a French "acousmaticien", designed and patented underwater loudspeakers and conceived tape music to be played and heard underwater, as a way of experimenting new physical modes of sonic perception and new social modes of concert gathering. "Over the course of the years that we have worked together the systems and instruments continued to evolve from the first efforts in Nucelus at Coco Beach in Nice in 1989 to *Chrysalis*, a full-blown underwater opera with the soprano in an two ton plastic bubble half submerged in the pool at the 38e Ruggissants Festival in Grenoble, to the fully interactive systems for the five senses (including perfume sprayers) of *In Corpus* in Toulouse in 1994. At the 1996 *Ars Electronic Festival*, in Linz, Austria, we added the interactivity of the internet with viewers & listeners around the world choosing their favorite underwater virtual city where they could interact with the citizens of their city and with the citizens of the other *Liquid Cities*, both in the pools and on-line. We closed out the twentieth century with concerts in Sydney harbor, *Sonic Waters II* and North Sydney pool, *Virtual Lagoon*. *Sonic Waters II* employed low power FM transmitter to transmit the music to the FM receiver-amplifier-underwater speaker systems situated on mooring poles of the Shark Bay shark netting. Shark Bay lived up to its name when a small harbor shark made a cameo appearance and became entangled in the netting." [Dan Harris]) (Durant sa période américaine Redolfi fonde le concept des musiques subaquatiques, un projet innovant dont les recherches seront soutenues par l'Université de Californie et le Ministère de la Culture. Diffusées par des équipements submergés en pleine mer ou en piscine, ses musiques spécifiquement créées pour le médium invitent le public à flotter ou s'immerger au cœur du son : *Sonic Waters*, premier concert subaquatique en 1981, dans la Baie de San Diego et au Festival de la Rochelle. L'opéra subaquatique *Crysalis* en 1992 consacre internationalement le genre (soprano Yumi Nara). En 25 ans de représentations et installations, plusieurs dizaines de milliers de personnes ont vécu l'expérience d'une nouvelle écoute, ludique et futuriste- en Europe,

aux Etats Unis ainsi qu' en Australie (Brisbane et Festival de Sydney 1998.) <http://www.audionaute.com> [http://danielharrismusic.com/Underwater\\_Music\\_I.html](http://danielharrismusic.com/Underwater_Music_I.html)

- **1981** \_\_ **Vienna-Amsterdam FAX** (Kunst-Microkunst-Macrokunst), (Telecommunications Performance Via Facsimile: was conceived by Tom Klinkowstein and was the first telefacsimile project by artists in Europe (Zagreb, Amsterdam, Vienna). The event took place between Tom Klinkowstein at "Mazzo" in Amsterdam and Robert Adrian at the "Blitz Bar" in Vienna on Aug. 5, 1981. The fax machines were group II (3M 2346), speed = about 3 min for an A4 page.) <http://alien.mur.at/rax/BIO/telecom.html>

## 1982

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- **1982** \_\_ **Art-Com**, Kit Galloway & Sherrie Rabinowitz (ART-COM - 1982 was a credited multi-disciplinary laboratory at Loyola Marymount University in which graduate students used performance as the mode of investigation to study and comment on their experiences of "living in" a composite-image space. Students also explored performing everyday tasks, collaborative problem solving, and theatre skits mimicking life situations with their fellow students who were at a remote site on campus. This "life in virtual space" lab extended the notion of "the image as place," and as a "virtual performance space" developed in the Satellite Arts Project. A final live public performances of the findings of the ART-COM lab were performed at Loyola Marymount University, and for an audiences at the American Film Institute (AFI), Los Angeles.) <http://www.ecafe.com/museum/history/ksoverview2.html>

- **1982** \_\_ « **Art Worlds** », Howard S. Becker (Art Worlds says that art works do not result from the activity of a single artist, but from the coordinated work of a network of cooperating specialists: people who make musical instruments or oil paints or theatrical costumes as well as musicians and composers, painters, and actors, playwrights and directors. And that they manage to do that successfully because they share some ideas and conventions about how the work should be done. Art Worlds is not a study of this group of artists or that artistic community or some specific form of art practiced in such a context. It is, instead, an empirically based consideration of the kinds of questions you can ask and the kinds of operations you would engage in if you set out to study any such phenomenon. So, you could say, Art Worlds is a way of looking at the arts intended to create problems for investigation. It thus may not be helpful as a model of what a young chercheur might do, since young chercheurs are usually well advised to stay away from such grandiose theorizing. From another point of view, it is an empirical research, although a lot of the empirical materials were gathered or created by other people for their own purposes and I just used them. All artistic work, like all human activities, depends on the joint activity of a number of people. Lists what needs to get done to produce an artwork: an idea, a manufacturing/distributing network, time, money, "support" apparatus, an audience, critics, training, and civil order. Art world has a division of labor. Artist believed to be gifted, at least in W. society (Baxandall on the shift to this perspective). Are core and peripheral activities in any art world. Artist always at the core. Sometimes specialized groups take over a core task, e.g., orchestral musicians. Sometimes artists want to make art that challenges the existing structure, may not be producible, exhibitable.) <http://home.earthlink.net/~hsbecker/>

- **1982** \_\_ **BASICODE** (In the 80s, before WWW, in some high developed countries it was used to broadcast software via specific FM radio shows, e.g. of BBC, Dutch Public Radio or East-German Radio. The listeners could record the software by compact cassette or datasette and upload it to their computer for early gaming or very serious applications like arranging addresses alphabetically [Ralf Homann]. During the late seventies a new phenomenon appeared in Holland and the rest of the world. This phenomenon was the home computer. A home computer looked like a typewriter without a carriage and it had to be connected to an old, barely working TV set and a ditto cassette recorder. The ads promised it to be the thing that you could use for such useful things as word processing, accounting, database management and training yourself with programming. It must be 1979 or 1980 that the NOS (the Dutch radio - Nederlandse Omroep Stichting) started transmitting computer programs over the radio in the program 'Hobbyscoop'. First these programs were for specific machines, such as the TRS-80, the Commodore PET, the Apple-2 or the Exidy Sorcerer. This had two big drawbacks: you had to transmit every program four times and some of the cassette formats didn't survive radio transmission very well. In 1982 they got the idea to invent a standard cassette format to transmit BASIC programs over the air. This was called BASICODE : it provides a consistent method of transferring files between computers (BASICODE audio format), the Internet has taken this function over (at least for computers that can be connected to The Internet). Each computer needed a so-called translation program to read the Basicode signal from cassette and to translate the ASCII representation to the native (tokenized) BASIC representation in memory. Most translation programs could also convert the program in memory back to ASCII and save it on cassette as Basicode. The translation programs were transmitted over the air and you could purchase them from the NOS. The basic implementation were architecture-specific utility applications that executed calls of subroutines for text, audio and sound defined in the BASICODE language standard according to the abilities of the computer in question. These applications, called Bascoders, also enabled the sharing of data and programs across different computer platforms by defining a data format for the compact audio cassettes

that were regularly used as storage media in the 1980s. A BASICODE program stored on cassette could be loaded and run on any computer supporting the language. BASICODE was often called "Esperanto for computers" for that reason. Because programs and data were stored as audio on compact cassettes, it was possible to record such a broadcast on tape and load it into the computer later. However, because of the problems mentioned earlier, the program had to be adapted for nearly all popular types of computers and broadcasted multiple times as well. Because the compact cassette has a very low data density compared to today's storage media, the recording of the programs took quite a long time, and only a limited number of programs could be broadcast per show. So, the additional broadcasting of different versions of the same programs was a great inconvenience. In 1982 the executives at NOS decided to develop a unified data format. An application that was specific for each computer model, called Bascoder, managed the recall and storage of programs and data in this unified format from tape. The Bascoders were broadcast by NOS as well, but could also be bought from NOS on cassette and shared among friends and acquaintances. The format, which was very well-protected against interference, could be read and written by all popular home computer hardware. The robustness of the format also made broadcasting via mediumwave radio possible, which increased the range and in turn the number of potential users. For example, data broadcast by the Netherlands station TROS (Televisie en Radio Omroep Stichting, also known as Radio Hilversum) could be received in large parts of the German Democratic Republic (BASICODE programs are transmitted regularly on the European continent: each Sunday at GMT on 747 kHz medium wave on Hilversum 2, and during the <KNOW HOW> programme on West German TV, WDR-3, Enough talking). The installed base of BASICODE is hard to estimate, because both the Bascoders and the programs written in BASICODE were freely available. There was a Bascoder for nearly every home computer sold during this era. Commercially, BASICODE was of no importance because it was always shared for free. From the late 1970s to the late 1980s home computers based on 8 bit processors were very popular. Among the most well-known models were the TRS-80 by Tandy, the PET 2001, VIC-20, C64, C128 and the Plus/4 by Commodore, the Atari 400 / 800 (XL /XE), the Sinclair Research computers (ZX80, ZX81, ZX Spectrum) and the KC85 family popular in the German Democratic Republic. All these computers had a CPU of the MOS Technology 6502 or Zilog Z80 type, 16 to 64 kilobyte RAM, connectors for a cassette drive or a built-in one for data storage, and finally a BASIC interpreter that was generally stored in ROM. The flat learning curve of BASIC, which had been designed with newcomers to programming in mind, and the instant availability of the language on all these computers led to many users writing and sharing their own programs. A problem was that sharing programs and data across computers by different manufacturers was difficult because the various BASIC dialects were totally incompatible in some areas. They used different BASIC commands to make the same action (like clearing the screen, drawing a pixel or playing a sound), so that a BASIC program written for the C64 did not work on an Atari XL without modification and vice versa. Another difficulty was the fact that while these computers were similar, they still differed in key hardware aspects like screen resolution, available color palette or audio abilities. Finally, the data formats used for storing data on cassette were incompatible as well. The Basicode format was basically a 1200BPS RS232-like signal that was FSK modulated with 1200 and 2400Hz tones, essentially the native cassette modulation format of Acorn BBC computers (but not divided into small blocks). It was a 'synchronous' FSK format. A 0 bit was represented by a single period of a 1200Hz tone and a 1 bit was represented by two periods of a 2400Hz tone. This feature made the signal easy to decode and generate with software on a single I/O line. It could also be done using a simple tone decoder/encoder and a standard UART. Most home computers could be made to send or read Basicode on their existing cassette port. Each byte consisted of one start bit, 7 data bits and 2 stop bits. FSK had a fair chance of surviving radio transmission and cassette taping despite the comparatively high baud rate. The whole program was transmitted as one large block with 5 seconds 2400Hz leaders and trailers. In 1986, the new BASICODE 3 standard was developed. The most important additions were routines for simple monochrome graphics, reading and writing data from within programs and sound output. BASICODE 3 made BASICODE popular in the computer scene of the GDR, and from 1989 onward BASICODE programs were transmitted via radio throughout the GDR. Also, a book was published which included a vinyl record with Bascoders for all computers common in the GDR. The last revision of BASICODE, which featured color graphics, was released as BASICODE 3C in 1991. The successor of the GDR's state broadcaster, the Deutschlandsender Kultur (which later became part of the new Deutschlandradio), continued to broadcast BASICODE programs until about 1992. A planned standard called BASICODE 4 never became reality, because NOS stopped supporting the project shortly after BASICODE 3C was released. BASICODE is still used by enthusiasts, in particular 8-bit computer fans, for nostalgic value, but isn't of any practical relevance.) [Michael Wiegand, Manfred Fillingner: BASICODE. Mit Programmkassette. Ravensburger Buchverlag, Ravensburg 1986] [Lennart Benschop] <http://en.wikipedia.org/wiki/BASICODE> <http://www.joyce.de/basicode/> <http://www.sigord.co.uk/BC/BASICODE.htm>

- 1982 \_\_ « *Cyberspace* », William Gibson (*Cyberspace* is a domain characterized by the use of electronics and the electromagnetic spectrum to store, modify, and exchange data via networked systems and associated physical infrastructures. The term originates in science fiction, where it also includes various kinds of virtual reality experienced by deeply immersed computer users or by entities who exist inside computer systems. The word "cyberspace" (from cybernetics and space) was coined by science fiction novelist and seminal cyberpunk author William Gibson in his 1982 story "Burning Chrome" and popularized by his 1984 novel *Neuromancer*.[1] The portion of *Neuromancer* cited in this respect is usually the following: "Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts... A graphic representation of data abstracted from banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the non-space of the mind, clusters and constellations of data." Gibson also coined the phrase *Meatspace* for the physical world contrasted with

Cyberspace. "In this silent world, all conversation is typed. To enter it, one forsakes both body and place and becomes a thing of words alone. You can see what your neighbors are saying (or recently said), but not what either they or their physical surroundings look like. Town meetings are continuous and discussions rage on everything from sexual kinks to depreciation schedules. Whether by one telephonic tendril or millions, they are all connected to one another. Collectively, they form what their inhabitants call the Net. It extends across that immense region of electron states, microwaves, magnetic fields, light pulses and thought which sci-fi writer William Gibson named Cyberspace. "– John Perry Barlow, "Crime and Puzzlement," 1990-06-08. "A science fiction writer coined the useful term "cyberspace" in 1982, but the territory in question, the electronic frontier, is about a hundred and thirty years old. Cyberspace is the "place" where a telephone conversation appears to occur. Not inside your actual phone, the plastic device on your desk. Not inside the other person's phone, in some other city. THE PLACE BETWEEN the phones. The indefinite place OUT THERE, where the two of you, two human beings, actually meet and communicate. Although it is not exactly "real," "cyberspace" is a genuine place. Things happen there that have very genuine consequences. This "place" is not "real," but it is serious, it is earnest. Tens of thousands of people have dedicated their lives to it, to the public service of public communication by wire and electronics." [Bruce Sterling - The Hacker Crackdown, 1992] <http://www.mit.edu/hacker/hacker.html>

- 1982 \_\_ *Ensemblance*, Peter Child, for flute and alto flute, clarinet, violin, viola, cello, percussion, piano, and computer-synthesized sound (Musica Viva performed Peter Child's *Ensemblance*, a piece that incorporates computer generated sounds engineered at the EMS. "Child has put his mastery of the hardware (the MIT Experimental Music Studio's Music-II) to resourceful, artistic purposes. Sly similarities between "normal" instrumental sounds and computer-processed ones tease the ears, in the manner of acoustical puns; you also get the sense of a spacious mental canvas being excitedly filled up with discoveries and insights and speculations about mixtures of sonority, but with a difference -- a keen sense of harmonic color and rhetorical device. One was always fascinated and surprised with what the piano-wind-string-percussion ensemble was producing, and with what might issue from the loud-speakers -- in parallel, amplification, or contradiction. "Ensemblance" ended with a chime-and-piano bell-tolling aura that evoked (and not a bad thing) the ending of Stravinsky's "Les Noces." The repeat performance let you delve into its luxuriance all over again." [Richard Buell] <http://sound.media.mit.edu/resources/EMS/EMSt11.html> <http://web.mit.edu/child/www/reviews/ensemblance.html>

- 1982 \_\_ *Four Wings (Planetary I Ching)*, Directed by Roy Ascott (International Telematic project. Linz: Ars Electronica Festival, as part of Robert Adrian's "The World in 24 Hours".)

- 1982 \_\_ *Killed in a Bar When He Was Only Three*, Nicolas Collins (For backwards electric guitar, scanning radio and toy drumming bears. Written for Robert Poss. Premiered at The Kitchen, 1982.) <http://www.nicolascollins.com>

- 1982 \_\_ *Hans Otto Koenig* (Hans Otto Koenig developed new spirit communication technologies from 1982 to 1988, employing extremely low frequency oscillators, as well as lights in the ultraviolet and infrared range. In 1983 he appeared on a popular radio program on Europe's largest radio station, Radio Luxembourg. The host, Rainer Holbe, had Koenig set up his equipment under close supervision of the station engineers. One of the engineers asked if a voice could come through in direct reply to a question, and a voice quickly replied, "We hear your voice. Otto Koenig makes wireless contact with the dead." Stunned, Rainer Holbe addressed the millions of listeners across Europe, "I tell you, dear Listeners of Radio Luxembourg, and I swear by the life of my children, that nothing has been manipulated. There are no tricks. It is a voice, and we do not know from where it comes." [Mark H. Macy, *The Phenomenal History and Future of ITC Research*] [http://www.worlditc.org/a\\_02\\_macy\\_itc\\_history.htm](http://www.worlditc.org/a_02_macy_itc_history.htm)

- 1982 \_\_ *Levittown - How we Communicate*, Tom Klinkowstein, Centre Culturel Hooggt, Utrecht (Telecommunication performance, May 26 -- July 19, by Tom Klinkowstein at 't Hoogt (Utrecht) with images from the Levittown (PA, USA) shopping-mall, the 'planned' suburb mister Klinkowstein grew up in. Klinkowstein's work has included many events employing telecommunications connections between Europe and North America. The LEVITTOWN installation draws parallels between the American dream of the 50's and Holland in 1982. The artist uses telecommunication networks linked to electronic hardware to portray a vision of suburban America and its place in a global culture. Here he details a sampling of his performance art and explains his use of technology to recreate electronically the environments of selected American institutions. An 8 minute impression of the autobiographical telecommunication performance : "My intention was to present a symbolic electronic bridge between my past in Levittown and my" presence in Utrecht.)

- 1982 \_\_ « *L'importance des exercices d'écoute en tant que pratiques de subjectivation* », Michel Foucault ("To learn the art of listening, we have to read Plutarch's treatise on the art of listening to lectures (*Peri tou akouein*). At the beginning of this treatise, Plutarch says that, following schooling, we have to learn to listen to logos throughout our adult life. The art of listening is crucial so you can tell what is true and what is dissimulation, what is rhetorical truth and what is falsehood in the discourse of the rhetoricians. Listening is linked to the fact that you're not under the control of the masters but you must listen to logos. You keep silent at the lecture. You think about it afterward. This is the art of listening to the voice of the master and the voice of reason in

yourself.” [Michel Foucault]) (Il s’agit d’un cours donné par M. Foucault le 3 mars 1982 dans le cadre d’un ensemble de conférences prononcées au Collège de France sur le thème « du souci de soi », conférences regroupées et publiées dans un ouvrage intitulé « L’herméneutique du sujet ». Dans ce cours du 3 mars M. Foucault examine « l’importance des exercices d’écoute en tant que pratiques de subjectivation », c’est le titre de sa conférence. (...) Son point de vue [a pour but] d’examiner une pratique, l’écoute, par laquelle le sujet se constitue en tant que sujet, ce qui est aussi une des dimensions que l’analyse réflexive des pratiques professionnelles permet de mettre en oeuvre. Pour cela M. Foucault s’appuie sur diverses sources antiques, Sénèque, Marc Aurèle, Epictète et surtout Plutarque dont je reprendrai ici le point de vue sur l’écoute qu’il expose dans un petit traité le « Peri tou akouein », « traité de l’écoute » qui date de 100 ap. JC. (...) Si Michel Foucault s’est arrêté sur ce texte de Plutarque c’est parce qu’il exprime à travers la question de l’écoute, l’un des aspects de ce que Foucault a repéré et qu’il étudie ici : le souci de soi sous l’angle de la pratique de soi. Foucault dit : l’écoute telle qu’elle est examinée par Plutarque est un « exercice d’ascèse », une ascèse non de type chrétienne qui relèverait d’un travail sur soi (dans le cadre de la recherche de la connaissance de soi) par lequel on parviendrait à renoncer à soi, mais un travail proprement philosophique, grâce auquel l’élève philosophe « peut se rejoindre lui-même, comme fin et objet d’une technique de vie », voilà en quoi elle consiste bien en une pratique de soi. L’écoute entame le travail de « subjectivation du vrai discours », c’est à dire le travail « d’appropriation du vrai dans le discours ». Grâce à l’ascèse en laquelle réside l’écoute, l’élève philosophe peut parvenir à faire siennes les choses qu’il sait, à faire siens les discours qu’il entend. Et au lieu de rester comme extérieur à ce qu’il sait, au lieu de rester comme imperméable à ce qu’il entend, il est en mesure d’être sujet de ses propres pensées. (...) Ici comme là l’écoute est le support permanent de ce travail d’ascèse, c’est à dire de ce travail d’épuration de la pensée de tout ce qui la parasite et l’empêche d’être authentiquement pensée. (...) Michel Foucault (p320) éclaire l’argument de Plutarque en l’appuyant sur ce que Sénèque et Epictète y ajoutent. Face à un discours que l’on vient écouter, il y a plusieurs modes de présence à ce discours, l’une correspond à une écoute bien dirigée, que l’on peut donc qualifier d’attentive, et l’autre pas ; la première correspond à l’écoute du discipulus, de l’élève, l’autre à celle de celui qui vient assister à un cours en étant un simple locataire (inquilus) de son siège. L’écoute attentive, c’est celle qui est bien dirigée, celle qui vise ce qui dans le discours peut lui apprendre ce qu’elle vient chercher. L’auditeur court toujours le risque d’être captivé par la parole transmise, parce que cette parole pour se donner comme un discours audible, doit présenter des qualités particulières, qui tiennent autant à la manière de dire (lexis), qu’à celle d’organiser le discours avec finesse et diversité. L’auditeur ne porte pas alors nécessairement son attention là où il faut. L’écoute est donc toujours soumise à l’erreur et au contresens. Donc écouter s’apprend, et il y a bien un art ou du moins une certaine technique de l’écoute. (...) Tous ont à apprendre l’art de l’écoute, et à développer cette compétence particulière. Michel Foucault s’appuie sur ce qu’en dit Epictète (p323). « Pour écouter il faut de la compétence (empeiria) », c’est à dire de l’expérience ou encore de l’habileté acquise, mais il faut aussi de la pratique assidue (tribê). Compétence et pratique assidue de l’écoute ne nécessitent pas une connaissance particulière, mais un contact parce qu’elles ne sont pas des techniques, ou arts dont la maîtrise est obtenue par la connaissance et l’étude, comme c’est le cas pour la rhétorique, ou l’art de dispenser une leçon. L’écoute au contraire est préalable à toute connaissance puisqu’elle est condition de la connaissance. Cette compétence en matière d’écoute ou habileté, qui se développe par la pratique assidue de l’écoute même, consiste à se familiariser avec ses exigences. C’est l’objet même du « Traité sur l’écoute » ou « Comment écouter ? [Hubert Vincent]) <http://www.thefoucauldian.co.uk/tsself.htm>

- **1982 \_\_ Music Room / Faultless Jamming**, Paul DeMarinis (A multi-player interactive music system consisting of five touch-sensitive guitars connected to a computer which allows people with no previous musical training to engage in a lively musical dialog.) <http://www.stanford.edu/~demarini/exhibitions.htm>

- **1982 \_\_ Quaquaversal Transmission 6**, Jerry Hunt (System performance using multiple-channel telephony transmission of geomantic object exercises within on-site mechanic fields.) <http://www.jerryhunt.org>

- **1982 \_\_ Radical Radio/Wilderness Radio**, Robert Murray Schafer (Bruce Davis suggests the idea of injecting fresh sounds to the heart of the cities from remote and wild locations. « A few years ago Bruce Davis and I had an idea for what we called Wilderness Radio. The plan was to put microphones in remote locations uninhabited by humans and to broadcast whatever might be happening out there: the sounds of wind and rain, the cries of birds and animals - all the uneventful events of the natural soundscape transmitted without editing into the hearts of the cities ») (Wilderness radio de Murray Schafer, par exemple, dont l’idée est de diffuser en direct et sans durée précise un mixage de paysages sonores captés dans des lieux où l’être humain est absent. [Bruno Guiganti]. Nous considérons que la mise à distance, la “fantômatisme”, que permet l’écoute médiatisée et acousmatique, est un complément de l’écoute in-situ offertes par les soundwalks. D’ailleurs, Murray Schafer fait paradoxalement la proposition suivante : « A few years ago Bruce Davis and I had an idea for what we called “Wilderness Radio”. The plan was to put microphones in remote locations uninhabited by humans and to broadcast whatever might be happening out there : the sounds of wind and rain, the cries of birds and animals - the uneventful events of the natural soundscape transmitted without editing into the hearts of cities. It seemed to us that since man has been pumping his affairs out into the natural soundscape, a little natural wisdom might be an useful antidote ». Ce projet de captation d’un paysage sonore et de diffusion en direct, semble assez peu compatible avec les contraintes économiques des radios nationales, pourtant un artiste fera de cette idée la base même de son activité. [Yannick Dauby]) <http://www.synesthesie.com/heterophonies/theories/guiganti-artaudiotxt.html>

- **1982 \_\_ Radio Computing Services** (Before the advent of the World Wide Web, in the 1980s, RCS (Radio Computing Services), provided music and talk-related software to radio stations in a digital format. Before online music digital distribution, the midi format as well as the Mbone, Multicast Network was used to distribute audio and video files. The Mbone was a multicast network over the Internet used primarily by educational and research institutes, but there were audio talk programs.)

- **1982 \_\_ Radio Polybucket**, Tetsuo Kogawa (Radio station using a small transmitter on the university campus - The birth of mini-FM is related to the peculiar situation of radio in Japan. When mini-FM originated in the early 1980s, most cities in Japan had only one FM station, if any at all, because only government-operated stations could obtain licenses; station administrators tended to be retired government officials. (...) The Italian free radio movement and Felix Guattari's approach to it presumably solved our dilemma. It provided thrilling examples in which politics and culture creatively worked together and gave us hope with which to cope with the dismal state of Japanese mass media. Guattari stressed the radically different function of free radio from conventional mass media. His notions of transmission, transversal and molecular revolution suggested that, unlike conventional radio, free radio would not impose programs on a mass audience, whose numbers have been forecast, but would come across freely to a molecular public, in a way that would change the nature of communication between those who speak and those who listen. (...) I stumbled upon Article 4 in the Radio Regulations Book. It permits transmitting without a license if the power is very weak and is intended to accommodate wireless microphones and remote-control toys, for example. Under this regulation, quite a few wireless transmitters were sold in toy stores and electronic markets. Also, several audio-parts makers sold the wireless stereo transmitters to link amplifiers to speakers without wires. My idea was to use this type of tiny unit for radio transmitting. (...) During several tests of small ready-made FM transmitters, however, we found that some of them could cover a half-mile radius. Presumably, the sensitivity of radio receivers had increased beyond the Ministry's estimation when they established the regulation in the 1950s. started to make this idea public in various kinds of periodicals using the opportunities that I had in popular magazines. My book *This is Free Radio* [4] provoked strong responses. The next stage transpired quickly and dramatically. In late 1982, my students and I started Radio Polybucket, a station using a small transmitter on the university campus.) <http://anarchy.k2.tku.ac.jp/non-japanese/radiorethink.html>

- **1982 \_\_ Rota-League** ("In 1982 the League of Automatic Music Composers joined forces with the electronic-music band The Rotary Club to develop a concert of works under the name Rota-League. The Rotary Club, which consisted of a younger generation of graduate students who had just finished at Mills, built its performance style around an automatic switching box designed by member Brian Reinbolt. Using an industrial timing wheel scavenged at a local surplus outlet, Reinbolt interfaced the switching box with the wheel in such a way that the turning wheel would affect the configuration of switches in an ongoing fashion. As the band members played, their sounds were routed through the switching box and chopped into a stunning, real-time collage of bits and pieces. The results fit well with the League's devotion to algorithmic music structures coupled with live human interaction. The combined group Rota-League performed an evening of music in September of that year at Ed Mock's studio in San Francisco, with the performers including Sam Ashley, Kenneth Atchley, Ben Azarm, Barbara Golden, Jay Cloldt, and Reinbolt." [John Bischoff])

- **1982 \_\_ SCANNING**, DAX Group (Digital Art Exchange Group) (The name DAX (Digital Art Exchange) was born with the Ultimate Contact FM radio project. Prior to this the group was known as Gekko which stood for: "...generative energy, kinetic knowledge and order." The Gekko group was formed in 1979 as extension of the art department intermedia program for the purpose of producing community access television for broadcast over the Warner Cable network. "Telematic art" as a class-room activity began in 1981, and during this time period DAX (Gekko) first subscribed to the Computer services of I.P. Sharp Associates, Incorporated of Toronto (IPSATEXT). IPSA provided the only practical international computer "E-mail" network service available to artists groups at that time. IPSA is still used, in a very limited way, to coordinate telematic projects. The founding DAX members in 1985 were James Kocher, Gregg Podnar, Eugene Hastings, Michael Chepponis, and Bruce Breland. The Inaugural slowscan television exchange in Pittsburgh was between intermedia art students of Carnegie Mellon University and students at the Ecole Nationale Supérieure des Arts Decoratifs, Paris, France, in April. The slowscan exchange was initially planned as a three institutional event to include work from the National Film School of Lodz, Poland, DAX (Gekko) in Pittsburgh, and ENSAD in Paris. With the crushing of the solidarity labor movement, and the declaration of martial law by the Polish government in December of 1981 the original idea of a three City project was abandoned. In lieu of a realtime tri-national exchange with Lodz, Polish student photographs were brought out of Poland early in 1982 by the project director, video artist Douglas Davis. These symbolic images were then transmitted during the "Scanning" exchange combined with poetry. Supported in part by the International Network for the Arts, NYC; the Rockefeller Foundation; Warner Cable Communications Corporation of Pittsburgh, and the College of Fine Arts, Carnegie Mellon University. Collaborative art direction by Don Foresta in Paris, Douglas Davis in New York City, Lodz, Pittsburgh, and Bruce Breland in Pittsburgh. Student art director James Kocher.) [http://www.digitalartexchange.net/e/txt\\_11.html](http://www.digitalartexchange.net/e/txt_11.html)

- **1982 \_\_ Sound Fountain**, Paul DeMarinis, David Behrman (Touch sensitive sticks make music and move computer generated creatures around a video screen. Sound Fountain was the first multi-player interactive music and video game. it allowed up to six

people at a time to cooperatively make four-channel electronic music and color video graphics. It was designed to be played easily by persons with or without musical training on six touch sensitive wands that control music-generating and video parameters. By touching the instruments, players could change such features as the rhythm, tempo, and timbre of the music as well as create and control the video graphic creatures who dance across the screen. The game was devised to be collective and non-competitive, its rules being intuitive and its reward being participation in a lively ensemble experience.) <http://www.stanford.edu/~demarini/exhibitions.htm>

- **1982** \_\_ **Speaker Swinging**, Gordon Monahan (In Gordon Monahan's *Speaker Swinging*, three performers—one elevated and standing in the middle, and two performers on floor level at the left and right sides—literally swing small loudspeakers over their heads in ever increasing circles and speed, each speaker attached to a rope and electrical cord. Through the speakers is fed a mix of live electronic sound provided in most performances by the composer at a synthesizer. The resulting Doppler effect of the passing speakers creates an ethereal impression. The physicality of the swinging itself also has an additional theatrical effect of impending danger which is increased at the end of the piece when the concert hall lights are turned out for the last few minutes and all sense of proximity is lost by the audience. [“Blue” Gene Tyranny]) [http://www.youtube.com/watch?v=delDUry0\\_eo](http://www.youtube.com/watch?v=delDUry0_eo)

- **1982** \_\_ **Stock-Exchange of the Sensational**, Fred Forest (For a period of five weeks, the artist turns an exhibition space in the Centre Pompidou into the nerve center of a nationwide exchange of fictitious news items that are composed by members of the public. It is equipped like the headquarters of a news wire service with a phone bank (handling up to 8,000 calls a day), a computerized database, video production facilities, and a full range of office equipment. Working 24 hours a day, its staff of 15 are responsible for gathering, editing, displaying, archiving, and rating the news items—tabloid-type stories with an emphasis on sex, death, transgression, the unusual, and the absurd (not unlike much of modern art)—that are sent in from outside “correspondents” and produced on the spot by visitors. A national toll-free number set up so that interested members of the public can find out the highest rated story of the day. The operation lays bare the blurring of the boundaries between information, art, commerce, and the collective subconscious that is so characteristic of postmodern culture.) <http://fredforest.org>

- **1982** \_\_ **Telephone events**, Liam Gillick (Liam Gillick did the telephone events in London (1982), which represents a new model of art practice in the 80's. He phoned a café and asked the café person to call someone there to have a totally invented conversation with them on the phone. There is an act of happening, out of which things emerge and evaporate. His event already contained relational aesthetics and highlight again the notion of documentation with questioning a meaning of the traces of events. [Miya Yoshida])

- **1982** \_\_ **Telesky**, Eric Gidney (Artists simultaneously exchanged sky art images between Paddington Town Hall Sidney and MIT using slow-scan and telephone lines.)

- **1982** \_\_ **Ubiqua** (The Pittsburgh-based Dax Group worked to create series of telecommunication events, which was realized the “Ubiqua” telecommunication lab at the 42nd Biennale de Venezia in 1986. In 1990, the Dax Group organized the first collaboration with African artists in a telecommunications event.) [http://www.digitalartexchange.net/e/txt\\_11.html](http://www.digitalartexchange.net/e/txt_11.html)

- **1982** \_\_ **The World in 24 Hours**, Linz Ars Electronica (Frankfurt, Amsterdam, Wien, Pittsburgh, Toronto, San Francisco, Honolulu, Tokyo, Sydney, Istanbul, Florence), Robert AdrianX, Helmut Mark, Zelko Wiener, Karl Kubacek, Gerhard Taschler (Gruppe BLIX) (*Die Welt in 24 Stunden* was an ambitious project using low tech (telephone-based) communications equipment to set up a global network of participating artists and groups that would each organize a contribution from their location using any or all of SSTV, fax, computer mailbox/ conference or telephone sound. The cities involved were: Vienna, Frankfurt, Amsterdam, Bath, Wellfleet, Pittsburgh, Toronto, San Francisco, Vancouver, Honolulu, Tokyo, Sydney, Istanbul and Athens. Each location was called from Linz at 12:00 local time - so the project began at Noon Central European Time on September 27th and, following the midday sun around the world, ended at Noon C.E.T. on September 28th. In Linz Robert Adrian was assisted by Waltraut Cooper, Norbert Hinterberger and students from the class of Prof. Ortner at the Hochschule für Gestaltung. In Wien the organization was by Helmut Mark and Zelko Wiener at the Österreichische Kultur Service (ÖKS) Studio.)

## 1983

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- **1983** \_\_ « **Aesthetics of Communication Group** », Frank Popper (“In this type of event, it is not the exchanged content that matters, but rather the network that is activated and the functional conditions of exchange. The aesthetic object is replaced by the immateriality of field tensions and by vital and organic energy (mental, muscular, affective) and artificial or mechanical energy (electricity, electronics) that transform our mundane object-centred sense of space and time. Equally the subject is transformed, being

*no longer defined by rigid opposition of self/not-self, but becoming part of this same flowing field of energy.” (Popper, Frank, Art of the Electronic Age, Thames and Hudson 1993))*

- **1983** \_\_ **Answering Machine** « **Site** », Patrick Sumner, San Francisco (*Patrick Sumner, as part of Burning Books' By-Products, hosted an unusual answering-machine "site" in 1983-1984. Patrick advertised his site with a series of twelve postcards showing an image and phone number only, which were mailed out, posted and printed in magazines. Each week a short, specially commissioned audio work could be accessed free, all you had to do was ring up the number and listen. Patrick asked a dozen of artists to contribute audio works, including Jon Livingston's "Streetwalker", Michael Peppe's "Phoney", and the serialized drama "Three Shots in the Night" by Sheila Davies. [Melody Sumner Carnahan]*)

- **1983** \_\_ **BLIX** (a non-profit organisation for the development and execution of telecommunication projects by artists was founded in January '83 by Robert Adrian, Helmut Mark, Zelko Wiener (media artists) and Karl Kubaczek, Gerhard Taschler (communication engineers). Blix was active until 1986.) <http://alien.mur.at/rax/BIO/telecom.html>

- **1983** \_\_ **The Communicating Space**, Fred Forest, Electra Paris (*In this early example of "instant messaging" art, the artist provides the infrastructure for an independent telecommunications network inspired by the "wildcat" networks that temporarily flourished in 1982 by exploiting cracks in the national network that allowed people to make free telephone calls to one another by dialing certain unassigned numbers normally kept secret. Newspaper ads invite members of the public to make calls to the telecommunications installation, where they can talk to, and leave messages for, total strangers visiting the museum. Unlike like messages exchanged on the real-life wildcat networks, those exchanged through "The Communicative Space" are not clandestine: all calls are instantly broadcast over the museum's public address system; a special interface is creating to broadcast a portion of the calls during the course of a program on a nationwide radio channel.*) <http://fredforest.org>

- **1983** \_\_ **Electrographics** (a FAX event between Vienna (Blix/Molotov), New York (FashionModa) and Berlin (AufbauAbbau). Concept: Christian Michaelides of Molotov. Electrographics was the first use of a group III fax machine (3M 9136.) <http://alien.mur.at/rax/BIO/telecom.html>

- **1983** \_\_ **Installation Contact**, Natan Karczmar, Tel Aviv (*Organized by Natan Karczmar, this was a project involving a network of 24 telephones.*) (*Ma première action de communication intitulée Installation Contact fut réalisée en 1983 sur la Place de la Municipalité de Tel Aviv. Cette installation était attenante à la Foire du Livre et comme son accès était gratuit, j'étais donc assuré d'une large fréquentation. De nombreux jeux de communication étaient à la disposition du public. L'un d'eux consistait en 24 téléphones en circuit fermé et disposés en demi-cercle sur une douzaine de petites tables. Une opératrice décidait des connexions et il fallait deviner qui était l'interlocuteur ou l'interlocutrice parmi les 23 autres participants. Je fus invité ensuite à présenter l'installation à Haïfa et au Festival du jeune théâtre à Saint-Jean d'Acre.*) [http://www.olats.org/projetpart/artmedia/2002/t\\_nKarczmar.html](http://www.olats.org/projetpart/artmedia/2002/t_nKarczmar.html)

- **1983** \_\_ « **Manifeste pour une esthétique de la communication** », Fred Forest (*Communication Aesthetics was devised by Mario Costa and Fred Forest at Mercato San Severino in Italy in 1983. It is a theory of aesthetics calling for artistic practise engaging with and working through the developments, evolutions and paradigms of late twentieth century communications technologies. Observing the emerging supremacy of networks over subjects, it called for an artistic approach that was both adapted to, and invested in this changing techno-social arena. "I have always considered that the natural field of artistic production is the terrain of social activity. A field which may be enlarged and explored thanks to the new Communication technologies. This option upsets the holders of a fixed concept of aesthetics, who are incapable of grasping the obvious articulation between this type of practice, the concept of art, and a society in transformation. We are called upon to ask the question "Where are the frontiers of art situated?" It's a brave man who will stick his neck out! There is no frontier. Art is an attitude—a way of relating to something, rather than a thing in itself. There is an aesthetics of behavior, an aesthetics of gesture, just as there is an aesthetics of object. We have now to take a new category into account: the aesthetics of Communication. The media of this aesthetics are often immaterial: its substance comes from the impalpable stuff of information technology. In the sky above our heads, the electrical signals of this information trace invisible, blazing and magical configurations." Fred Forest's work, frequently immaterial and relational, raises questions about the nature and function of art in a market-driven age of information. As early as 1967, Forest organized a series of participatory and community-based art activities which laid the foundations for the "Sociological Art" movement to follow. In 1982 Forest formulated the term "Communication Aesthetics," and in 1983 Fred Forest co-founded the International Group for Research into Communication Aesthetics, to explore new directions for art centered on problems of communication, new models of anthropological behavior, and our evolving relationship with a world conditioned by technological developments.*) [http://www.webnetmuseum.org/html/fr/expo-retr-fredforest/textes\\_critiques/textes\\_divers/3manifeste\\_esth\\_com\\_fr.htm](http://www.webnetmuseum.org/html/fr/expo-retr-fredforest/textes_critiques/textes_divers/3manifeste_esth_com_fr.htm)

- **1983** \_\_ **MIDI (Musical Instrument Digital Interface)** is an industry-standard protocol that enables electronic musical

instruments, computers, and other equipment to communicate, control, and synchronize with each other. MIDI allows computers, synthesizers, MIDI controllers, sound cards, samplers and drum machines to control one another, and to exchange system data. MIDI does not transmit an audio signal or media — it transmits digital data "event messages" such as the pitch and intensity of musical notes to play, control signals for parameters such as volume, vibrato and panning, cues, and clock signals to set the tempo. As an electronic protocol, it is notable for its widespread adoption throughout the industry, and for continuing in use since its introduction in 1983. By the end of the 1970s, electronic musical devices were becoming increasingly common and affordable. However, devices from different manufacturers were generally not compatible with each other and could not be interconnected. Different interfacing models included analog control voltages at various standards (such as 1 volt per octave, or the logarithmic "hertz per volt"); analog clock, trigger and "gate" signals (both positive "V-trig" and negative "S-trig" varieties, between -15V to +15V); and proprietary digital interfaces such as Roland Corporation's DCB (digital control bus), the Oberheim system, and Yamaha's "keycode" system. In 1981, audio engineer and synthesizer designer Dave Smith of Sequential Circuits, Inc. proposed a digital standard for musical instruments in a paper for the Audio Engineering Society. The MIDI Specification 1.0 was published in August 1983. In the years immediately after the 1983 ratification of the MIDI specification, MIDI interfaces were released for the Apple Macintosh, Commodore 64, and the PC-DOS platform, allowing for the development of a market for powerful, inexpensive, and now-widespread computer-based MIDI sequencers. The Atari ST came equipped with MIDI ports as standard, as was commonly used in recording studios for this reason. Synchronization of MIDI sequences is made possible by the use of MIDI timecode, an implementation of the SMPTE time code standard using MIDI messages, and MIDI timecode has become the standard for digital music synchronization. The MIDI standard consists of a communications messaging protocol designed for use with musical instruments, as well as a physical interface standard. It consists physically of a one-way (simplex) digital current loop serial communications electrical connection signaling at 31,250 bits per second. 8-N-1 format, i.e. one start bit (must be 0), eight data bits, no parity bit and one stop bit (must be 1), is used. Most MIDI capable instruments feature a MIDI IN, MIDI OUT, and occasionally a MIDI THRU connection in the form of five-pin DIN connectors. In order to build a two-way physical connection between two devices, a pair of cables must be used. The MIDI THRU jack simply echoes the signal entering the device at MIDI-IN. This makes it possible to control several devices from a single source. Every MIDI connection is a one-way connection from the MIDI Out connector of the sending device to the MIDI In connector of the receiving device. Each such connection can carry a stream of MIDI messages, with most messages representing a common musical performance event or gesture such as note-on, note-off, controller value change (including volume, pedal, modulation signals, etc.), pitch bend, program change, aftertouch, channel pressure. All of those messages include channel number. There are 16 possible channels in the protocol. The channels are used to separate "voices" or "instruments", somewhat like tracks in a multi-track mixer. The ability to multiplex 16 "channels" onto a single wire makes it possible to control several instruments at once using a single MIDI connection. When a MIDI instrument is capable of producing several independent sounds simultaneously (a multitimbral instrument), MIDI channels are used to address these sections independently. (This should not be confused with "polyphonic"; the ability to play several notes simultaneously in the same "voice".) MIDI messages are extremely compact, due to the low bandwidth of the connection, and the need for real-time accuracy. Most messages consist of a status byte (channel number in the low 4 bits, and an opcode in the high 4 bits), followed by one or two data bytes. However, the serial nature of MIDI messages means that long strings of MIDI messages take an appreciable time to send, at times even causing audible delays, especially when dealing with dense musical information or when many channels are particularly active. Although traditional MIDI connections work well for most purposes, a number of newer message protocols and hardware transports have been proposed over the years to try to take the idea to the next level. Some of the more notable efforts include: OSC, mLAN, HD-MIDI.

- **1983 \_\_ Night Satellite**, Jean Piché, Osamu Shoji, Martin Wesley-Smith, during Digicon 83, Vancouver (The next event, fortunately, is far more successful. The piece is called "Night Satellite," and features Vancouver composer Jean Piche playing a Fairlight CMI. Piche it turns out, is not performing alone; two other composers, Osamu Shoji and Martin Wesley-Smith, are also working their Fairlights but we can't see them, because Shoji is in Tokyo and Wesley-Smith is in Sydney, Australia. They are linked to each other by satellite, which leads to some interesting problems: because of the built-in 300-millisecond delay of a satellite hop, Australia has to hold back its entrances for a beat after hearing a cue from Canada, which in turn must pause after getting a cue from Japan. The machines are also set to play each other, in a continuous round-the-world loop. Some of us get a little uneasy before the piece starts--the communication line between the three performers is piped onto the house PA, and it has a bad echo and sounds dreadful. There is no such problem with the audio lines, however, and the sound is remarkably clean. It is hard to determine exactly who is playing what (a situation exacerbated by an unbelievably inept video cameraman who insists on showing images of Piche's feet on the projection screen), but it seems that Piche like to play Morse-code like patterns and percussive riffs, while Australia is into sounds of guns, whips, and ripping metal, and Japan is predisposed to heavy synthetic rock and roll. Although the music seems a little disjointed, there is no mistaking the energy of the performance, and when it is over, the usually unsmiling Piche cracks a wide grin. The communication line is put back on the house PA, revealing that all is not perfect: "Do you want the bridge again?" asks an Australian voice. As the three audiences, thousands of miles apart, applaud each other, Piche proclaims, "Next year, Africa, Europe, and South America!" [Paul D. Lehrman, CREATIVE COMPUTING VOL. 10, NO. 4 / April 1984 / p. 164] <http://www.paul-lehrman.com/digicon/digiconCC.html>

- **1983 \_\_ Pleiddes Project**, David Cope (*Composer David Cope is currently working on his Pleiddes Project, a yet-unrealized plan to build a privately owned and operated radio telescope on the rim of the Grand Canyon. The purpose of this undertaking is to transmit music deep into space in hopes of contacting extra-terrestrials.*)

- **1983 \_\_ La Plissure du Texte (A Planetary Fairy Tale)**, Roy Ascott and Robert Adrian X, Electra'83 Paris (*It was an exercise in "distributed authorship" that used the ARTEX email network both for project organisation/coordination and as the medium for the project itself. Artists and groups in Alma Quebec, Amsterdam, Bristol, Honolulu, Paris, Pittsburgh, San Francisco, Sydney, Toronto, Vancouver, Vienna were invited to improvise an on-line narrative in the character of the roles assigned to each of them (princess, witch, hero etc.). The resulting text-collage was a global fairy tale created in 12 days - from Dec.8 to 22 '83. Concept: Roy Ascott for "Electra'83", Paris. Network coordination: Robert Adrian X. Organisation in Vienna: Helmut Mark & Zelko Wiener for Blix IPSharp provided free computer time for the project. An Incomplete and fragmented version of "La Plissure du Texte", was captured on disk by Norman White in Toronto. "La Plissure du Texte: a planetary Fairy Tale was the title of a project involving "dispersed authorship" which I created for Frank Popper's Electra at the Musee d'art moderne in Paris 1983. Here artists at 14 nodes around the world took on the identity of fairy tale personae, and across the networks created a non-linear narrative. The planetary perspective was celebrated in Planetary Network: Laboratory Ubiqua which I organised as an International Commissioner for the 1986 Venice Biennale, along with Don Foresta, and Tom Sherman. (...) Each participant of group of participants in the process could interact with the inputs of all others, retrieving from the large memory store all text accumulated since they last logged on. The textual interplay was complex, working on many layers of meaning, witty, baddy, clever, academic, philosophical, entertaining, inventive, shocking, amusing - assimilating the great diversity of cultural contexts, value systems, and intellectual interests of the participants (...). In some instances a dramatis persona would be no more than one or two artists grouped around a desktop computer, in other cases an artist group would meet regularly in its media center to move the narrative along on-line. Others made a full-scale performance, as with the witch in Sydney, where each evening, at the Art Gallery of New South Wales, the evolving narrative text was downloaded and read out to the gathered participants, representing the witch, who in turn collaborated in further production of the text. In almost every case the individual node of the narrative network was itself a hub networking out to other individual or groups in its region, collectively constituting the lind of the dramatis persona at that location. The Musée d'Art Moderne in Paris was the principal hub, the home of the magician. La Plissure du Texte was effectively a watershed, a fulcrum point in my work. It showed me the importance of text as the agent of practice, not merely of theory, and it demonstrated the potency of distributed authorship in the creative process. (...) That led me to the formulation of a practice that I have theorized as telematic art, a form of "telemadic" connectivism. (...) As for my current work, there has been a passage, from ideas to mind-at-a-distance invested in nonlinear narrative (including the "centers on action" of Vladimir Propp) set in telematic space, toward the new organicism in biophysics and research into biophotonics of Fritz-Albert Popp. (...) So from the emergent planetary network of telematics, to the embodied biophotonic network of living entities, there is a potential for continuity and connectivity, the transdisciplinary aspects of which it is my present purpose as an artist to pursue." [Roy Ascott]) <http://alien.mur.at/rax/ARTEX/PLISSURE/plissure.html>*

- **1983 \_\_ Radio Home Run**, Tetsuo Kogawa (*The radio station that my students and I had started on the campus re-established itself in the centre of Tokyo when the students finished school in 1983. The new station was called Radio Home Run. Every day, from 8 PM to midnight, one or two groups aired talk or music programs. Themes depended on who was host and who were guests. The members always invited new guests who were involved in political or cultural activism. Also, listeners who lived close to the station hesitantly began to visit. To repeat the telephone number during each program was our basic policy. Guests sometimes recorded cassette tapes of our programs and let their friends listen. Radio Home Run quickly became a meeting place for students, activists, artists, workers, owners of small shops, local politicians, men, women and the elderly. (...) Theoretically, I had argued that mini-FM stations might be linked together to extend the transmission/reception area. Since the cost of each unit is cheap, one could have a number of radio sets and transmitters to relay to each other quite inexpensively. Radio Home Run was not so eager to do this but some stations succeeded in establishing a very sophisticated network to link together and extend their service areas. Through a number of experiments to remodel the transmitting system, create programs and pursue a new way of getting together, we came to the conclusion at Radio Home Run that we must work within a half-mile service area. Tokyo is densely populated so even a half-mile area has at least ten thousand inhabitants. This meant that mini-FM could function as community radio. Moreover, we realized that in the process of transmitting we were more conscious of our members than(possible)listeners. The action of transmitting together changed our relationships and feelings in a way that seemed distinct from the effects of other collective actions that did not involve transmitting. Further, we surmised that relationships differed because we were narrowcasting rather than broadcasting. We decided it had something to do with the limited area of our transmission signal.") <http://anarchy.translocal.jp/non-japanese/radiorethink.html>*

- **1983 \_\_ Sound disinformation** (*In Poland, in the fall of 1983, Solidarity retaliated against a tape the government concocted of a fake conversation between Lech Walesa and his brother, with a tape of their own, but which did not attempt to deceive. It was*

produced from the infamous 1981 broadcast of general Wojciech Jaruzelski declaring martial law. They ``ventriloquized'' the general to have him say, in an unusual moment of candor, ``Citizens, men and women, the following in a nutshell is the truth about martial law. There have come into effect, or shortly will come into effect, laws making a mockery of the principles of morality and justice.'' Per CRASS, band member Andy Palmer explained the action: We took extracts from speeches by Thatcher and Reagan, put them together with some telephone noises over the top and distributed it anonymously on the continent. A Dutch journalist took it to the States where it ended up in the State Department in Washington, who promptly issued a statement saying that they felt it was part of the "Soviet disinformation campaign." Subsequent to that, the (London) Sunday Times got a hold of it and, acting purely as a mouthpiece for the State Department, printed an article entitled "How the KGB Fools the West's Press." The tape had Reagan and Thatcher commiserating on the Falkland Islands invasion and on nuclear armaments. Eight months later CRASS announced that they, and not the KGB, had manufactured that tape, much to the embarrassment of the governments and press. Perhaps the State Department was quick to accuse because it was informed by the CIA's own background in fraud. ``to spread dissatisfaction about the exiled Sihanouk amongst the Cambodian peasantry who revered him, a CIA sound engineer, using sophisticated electronics, fashioned an excellent counterfeit of the Prince's distinctive voice and manner of speaking -- breathless, high-pitched, and full of giggles. This voice was beamed from a clandestine radio station in Laos with messages artfully designed to offend any good Khmer. In one of the broadcasts, 'Sihanouk' exhorted young women to aid the cause by sleeping with valiant Vietcong." -- Bill Blum, *The CIA: A Forgotten History*, (London: Zed Books Ltd., 1986), p. 154. [Douglas Kahn, John Heartfield, "Art & Mass Media"])

- **1983 \_\_ Sound Sculpture with a Series of Level Crossings**, Bill Fontana ("First premiered in 1983 at a sculpture conference in California, *Sound Sculpture with a Series of Level Crossings* advanced Fontana's research into the power of man-made objects to generate sounds within the auditory field of natural environments. The first of Fontana's sculptures to be acquired by an American museum, (The San Francisco Museum of Modern Art in 1997) the project demonstrates the artists' ambition in creating sound composition through the collection and restructuring of sonic events. Microphones placed in eight different areas of the train yards on the eastern shoreline of the San Francisco Bay were connected to Fontana's studio via live telephone lines installed on existing utility poles to the vast area of the railroad yard enabling the recording of the approach, crossover, and retreat of locomotive engines and freight trains across a vast area. Fontana's prefigured framework of sound data collection points accentuates the listener's perception of distance and dimension and the elasticity of time. The eight-channel filed recording of train locomotion, whistle sequence, and the automated warning system of synchronized street-level crossings combine to create a spatiality that is entirely aural in aspect. Composed stereophonically, the sound mix once relocated to the gallery space as a means of inducing a dynamic auditory representation of time and space as conveyed through the noise of the train yard. Modern composer and philosopher John Cage identified noise as extra-musical. He saw it, along with silence, as the basis for emerging theories and practices of sound art. Fontana's reclassification of urban noise such as train whistles and machine vibration into a set of harmonic tonalities and frequencies addresses the perception of space and speed of time in thoughtfully considered plans which reflect the complexity of lived moments through the psycho-acoustic properties of the human ear." [Robert Riley])

- **1983 \_\_ Synthetic Performer**, Barry Vercoe (Barry Vercoe wrote a computer program called "the Synthetic Performer" which can accompany a human performer. The program detects pitches in a flute performance and compares the notes with a musical score stored in memory. It then analyzes the tempo of the performance and generates an appropriate accompaniment.) (En 1983, Barry Vercoe, compositeur-chercheur du M.I.T., alors en résidence à l'IRCAM, et Larry Beauregard, flûtiste à l'Ensemble Intercontemporain, ont mis en œuvre le concept de l'accompagnateur synthétique (synthetic performer) - un dispositif de synthèse musicale capable d'assujettir son propre tempo à celui d'un interprète vivant en suivant la partition (score following). [Jean-Claude Risset]) <http://trf.education.gouv.fr/pub/educnet/musique/neo/04infos/formations/concours/baccalaureat/bac2002/sud/6sud.htm> <http://www.media.mit.edu/~bv/papers/synthetic%20performer.pdf> <http://www.youtube.com/watch?v=vOYky8MmrEU>

- **1983 \_\_ TCP/IP** (The first TCP/IP-based wide-area network was operational by January 1, 1983 when all hosts on the ARPANET were switched over from the older NCP protocols.)

- **1983 \_\_ Telephone Music** (In 1983 (on April 15,1983), Robert Adrian, Helmut Mark, and Zelko Wiener formed the verein BLIX together with musician/technician Karl Kubaczek and technician Gerhard Taschler. DAX Group organized A slowscan television event between Pittsburgh and Linz, Austria. First major slowscan image transmission at a global network level. Slowscan images were transmitted from the studios of Atlantic Teleproductions located in Pittsburgh to the Bruchnerhaus in Linz, Austria where they were aired over the city's cable television system. Pittsburgh participants were Bruce Breland, Jim Kocher, Bruce Hamady, Herb Koshak, and Cindy Snodgrass. Produced by Robert Adrian X in collaboration with Sky Art of MIT, Otto Piene, Director, Boston, Massachusetts. Staged for the Bruchnerfest in Linz. Telephone Music, was a telephone concert organized by BLIX between Wien, Berlin and Budapest on April 15,1983. Telephone Music was an attempt to use the telephone (as the most universally available electronic communications medium) to create a common space for artists across the ideological barriers that divided Central Europe at the time - between "western" Wien, divided Berlin and "eastern" Budapest. At the ÖKS in Wien, Artpool in Budapest and

*Aufbau/Abbau in Berlin, we simply connected our telephones to amplifiers and played live music to each other for a couple of hours. "It was an effort to use the telephone (as the most universally available electronic communications medium) to create a common space for artists across the ideological barriers that divided Central Europe at the time – between "western" Wien, divided Berlin and "eastern" Budapest. At the ÖKS in Wien, Artpool in Budapest and Aufbau/Abbau in Berlin, we simply connected our telephones to amplifiers and played live music to each other for a couple of hours."* <http://alien.mur.at/rax/BIO/telecom.html> <http://alien.mur.at/rax/PHONEMUSIC/telemusic.html>

- **1983 \_\_ Wiencouver IV**, Robert Adrian and Hank Bull (*a slow-scan TV and telephone music project between Vancouver and Vienna on Dec. 4, 1983. Sound and Image from live performances by artists in Vancouver and Vienna were sent and received on 2 phone lines - one line for sound and one line for Video (slow-scan). The event - a low-tech interactive TV program - lasted for about 3 hours. Due to the time difference the event in Vancouver took place at 11:00 as a Sunday brunch while in Vienna it was an evening event starting at 20:00. In Vienna a preliminary telephone concert with Warsaw and Berlin took place between 18:00 and 20:00. Overall concept: Robert Adrian. Vienna location: Osterr. Kulturservice Studio. Concept/organisation: Helmut Mark for BLIX. Vancouver location: Western Front Society. Organisation: Robert Adrian and Hank Bull.*) <http://kunstradio.at/HISTORY/TCOM/WC/1983/83index.html> <http://alien.mur.at/rax/BIO/telecom.html>

## 1984

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- **1984 \_\_ « Art and Telematics - Towards a Network Consciousness »**, Roy Ascott (*In Ascott's opinion, computer-mediated networks offered the possibility of "a kind of planetary conviviality and crativity" achieved by no other means of communication. In the 1980s and early 1990s, publicists such as John Perry Barlow and Esther Dyson, founders of the Electronic Frontier Foundation, and Nicholas Negroponte, Founding Chairman of the Media Laboratory at the Massachusetts Institute of Technology (MIT), heralded the newly popularized technology of the Internet as a new frontier in which unmediated communication among users would foster the development of a radical democracy. Visual artists including Roy Ascott, Karl Loeffler, Kit Galloway, and Sherrie Rabinowitz and critics such as Gene Youngblood forecasted the long-awaited arrival of world peace to the planet, as they believed that the Internet would increase human understanding and collaboration. The catastrophic failure of these predictions makes it clear that these ideas were based more on the artists' visions than on properties inherent to the technology. (Maria Fernández). "The creative use of networks makes them organisms. The work is never in a state of completion, how could it be so? Telematique is a decentralising medium; its metaphor is that of a web or net in which there is no centre, or hierarchy, no top nor bottom. It breaks the boundaries not only of the insular individual but of institutions, territories and time zones. To engage in telematic communication is to be once everywhere and nowhere. In this it is subversive. It subverts the idea of authorship bound up within the solitary individual. It subverts the idea of individual ownership of the works of imagination. It replaces the bricks and mortar of institutions of culture and learning with an invisible college and a floating museum the reach of which is always expanding to include new possibilities of mind and new intimations of reality." "(...) Telematics has arisen an ethos of cross-disciplinary science and is set within a cybernetic perspective of the world. Numerous writers have attempted to describe the enormous changes they see occurring in human awareness, which some see as a kind of planetary consciousness. Teilhard de Chardin imagined a noosphere, a thinking layer, enveloping the biosphere of the earth. Peter Russell has more recently advanced the hypothesis of the emergence of a planetary brain..." "In telematic art, meaning/content is no longer something which is created by artist, then distributed through the network and received by the recipient. Meaning is rather the result of an interaction between the observer/participant and the system, the content of which is in a state of flux, of endless change and transformation. In this state of uncertainty and instability the content becomes ... embodied in data which themselves are immaterial - pure difference - until it is reconstituted at the interface as image, text or sound."*)

- **1984 \_\_ Les cailloux radiophoniques** (the radio stones), Fred Forest (*media action with the involvement in direct of Radio-Lyon, ten Galleries of Art of which the Gallery l'Ollave, Lyon, 3 November - 1st December 1984.*) [http://www.fredforest.org/book/html/en/bio\\_en.htm](http://www.fredforest.org/book/html/en/bio_en.htm)

- **1984 \_\_ Cleveland FreeNet** (*The Cleveland Free-Net computer networking system is often cited as the grandfather of the worldwide community computer networking movement. This movement takes as its goal the provision by community networks of free or at-cost dialup and public terminal access to community and world wide communication. Cleveland Free-Net and other community networks are made possible by volunteers from all sectors of the community. In 1992, Cleveland Free-Net had well over 40,000 registered users making more than 10,000 accesses per day. Over 250 volunteer system operators maintained and upgraded the system and kept the information fresh or got answers to questions posted by users. This model is proving attractive to citizens around the world. It is worth looking at how the first Free-Net got started in Cleveland. The Cleveland Freenet began operations in*

July 1986 (or in 1984?) through the efforts of Dr. Thomas M. Grundner of Case Western Reserve University to create a free public community computer system, the first of its kind in the world. Grundner envisioned the network as a tool for promoting effective democracy through fostering a well-informed public, often quoting Madison, "A popular government without popular information, or the means of acquiring it, is but a prologue to a farce or a tragedy, or perhaps both." The early Freenet grew out of a smaller project of Grundner and his colleagues at the CWRU School of Medicine, called "St. Silicon's Hospital and Information Dispensary," which they began in 1984 as a free medical question and answer service for Clevelanders. Renamed the Cleveland Free-Net, the system expanded to provide additional professional advisory services, Special Internet Group (SIG) discussion forums, and email within the Cleveland Freenet community. Ohio Bell and AT&T offered donations of money and equipment, although CWRU provided the bulk of financial support. Immediately popular, the system soon became overloaded with rapidly increasing use (reaching 1,000 registered users by summer of 1988). The Cleveland Freenet felt a missionary impulse and helped support the creation of similar community networks elsewhere in Ohio and the United States, serving as a model for a global trend. However, with heavy demand, even the upgraded Cleveland Freenet system became increasingly subject to malfunction, and frequent busy signals frustrated users. Commercial access to the Internet was also becoming more affordable at this time, providing competition to the Freenet. Faced with significant potential financial costs for additional improvements necessary for adequate performance and Y2K compatibility, CWRU closed the original Cleveland Freenet on September 30, 1999. However, the Cleveland Freenet was quickly reborn through efforts begun, soon after the close of the CWRU system, by the Organization For Community Networks (OFCN), an Ohio non-profit corporation based in Euclid with a mission of providing a central repository for community network information. John M. Kurilec was serving as the Executive Director of the new Cleveland Freenet in 2001.) [http://wiki.case.edu/Cleveland\\_Freenet](http://wiki.case.edu/Cleveland_Freenet) <http://www.prometheusonline.de/heureka/kommunikationswissenschaft/monografien/hauben/brief.htm>

- **1984 \_\_ Computer Music Association Concert Series** presented at The Vorpall Gallery, San Francisco (*Piano Social* (1974, rev. 1984) -- J. Bischoff Tape loops made from 16 sound sources are played continually through switching circuits. The occurrence of each sound turns another sound on and off. In addition, a performer turns other tape material on and off at the appearance of certain loop sounds. Sound sources include a piano, a car, an Osterizer, a harpsichord. Blase (1984) -- T. Perkis A microcomputer coordinates the switching of assorted recorded material (some of it computer generated), and controls a Casio keyboard while monitoring performer controls which set various program parameters. *Candelabra Junction* (1983) -- J. Bischoff/T. Perkis A Casio keyboard driven with an external variable clock provides the ground for a mixture of computer generated sound, synthesizer sound and pre-recorded textures. *Portable Memories* -- B. Azarm/B. Reinbolt Free experiments with phase techniques mixed with unjustified random deviations. The computer acts as total slave to questionable whims. B. Azarm: *Trimangulation and context swapping*. B. Reinbolt: *Computer design and control*. *Faiths Full of Makeup* -- B. Azarm/B. Reinbolt Media used in the context of source. Experimental, non-ordinary use of ordinary input to express certain unavoidable personal and social facts. B. Azarm: *Performance concept and source mutation*. B. Reinbolt: *Computer design and control*. *Exploradores for two Synclaviers and guitars* -- F. Harris, J. Marc, T. San Miguel. The motivation for this suite came from a desire to explore, therefore the title. Synclaviers are designed to make live performance possible with a blend of pre-programmed compositions and live keyboard performances. We wanted to examine some of the possibilities of cooperation between two separate computers, doing their calculations in real time, and live performers doing the same. The score consists of standard music notations for the performers, instructions for the computers, and instructions for the sound mixer.) <http://www.o-art.org/history/Computer/CMAconcert.html>

- **1984 \_\_ DNS** (The domain name system is established. At that time the Net comprised 1,000 host computers. The newly developed DNS is introduced across the Internet, with the now familiar domains of .gov, .mil, .edu, .org, .net, and .com. A domain called .int, for international entities, is not much used. Instead, hosts in other countries take a two-letter domain indicating the country. The British JANET explicitly announces its intention to serve the nation's higher education community, regardless of discipline.)

- **1984 \_\_ Electronic Café Network (Communication Access For Everybody)**, Kit Galloway and Sherrie Rabinowitz (In 1983 artists Kit Galloway and Sherrie Rabinowitz began refining a concept for a telecollaborative network connecting informal public multimedia communications venues. "We've designed this communication system to associate as many communication systems as possible, and it tends to emulate a real café, a café in the sense that you can walk into a café and at one table people are having a serious conversation, at another table people are flirting, somebody else is just watching what's going on, somebody else is writing poetry, somebody else is drawing something. All those things take place simultaneously, at the same time, and they're hosted gracefully by the café. So in trying to define what we wanted the communications system to be, we wanted to create a communications system that allowed for that same kind of breadth of communication" [Sherrie Rabinowitz]. The Electronic Café network was to be the artists offering as a replicable social model and proposed antidote to the approaching Orwellian year of 1984. It was thought that by integrating multiple-media telecollaborative technologies with the culturally diverse creative communities throughout Los Angeles that a powerful new context for cultural sharing and interaction would emerge -- a breakaway context that would establish an important dialogue about the role such technologies can play in fostering the invention of a new cultural interaction, and scale of artistic collaboration and inquiry. Thus the world would be safe from the Orwellian prophecy:-) Electronic Café was about integration: Integrating community, art, technology, and cross-cultural communications. The technical mission was

to define the basic human requirements to facilitate creative conversations between people even if they did not speak the same language. The technical installation used a hybrid of computer-based communications; Keyword searchable text and pictorial databases "Community Memories"; Videoconferencing; Audioconferencing; Realtime collaborative telewriting/drawing, including the ability to collaboratively add annotations to still-video images: High resolution image printers so that activities could be documented and mounted on the wall for public view; And, the ability of any venue to broadcast sight and sound to any, or all, of the others venues. The network was operational for seven weeks during the 1984 Olympic Arts Festival. The cultural diversity of greater Los Angeles provided a perfect setting for mimicking an international network. Artists and educators that lived in the communities helped find the host venues for their EC installations. They were trained as EC systems operators and everyone drew upon their talents as community instigators, helping themselves and others in the community to culturally, and politically animate "their" network node. To meet the challenge of establishing a representative cultural identity on the network, and then, to eventually discover the new skills, dexterity's, and common concerns and interests required to successfully begin telecollaborating with other communities on the EC network. The original Electronic Cafe Network was a model for a regional resource and intended to demonstrate in a very public way the rewards of acknowledging, cultivating, and acculturating multimedia, telecollaborative, virtual space. The six months prior to the installation of any technology in the participating communities were dedicated to community meetings, introductions to what was then state-of-the-art and prototype technology, and the training of the artists and others living in the communities that would be the facilitators in their own communities. Budget issues reduced the intended ten EC-Sites to the final five locations. For many reasons other than the fact that a keyboard alone was intimidating to most people as a point of entry, the multimedia EC Network enabled people of different language groups to participate. Not only that, the audio visual "show & tell" capabilities, the shared-screen telewriting/drawing capability, video annotation, image database archiving, and multimedia broadcast capabilities opened up the world of telecollaboration to individuals, groups, artists, and community organizers in ways not possibilities, nor as dynamics as text-based networks alone.) <http://www.ecafe.com/>

- **1984 \_\_ Electronically Yours**, Helmut Mark for BLIX (a fax project organised by C.A.T., Toronto, for "Video Culture Canada", (Toronto, Nov. 2 -4 '83). . Artists from Austria, Belgium, Canada, Germany, Italy, Japan, Norway, Morocco and U.S.A. exchanged images by fax during the event. On Nov. 4 BLIX initiated a public event at the Europa Bar in Vienna that included a telephone music concert with Bergen and Berlin plus a live fax exchange with Bergin, Berlin, Rabat, Toronto and San Francisco. Concept and organisation in Vienna: Helmut Mark for BLIX. Network coordination & Fax: Robert Adrian X. Performances in Vienna: 1) Halofern (J. Danner, A. Kunzman, M. Geiger, H. Zobernig). 2) Die Nervösen Vogel (G. Danner, C. Brandl, Viech). Installation (projections): Helmut Mark.) <http://alien.mur.at/rax/BIO/telecom.html>

- **1984 \_\_ Entfernte Zuge**, Bill Fontana (brought the sounds of the Cologne main train station to the ruin of the former Anhalter Bahnhof in Berlin.) <http://www.resoundings.org/Pages/UrbanSoundSculpture.html>

- **1984 \_\_ « L'Espace Critique »**, Paul Virilio (It is interesting to note that in Paul Virilio's 'L'Espace Critique', published in 1984, he contextualizes his analysis of the ubiquitousness of contemporary vision by arguing that the architecture of a global system is generated as a response to the euroterrorism of the late 1970s whereby the "screen interface of computers,televisions, and teleconference, the surface of inscriptions, hitherto devoid of depth, becomes a kind of 'distance', a depth of field of a new kind of representation, a visibility without any face-to-face encounter" . In linking the image proliferations of the simulacrum to the defensive responses of a multinational capitalism and to the material traces of architecture, Virilio's analysis, like Birnbaum's Hostage, not only isolates the nervous system at its most nervous, but points to the ways in which economic, political, and military power is reformatted upon an image plane of information. For as a strategic focal point of a multinational capitalism's bid for global hegemony, the screen interface has not denuded representation of its power to influence the lived realities and productive forces of society, but paradoxically, doubled the stakes of representation's power to influence the global course of politics and economics From the televised simulations of the Gulf War to the frenzied trading of international money markets, the capitalist infrastructure that the students of May 1968 sought so idealistically to overthrow holds post-industrial society captive to what Michael Taussig has termed "the visual contract with reality," in which a mimetic structure of mediation accords the copy the power to affect the original. [Dot Tuer]. Paul Virilio maintains that the exhaustion of time should not be understood solely in economic terms (as a consequence of capitalism) but as the effect of the expansion of technologies of communication. Since the implementation of television, it is not so much space that absorbs time as time itself --the instantaneous time of electronic transmission-- that erodes the temporality of delay. The subordination of time to itself here reaches another stage: after its detachment from space, time is now postulated as abolishing its own existence as interval, duration, and retardation. For Virilio, the predominance of speed and instantaneity over delay can only be highly problematic, for it tolls the knell of perspectival viewpoint and the sense of criticality that this viewpoint made possible. [Christine Ross])

- **1984 \_\_ Festwochen Kunstfunk Technology Exhibition**. DAX Group (First U.S. amateur radio transmission slowscan television by artists, during July. A telecommunications exchange by HAM radio satellite by artists from the Carnegie Mellon amateur radio club. Ham radio Operator Mike Chepponis of the DAX Group transmitted the work of Bruce Breland and Jim Kocher,

*Funkatotemic, and Atomic Alphabet, to Vienna, Austria. The HAM radio Operator in Vienna was Hans Hahn.)* [http://www.digitalartexchange.net/e/txt\\_11.html](http://www.digitalartexchange.net/e/txt_11.html)

- **1984** \_\_ **FidoNet** (FidoNet is a worldwide computer network that is used for communication between bulletin board systems. It was most popular in the early 1990s, prior to the introduction of easy and affordable access to the Internet. The network continues to operate but has shrunk in size considerably, primarily due to the closing of many BBSes. FidoNet was originally founded as a non-commercial network in 1984 by Tom Jennings of San Francisco, California as a means to network together BBSes that used his own "Fido" BBS software. Over time, other BBS software was independently adapted to support the relevant FidoNet protocols and the network became a popular means for hobbyist computer users to communicate. FidoNet is governed in a hierarchical structure according to FidoNet policy, with designated coordinators at each level to manage the administration of FidoNet nodes and resolve disputes between members. Network coordinators are responsible for managing the individual nodes within their area, usually a city or similar sized area. Regional coordinators are responsible for managing the administration of the network coordinators within their region, typically the size of a state, or small country. Zone coordinators are responsible for managing the administration of all of the regions within their zone. The world is divided into six zones, the coordinators of which elect one of themselves to be the "International Coordinator" of FidoNet. FidoNet was historically designed to use modem-based dial-up (POTS aka Plain Old Telephone Service) access between bulletin board systems, and much of its policy and structure reflected this. The FidoNet system officially referred only to transfer of Netmail—the individual private messages between people using bulletin boards—including the protocols and standards with which to support it. A netmail message would contain the name of the person sending, the name of the intended recipient, and the respective FidoNet addresses of each. The FidoNet system was responsible for routing the message from one system to the other (details below), with the bulletin board software on each end being responsible for ensuring that only the intended recipient could read it. Due to the hobbyist nature of the network, any privacy between sender and recipient was only the result of politeness from the owners of the FidoNet systems involved in the mail's transfer. It was common, however, for system operators to reserve the right to review the content of mail that passed through their system. Netmail allowed for the "attachment" of a single file to every message. This led to a series of "piggyback" protocols that built additional features onto FidoNet by passing information back and forth as file attachments. These included the automated distribution of files, and transmission of data for inter-BBS games.) <http://www.fidonet.org>

- **1984** \_\_ **«Good Morning, Mr. Orwell»**, Nam June Paik (In «1984», the novel he wrote in 1948, George Orwell sees the television of the future as a control instrument in the hands of Big Brother in a totalitarian state. Right at the start of the much-anticipated Orwellian year, Paik was keen to demonstrate satellite TV's ability to serve positive ends such as the intercontinental exchange of culture combining both highbrow and entertainment elements. A live broadcast shared between WNET TV in New York and the Centre Pompidou in Paris and hooking up with broadcasters in Germany and South Korea reached a worldwide audience of over 10 or even (including the later repeat transmissions) 25 million. The broadcast carried forward Paik's videotape 'Global Grove' of 1973 – an early, pioneering concept aimed at international understanding through the vehicle of TV – by expanding the concept with the possibilities of satellite transmission in real time. Although abundant technical hitches sometimes rendered the results unpredictable, Paik deemed that this merely served to increase the 'live' mood. The mixture of mainstream TV and avant-garde arts was a balancing act typical of Paik and met with more misgiving from art-oriented viewers than the audience Paik termed «the young, media oriented people, who play 20 channels of New York TV stations like piano keys». The artist personally invested a large sum in the project in order to realize his vision. Asked what he would say to St. Peter at the gates to the Kingdom of Heaven, Paik instantly replied that this live show was his «direct contribution to human survival and he'll let me in. ») <http://www.medienkunstnetz.de/works/goog-morning/>

- **1984** \_ **« GNU Manifesto »**, Richard Stallman ("GNU, which stands for Gnu's Not Unix, is the name for the complete Unix-compatible software system which I am writing so that I can give it away free to everyone who can use it. Several other volunteers are helping me. Contributions of time, money, programs and equipment are greatly needed. (...) I consider that the golden rule requires that if I like a program I must share it with other people who like it. Software sellers want to divide the users and conquer them, making each user agree not to share with others. I refuse to break solidarity with other users in this way. I cannot in good conscience sign a nondisclosure agreement or a software license agreement. For years I worked within the Artificial Intelligence Lab to resist such tendencies and other inhospitalities, but eventually they had gone too far: I could not remain in an institution where such things are done for me against my will. So that I can continue to use computers without dishonor, I have decided to put together a sufficient body of free software so that I will be able to get along without any software that is not free. I have resigned from the AI lab to deny MIT any legal excuse to prevent me from giving GNU away. (...) GNU is not in the public domain. Everyone will be permitted to modify and redistribute GNU, but no distributor will be allowed to restrict its further redistribution. That is to say, proprietary modifications will not be allowed. I want to make sure that all versions of GNU remain free. Many programmers are unhappy about the commercialization of system software. It may enable them to make more money, but it requires them to feel in conflict with other programmers in general rather than feel as comrades. The fundamental act of friendship among programmers is the sharing of programs; marketing arrangements now typically used essentially forbid programmers to treat others as friends. The

purchaser of software must choose between friendship and obeying the law. Naturally, many decide that friendship is more important. But those who believe in law often do not feel at ease with either choice. They become cynical and think that programming is just a way of making money. By working on and using GNU rather than proprietary programs, we can be hospitable to everyone and obey the law. In addition, GNU serves as an example to inspire and a banner to rally others to join us in sharing. This can give us a feeling of harmony which is impossible if we use software that is not free. For about half the programmers I talk to, this is an important happiness that money cannot replace.”) <http://www.gnu.org/gnu/manifesto.html>

- **1984 \_\_ The Hands** (first version 1984 - 1989), Michel Waisvisz (The Hands were used in concert for the first time in The Concertgebouw in Amsterdam in 1984. The instrument consists of a number of sensors and keys mounted on two small keyboards that are attached to the players hands. The combination of many different sensors to capture the movements of the hands, the fingers and the arms is still unique and make The Hands still one of the most refined and musical MIDI-controllers. Waisvisz has used The Hands in a great number of concerts in Europe, the USA and Japan. The Hands have become his primary instrument. The Hands have been rebuilt and reprogrammed many times. Also The Hands have controlled a vast variety of MIDI-instruments: Yamaha DX7's, 802's, TX7's, SY99's, Emu samplers and STEIM's Lick Machine, Sam and LiSa and more recently also STEIM's visual performance program Image/ine. To translate the sensor information in a musical way into MIDI-codes a small computer is worn on the back of the performer. This computer 'The SensorLab' is programmable so that for each work a unique relationship between the performers gestures and the musical output can be programmed. Many STEIM designers and Engineers have been involved in the construction of the first version of The Hands: Johan den Biggelaar - first version/prototype (both The Hands and an early SensorLab), Wim Rijnsburger - software design early SensorLab, Hans Venmans - inspiring repairs, Peter Cost - R & D final SensorLab, Tom Demeijer - design ROM software for the final SensorLab, Bert Bongers - construction second version of The Hands, Frank Balde - design performance software for The SensorLab) <http://crackle.org/The%20Hands%201984.htm>

- **1984 \_\_ KunstFunk (Artradio)**, BLIX (A 1 week slow-scan TV project using ham (amateur) radio organised by Blix for the Vienna Festival. The radio equipment was installed in upper rooms in the Vienna Secession and the antennas were mounted on the roof. Short wave was used for local (Europe, Middle East, North Africa) and VHF to a local "ham" for retransmission via satellite (Oscar1) to Pittsburgh. Each day a different artist or group presented a work in the Secession for sstv transmission. The artists included Robert Adrian, Distel/Dee, Klaus Karlbauer, Helmut Mark, Rainald Schumacher and Zelko Wiener. Concept: BLIX. Project organisation: Zelko Wiener. Program organisation: Helmut Mark. Technical (radio) organisation: Gerhard Taschler) <http://alien.mur.at/rax/KUNSTFUNK/index.html>

- **1984 \_\_ Learn how to watch television by listening to your radio**, Fred Forest (The artist further perfects the esthetic application the concept of the wildcat meta-media network in this work that prefigures the « hacktivist » and “interface art” of today by putting together a confederation of 10 independent FM radio stations in the Paris area that will broadcast 4 hours of nonstop programming replacing the normal audio of the television programming broadcast at same time (i.e., the viewers are told to turn down the sound on their televisions and listen to their radios instead). The artist's radio program features critical commentary by journalists and intellectuals, ridiculous instructions issued to viewers to change channels and perform other actions that together make up the “choreography” of a distributed collective performance, and call-in segments for viewer feedback.) <http://fredforest.org>

- **1984 \_\_ Minitel** (Under the name “Minitel”, France implemented a comprehensive videotext network that was widely used throughout the 1980s. In 1984 Minitel terminals were distributed to subscribers free of charge, which helped to further popularize the network. From 1983 to 1994 (the year of the Internet boom), use of the Minitel grew continuously. In 1995 there were 7 million Minitel terminals in France. Although most countries no longer use videotex, the medium is still employed in France. It is also possible to access the Minitel through the web.)

- **1984 \_\_ Particifax** (FAX project by C.A.T., Toronto with a free phone for 2 months (for N.American users). Blix organised a 7 day participation for 4 European locations - Pavia, Berlin, Vienna and Bristol - as part of the L'Unita festival.) <http://alien.mur.at/rax/BIO/telecom.html>

- **1984 \_\_ A Piece for Peace**, Alvin Curran (“Further extending my dream towards a global concert hall is my premier simulcast: A PIECE FOR PEACE, produced by the imaginative efforts of the producers: Ernstalbrecht Stiebler HR, Han Reiziger VPRO and Pinotto Fava RAI who were able to organize a large number of musicians - mixed choruses, brass bands, percussion , accordions and soloists into a unique radiophonic space linking three churches located in Frankfurt, Amsterdam and Venice respectively. Covering some thousands of square kilometers, this work united three groups of performers (about 150 in all) in three different spiritual locations- who neither see nor hear one another - yet through a score of completely notated structures, (based around a sound-text recitation of the names of the then 142 members of the United Nations , from Albania to Zimbabwe) and high quality telephonic broadcasting -are sonically “fused” into a single space between a pair of stereo loudspeakers in anyones living room anywhere in

Europe at 20h on Jan 1 1984." [Alvin Curran - Published, in German, in Positionen, issue 42 ("Orte"), February 2000] <http://www.alvincurran.com/writings/out%20of%20place.html>

- **1984** \_\_ **Un re in ascolto** (A King Listens), Italo Calvino (libretto for the opera by Luciano Berio) (This short story focuses on the sense of hearing. It is designed to be read in different ways, as it is written in the second-person. In the story, a palace becomes a giant ear and a King is obsessed by fears of rebellion which send him toward a state of restless aural surveillance. This paranoia only seems to halt when he hears the sincere love song of a woman. *Un re in ascolto* (A King Listens) is an opera by Luciano Berio, who also wrote the libretto. The libretto (in Italian) is based on an idea by Italo Calvino, incorporating excerpts from Friedrich Einsiedel and Friedrich Wilhelm Gotter's eighteenth century libretto on Shakespeare's *The Tempest* as well as W. H. Auden's *The Sea and the Mirror*. Berio himself described the work as an *azione musicale* (musical action) rather than an opera. It falls into 19 sections grouped into two parts. The work was written from 1981–83 and received its premiere at the Kleines Festspielhaus, Salzburg, on 7 August 1984, conducted by Lorin Maazel, directed by Götz Friedrich, with set designs by Günther Schneider-Siessman. The London premiere was on 9 February 1989 at the Royal Opera House, Covent Garden. The opera concerns itself with a king of a mythical kingdom who lives detached from his realm, where his only contact with his kingdom is through overhearing conversations. A traveling theatrical troupe arrives to stage a performance of *The Tempest*. The king overhears this action, and begins to imagine himself as Prospero from the play. As he overhears the auditions and the rehearsals, he begins to equate these with the happenings in his kingdom, blurring the two worlds. However, the king eventually undergoes a psychological collapse. Ultimately, the rehearsed production of *The Tempest* never occurs and the theatrical troupe departs. The king has a vision of the future as he moves towards his own death. « Le palais n'est que volutes et lobes, une grande oreille où anatomie et architecture échangent leurs noms et leurs fonctions : pavillons, trompes, tympanes, colimaçons, labyrinthes, tu es tapi au fond, dans la zone la plus intérieure du palais-oreille, de ton oreille, le palais est l'oreille du roi. » (Sous le Soleil Jaguar, traduit de l'italien par Jean-Paul Mangano, Seuil, Paris, 1990, p. 62)

- **1984** \_\_ **Vertiges**, Camille Philibert & Jacques Élie Chabert (En ce qui concerne l'usage des ordinateurs, du minitel et du système vidéotext, les distinctions sont difficiles. L'écriture télématique et l'écriture en réseau ne se confondent pas exactement. Le projet A.C.S.O.O. pour " Abandon Commande Sur Ordre [de l']Opérateur ", dont les initiateurs sont Camille Philibert et Jacques Élie Chabert, a été montré pour la première fois au public lors des Rencontres Internationales de Lurs en août 1983 puis à l'exposition " Électra ", en 1984, au Musée d'Art Moderne de Paris. L'idée de départ était que le minitel serait capable de rendre compte d'une fiction, d'une narration. D'où la composition d'un récit sous la forme de pages-écrans successives, disposées en arborescence, avec des pages de menus et des touches de fonction qui permettaient d'effectuer des choix. La touche de fonction n°5 du clavier correspondait à " l'amour sauvage ", la touche n°12 à " un dialogue entre amis ", la touche n°17 à " Fiches anthropométriques ", un peu selon le principe de la " Carte du Tendre " au XVII<sup>e</sup> siècle en France. Ce principe permettait de transformer le clavier du minitel en " Une machine narrative combinatoire " ou encore en un roman inépuisable. Une autre création de Camille Philibert et de Jacques Élie Chabert, c'est *Vertiges*, une fiction télématique arborescente, qui date de 1984. Le récit est conçu comme une partie d'échecs, avec ses cases, ses pions (les personnages, comme Samy et son taxi maudit, Urgula et son âme de lionne hystérique dans les " trans-faux basiques ", Willy K le vampire dont les mains transpirent, etc.), ses totems aussi, correspondant aux 7 terminaux minitel " sentimentaux " qui étaient utilisés (" Erogène c'est la zone ", " Vitriol ", " Dévotion mécanique ", " Poussière d'amour ", etc.) et sa géographie amoureuse interactive qui se déroulait selon des modes de consultations infinies, entre l'ordre et le chaos, entre le coup de foudre et l'absence... Une dernière réalisation de ces mêmes auteurs, *L'Objet perdu*, fut aussi montré en 1985, sur un mur d'écrans, à Paris, au Centre " Georges Pompidou ", lors de l'exposition des " Immatériaux ". [Jacques Donguy] <http://costis.org/x/donguy/poesies2.htm>

- **1984** \_\_ **Ken Webster** (Ken Webster received some 250 spirit messages in his computers (1984-5) from a 16th-Century Englishman named Thomas Harden who was apparently "haunting" Webster's house. Harden claimed that he had owned the same house some four centuries earlier. Harden in spirit was apparently rather stuck in time, referring to Webster's computer as a "light box" and typing a message to Webster onto the screen on one occasion, "What strange words you are speaking, although I must admit that I had only a poor school education myself. You are a good person and you have a fantastic wife. But you live in my house. It was a big crime to steal my home." The many messages from Harden were in Olde English dialect and contained extensive details of Harden's personal life, as well as life of that era, which were later confirmed through research at Oxford Library. Webster's book, *The Vertical Plane*, documents those ITC contacts. [Mark H. Macy, *The Phenomenal History and Future of ITC Research*] [http://www.worlditc.org/a\\_02\\_macy\\_itc\\_history.htm](http://www.worlditc.org/a_02_macy_itc_history.htm)

- **1984** \_\_ **The Well** (The WELL was started by Stewart Brand and Larry Brilliant in 1985, and the name is partially a reference to some of Brand's earlier projects, including the Whole Earth Catalog. The WELL began as a dial-up BBS, became one of the original dial-up ISPs in the early 1990s when commercial traffic was first allowed, and changed into its current form as the Internet and web technology evolved. (...) Notable items in WELL history include being the forum through which John Perry Barlow, John Gilmore, and Mitch Kapor, the founders of the Electronic Frontier Foundation, met. The WELL was a major online meeting place for fans of

*the Grateful Dead, especially those who followed the band from concert to concert, in the late 1980s and early 1990s. Inspired by EIES (Electronic Information Exchange System - piece of conferencing software called the Onion in 1983), in 1984 Stewart Brand cofounded The Well (Whole Earth 'Lectronic Link), a computer teleconference system for the San Francisco Bay Area, considered a bellwether of the genre. "(Internet) keeps changing, partly because the technology is moving and partly because it is basically a grassroots phenomenon where the users are constantly reinventing the technology, constantly reinventing what would be fun to do on it, what would be useful to do on it. Each time you begin to think you have an idea what the Net is, it turns into something else. This was not the case with broadcast television or broadcast radio, which settled down within a couple of decades and then remained the same for twenty, thirty, forty years. The Net can't hold still for even ten months." The WELL is divided into general subject areas known as conferences. These conferences reflect member interests, and include arts, health, business, regions, hobbies, spirituality, music, politics, games, software and many more. Within conferences, members open separate conversational threads called topics for specific items of interest. "Public" conferences are open to all members, while "private" conferences are restricted to a list of users controlled by the conference hosts, called the ulist. Some "featured private" or "private independent" conferences (such as "Women on the WELL" and "Recovery") are listed in the WELL's directory, but are access restricted for privacy or membership-restriction reasons. Members may request admission to such conferences. There are also a large number of unlisted secret private conferences. The names of these conferences are public, but the contents, hosts, and members are restricted to members of a particular conference. Membership in private conferences is by invitation. WELL members may open their own new public or private independent conferences. The Well computer teleconferencing system was essentially a gift from a friend who had some software to spare, a little bit of money, and a Vax minicomputer to loan. When it started in 1984, it was connected to Co-Evolution Quarterly, which had a community feel, and it was another way for people who used the magazine to contact each other. Within two years, it had attracted a particular group of people who were intensely interested in talking to each other online, the Deadheads. That was enough of a protocommunity for a real electronic community to take shape, where marriages and births and deaths and suicides and other profound personal changes all took place and were brought to life through the prism of this online connection. It worked as a community partly because it was set up as a regional system and partly because we insisted that people be identifiable. Anonymity was not allowed. Bright, eloquent people, both hackers and journalists, were involved from the very beginning." [Stewart Brand]]*  
<http://www.well.com>

- 1984 \_\_ « **The Walkman Effect** », Shuhei Hosokawa (*The Walkman Effect refers to the way music listened to via headphones allows the user to gain more control over their environment. It was coined by International Research Center for Japanese Studies Professor Shuhei Hosokawa in an article of the same name published in Popular Music in 1984 (- Popular Music, Vol. 4, Performers and Audiences (1984), pp. 165-180 - extracted from a full-length study in Japanese: Shuhei Hosokawa, Walkman no Shūjigaku, Tokyo, Asahi Shuppan, 1981). While the term was named after the dominant portable music technology of the time, the Sony Walkman, it applies to all such devices and has been cited numerous times to refer to more current products such as the Apple iPod. "The Urban Theatre - At a first glance, the spatial effects of the stage and the walkman would seem to have little in common. Theatre structures space along two main perceptual axes : the fictional space of the represented world on the one hand, and the collective space uniting spectators and performers in a variety of ways on the other; ranging from baroque theatre boxes to the fluidity of street theatre. The walkman, on the other hand, seems to embody an individualized listener rather than a collectivized spectator, and as a medium appears to be directly opposed to the fundamentals of theatre. In his essay, Shuhei Hosokawa described the walkman as a form of 'secret theatre'. According to Hosokawa, this secrecy or what he terms its 'triple cryptic expressivity' manifests itself on at least three levels. The first one of form : walkman users and those who behold them are aware that the listeners have secrets, the content of which is irrelevant. While the content of the music listened to may be different, the form is the same. The second level concerns the "expressivity of the music tied up with corporal movement, the walk act". Walkman listeners are affected corporeally by an invisible acoustic source, which makes them interact differently from their surroundings. The third level is the music, its own secret "what event the holders do not know exactly". Hosokawa argues that the act of listening to the walkman elicits an aesthetic response in the original meaning of 'aisthesis' - objects are rendered perceptible to the senses and transformed in particular ways. This has nothing to do with aesthetics in the sense of beauty or value but refers to "provoking certain reactions (...) and transforming decisively each spatial signification into something else". This "something else" can have both semantic and theatrical dimensions. The walkman / listener is able to construct and / or deconstruct the network of urban meaning. Hosokawa is referring here to Michel de Certeau's notion of "walking the city", or creating an individual arrangement of paths and spaces out of abstracted and schematized 'place'. De Certeau says that in its relation to place, space is like the work spoken, which is transformed into a term dependent upon many different conventions. Spaces are determined by historical subjects, by the users of places. Thus, the street defined geometrically by urban planning is transformed into space by walkers. The theatrical dimension comes into play because the walkman walker is ostended and draws attention to him/herself. The walkman renders the listener an actor and the uninvolved bystanders into (unwilling) spectators : "Thus the appearance of this novel gadget, all passers by are inevitably involved in the walkman theatre, as either actors (holders) or spectators (beholders)." In a related publication Hosokawa examines 'the Walkman as Urban Strategy' and concludes : "The walkman makes the walk act more poetic and more dramatic (...). We listen to what we don't see, and we see what we don't listen to. (...) If it is pertinent to the speech act, it will make the ordinary strange. (...) It will transform the street into an open theatre." In his essay the Aural Walk, the cultural critic Iain Chambers extends Hosokawa's analysis to bring*

it within the framework of cultural and media theory. : “With the walkman there is simultaneously a concentration of the auditory environment and an extension of our individual bodies” [Chambers 1994]. Here we are reminded of McLuhan’s famous dictum of media as extensions of man, and according to Chambers, the meaning of the walkman does not lie in itself, in its technological specificities or special design, but rather “in the extension of “perceptive potential”. The walkman seems suspended in a curious paradox, signifying on the one hand manifest isolation, with the listeners apparently oblivious to the surroundings, but in fact creating a sociability of a different order : “In the manifest refusal of sociability the Walkman nevertheless reaffirms participation in a shared environment. It directly partakes in the changes in the horizon of perception that characterise the late twentieth century, which offers a world fragmenting under the mounting media accumulation of intersecting signs, sounds and images” [Chambers, 1994]. The ‘participation’ takes the form of a creative activity in which each listener creates a personal soundscape of musical fragments. Thus each listener / player selects and rearranges the surrounding soundscape, and, in constructing a dialogue with it, leaves a trace in the network. For Chambers, like Hosakawa, the walkman is the proto-typical postmodern technology. It is, like the mobile phone and credit card, a symptom of contemporary nomadism, of migrant population finding their way in cities and simultaneously reconfiguring these spaces : “As part of the equipment of modern nomadism it contributes to the prosthetic extension of mobile bodies caught up in a decentred diffusion of languages, experiences, identities, idiolects and histories that are distributed in a tangentially global syntax. The Walkman encourages us to think inside this new organisation of time and space” [Chambers 1994]. Both Hosokawa and Chambers regard the walkman as a cultural practice in which individuals listen to music. Its aesthetic potential is recognized only in terms of general aesthetics, a change in perceptual practices but not in the narrower sense of an artistic practice directed by artists. In keeping with their observation of the walkman as an cultural practice, Hosokawa and Chambers do not consider that individual listen to anything other than pre-recorded music. Yet the aesthetic effects and feature they describe : the ambulant / ambient practice, the altered perception of familiar spaces and places through the intensification of aural senses, the theatrical ostension created by an individual evidently experiencing phenomenon not accessible to others passers-by or by-standers - all these elements are in no way dependent exclusively on music. Of course, the potential of a mobile listener has long been recognized by museums, which quickly adopted, for an extra charge, the walkman technology for their audio tours. Anyone who has viewed exhibits with a voice telling one “what it means” or “how the artist came to create it”, is more than familiar with the informational function of the walkman. ” [Christopher B. Balme - Audio Theatre : the mediatization of theatrical space / In Freda Chapple, Chiel Kattenbelt - Intermediality in Theatre and Performance (2006)]

## 1985

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- **1985** \_\_ **Internet** (By the end of 1985, the number of hosts on the Internet (all TCP/IP interconnected networks) has reached 2,000.)

- **1985** \_\_ **Caméra Sonore** (Sound Camera), Gwek Bure-Soh (*The “Caméra Musicale”* is an instrumental interface which allows musical practice based on the position and movements of hands in space, in the scope of a video camera. After the first prototype was elaborated, its development was insured by constant experimentations. The first version (1992) had an audience interact by moving their hands in mid-air, controlling large and mechanical musical devices. The appeal of this version lied in the contrast between the immaterial nature of the movements and the materiality of the music produced by the machines. The system was immediately embraced by audiences of all kinds : Festival audiences, school kids, the handicapped, and of course, musicians. As years went by, thousands of people have played “Caméra Musicale” in various contexts. Consequentially, its development was in close relation with the audience and the “Caméra Musicale” evolved on grounds of experimentation - a very pragmatic, rather than scientific approach. These experiments also led to the development of another technology: an interface controlling audio or MIDI systems. [Jacques Rémus]) (*L’artiste Gwek Bure-Soh a créé depuis 1985 une « caméra sonore », un appareillage électronique et informatique permettant de produire des sons en temps réel à partir d’images saisies par une caméra vidéo. Le 5 décembre 1998, au cours d’un spectacle à l’Espace Renaudie à Aubervilliers, ses mains, sous forme d’une image rétroprojectée sur grand écran où notre texte traité à l’ordinateur défilait, sculptaient le son de notre voix lisant des sorties imprimante, réalisant ce que Raoul Hausmann évoquait dans une lettre à Henri Chopin: « Un jour je voudrais réaliser l’optophone, seul appareil électronique exact pour contrôler une nouvelle phonie, largement indépendante des immixtions humaines ». [Jacques Donguy]. «La caméra musicale est un capteur qui vous pousse dans une invisible forêt de sons synthétiques, où vous jouez dans le vide, à l’oreille. J’ai connecté un piano à la configuration, pour obtenir des sons acoustiques. Pouvoir jouer du piano à distance sans toucher le clavier c’est du domaine de la magie. Même un poisson peut devenir un grand pianiste! Avec la caméra sonore l’espace-vide devient un support de touches virtuelles... un support de production et de contrôle, un tremplin dynamique prêt à être branché au monde extérieur pour transmettre et recevoir. La caméra musicale est un dispositif de traitement d’images en temps réel. Pilotée par ordinateur, elle met en corrélation les mouvements et les sons. Elle extrait de l’image en mouvement des signaux de commande qui pilotent des instruments de musique MIDI. Ce projet de recherche a commencé à Paris au début des années 80, mais des systèmes similaires existent ailleurs, notamment au Canada avec le*

*Mandala et les caméras de David Rokeby. L'interface que j'utilise a été conçue à Paris par l'ingénieur-informaticien Sylvain Aubin. Elle permet un accès direct au software musical MAX via un modeste Macintosh LC. Les possibilités de Max sont énormes et plus aisées à programmer grâce au langage graphique. Le processus de création est interactif car le feedback et le résultat sont immédiats. Un environnement 3D interactif pourrait générer des sons tri- ou quadri-dimensionnels et omni-directionnels. D'après l'expérience que j'ai eue en utilisant des gants et des casques pour la Réalité Virtuelle, on pourrait contrôler un monde artificiel d'images 3D dans un environnement sonore et y naviguer. Le son, la musique sont composés mais ne sont pas interactifs. Avec un système de caméra musicale qui pourrait regarder l'espace d'après des angles différents et avec lequel on pourrait définir l'espace d'après de multiples perspectives, on arrive à une définition possible de l'espace tri-dimensionnel. Un tel système demandera au moins deux caméras vidéo, sinon 4. Si ces petites caméras pouvaient entrer dans un monde artificiel et en même temps agir comme des senseurs, on pourrait peut-être penser à intégrer la musique interactive dans la réalité virtuelle. Un système de caméra musicale 3D pourrait aussi être exploité dans le Cyberspace. [Gwek Bure-Soh] <http://www.costis.org/x/donguy/optophone.htm> <http://accorddessens.synesthesie.com/SENS/gweck.html> [http://recherche.ircam.fr/equipes/temps-reel/nime06/proc/nime2006\\_250.pdf](http://recherche.ircam.fr/equipes/temps-reel/nime06/proc/nime2006_250.pdf)*

- **1985 \_\_ Devil's Music**, Nicolas Collins (*In Devil's Music fragments of radio broadcast are digitally sampled, looped, re-triggered, and occasionally reversed or de-tuned. All the material is taken from FM and AM transmission occurring at the time of the performance. The performer plays off of certain musical ground-rules intrinsic to the sampling system (which consists of two modified inexpensive effect devices) to develop the quirky rhythmic interplay that characterizes the piece. For live radio and stuttering samplers. Premiered at the Anti-Club, Los Angeles, 1985. "I find it very hard to justify making a sound — I would infinitely prefer to recycle an existing one. Most of my work is based on the adaptation and re-utilization of our culture's sonic flotsam. Fragments of radio broadcasts and other found sound material are disassembled and reconstituted into forms that defy the inherent disposability of the elements. The recombined material lives on, if only for an instant, beyond its producer's expectations, and is fitted into a context unintended by its creators. Ensemble compositions use this re-worked material to suggest melodic, rhythmic, and harmonic motifs for players, who are asked to build a performance out of a limited — and often banal — vocabulary drawn from scraps of "musical wallpaper". My music attempts the constructive subversion of popular forms, often by "misusing" the technology that produced them originally. Typical instrumentation consists of inexpensive microcomputers, home-made electronic circuits, radios, cassette players, hot-wired cheap effect boxes, and hybrid "backwards" musical instruments. These latter include guitars whose strings are resonated by various sound sources instead of being struck, and a trombone that serves as both a controller and loudspeaker for a digital sampler and signal processor. The inclusion of players of traditional instruments allows a range of non-electronic appropriation of, and variation on, the scavenged sound material that I find so intrinsically appealing." "From music "found" in circuitry I shifted to working with "found" sound material. I had no interest in tape composition, and my segue from sound generation to sound processing was made possible by affordable digital delays and crude samplers that could be adapted for live sampling and signal transformation. Devil's Music (1985) is a good example of this phase of my work -- its live sampling and transformation of radio signals owes more to Cage's Imaginary Landscape #4 than to Stockhausen's Kurzwellen or the French tradition of musique concrète. I make performance decisions based on personal taste, rather than indeterminacy, but there is nonetheless a roulette-like element of chance in the piece as I scan through the radio dial trying to find the perfect sound snippet. I used to say that the radio was the world's most powerful synthesizer: you could find any sound you wanted; the only problem is can you find the sound you want when you want it -- this is the challenge facing the performer of Devil's Music." [Nicolas Collins]. "Devil's Music was wide open in terms of sound material, and unbelievably restricted in its rhythmic element, its time element. I had a problem in electronic music which was that the background I come from, both with circuit design and computer programming, was the one-circuit-equals-one-piece school of thought. There was no such thing for me for a long time as a general-purpose machine for making music. I had no instruments, nor did I have a production studio for the stage. What it meant was that it might take fifteen or twenty pounds of electronic music equipment to make twenty minutes of music, and then I'd have to do some furious repatching to set up another piece. One of the things I started doing in the early 80s was to look for a machine that could accept a lot of different kinds of sound input and would structure it to be a piece of music. The sound input could be a very ephemeral thing that would vary from site to site, but the machine would contain a core element of 'what makes this a Nic Collins piece'. "I built this automated mixer that was used in Is She/He Really Going Out With Him/Her/Them, which was on the first Lovely record I did. It was inspired by Grandmaster Flash. the beginning of the DJ turntable thing that's now ubiquitous. I loved watching people cut, and cutting contests were very trendy at that time. I thought, two record players, what if you had more? I thought it would be wonderful to have a wide open thing, ten, twelve, twenty channels, where any time two things came into rhythmic coincidence they would crossfade. The idea was that I'd keep developing other sound material to feed into it. The performances consisted of just plugging and unplugging sixteen inputs, electronic toys, tape loops, radio, musicians, whatever. Devil's Music was the next step, a system tweaked specifically for radio, and it just reduced the amount of kit considerably." It's fair to say that Devil's Music is typical of avant-garde appropriations of pop music in that it takes material with the one crucial ingredient of being immediately accessible, and turns it into something that requires a completely different way of listening. Anyone who's used to unusual music will cope without too much bother, but the constantly changing tempo, the lack of repetition, will baffle most pop listeners. In Devil's Music One, there seem to be about three channels of sound, each of which takes chunks of pop music and loops and interleaves them. The result is uneasy*

listening, the new hyper-repetitive rhythms taking the source material to one logical extreme. It exaggerates the repetition, superficial timbre and simple-mindedness of pop music. Like similar assaults on the genre (cf. Plunderphonic) it tries to destroy pop by ripping it up and fashioning a bludgeon from the pieces. The second side uses "easy listening" as its source material, and is actually more enjoyable than this would suggest, the rhythmic looping creating authentic but unsettled minimalism, without the manipulative romanticism that some of the genre's composers see fit to lard over everything they do. Other moments have more in common with the hypnotic grooves of Bruce Gilbert, but it's all far removed from the source. "Actually, I think the album is by now relatively tame. Here was one thing that Alvin and I would never agree on, because he despises pop music, or certainly doesn't feel it has a place in his own work, with one exception which is his very weird version of Strawberry Fields, which has to be heard to be believed. For me, it was part of my musical roots, as much as if not more than any other sort of music. I felt it was turf to be mined. The other thing is that formally, the pop song is just about perfect for that two to four minute duration. If you want a core to keep your music on track and you're working with short durations, the infrastructure is there. Some of that music has that maudlin poignancy and emotional resonance for large numbers of people, and in a lot of performance environments, it's an unexpected moment of poignance. At a London Musicians Collective gig it's not at all surprising, but when I get up on stage at the International Society for Computer Music and do a piece where there's a Roy Orbison quote in the middle of it (apart from the problem that a lot of people there don't even know who Roy Orbison was) ... it's a question of the unexpected versus the expected." Collins-ised pop songs have included music by Brian Wilson, David Bowie, the Shirelles, the Andrews Sisters, Roy Orbison (on the At Close Quarters compilation) and others, and he considers his altered versions of classical music to fit the same approach (e.g. Broken Light, on It's A Dark And Stormy Night). "Each one is an obsessive treatment of one tune. When I heard Oswald's plunderphonic, I thought that here was a guy who basically has a very similar approach, where you hack away at one particular tune and bring out these things that you think are the essences of it. The only difference, really, is that I do them as a live performance, his is studio music, and much more 'obsessive' than I am. He's perhaps made a career out of doing it, for me it's just one part of what I do. Devil's Music is different from plunderphonic because it goes in the opposite direction of cutting up a million things. "When I did the record, I specifically had this fantasy that I could sell loads of records by appealing to two diverse record-buying publics, the dance music crowd and the easy listening crowd. It wasn't actually a very serious assumption! The record was divided along those lines, while the performances would wander back and forth from one thing to another. I'd very often end up mixing up dance music for the rhythm, muzak or classical for the harmonic material, and advertising or news for vocals. The record's a bit artificial. One of my ideas was to make an encyclopaedia of break. Remember, this is 1985. I had this idea that you'd buy the record as a DJ because there was a two-second spot in the middle you could use, which was how DJs bought records. Except that in this case there were hundreds and hundreds of breaks. Like the index to a book instead of a book. I sold a few to dance music stores in New York in '85, or '86, but it was obvious that I'd failed completely on that score." [Brian Duguid] <http://media.hyperreal.org/zines/est/intervs/collins.html> <http://www.nicolascollins.com>

- **1985** \_\_ **Electronic Visions II, Life-O-Mation**, DAX Group (Four slowscan television broadcasts took place between CMU during the months of January and February between the cities Pittsburgh and New Orleans (Hammond, Louisiana): First color slowscan television transmission by artists using HF (HAM) radio. The broadcast originated from the Carnegie Mellon amateur radio club studio located in Hammerschlag Hall and was broadcast to HAM radio Operator Mid Bardwell in Hammond, Louisiana where Mr. Bardwell recorded the slowscan video images on sound tape and delivered the tapes to the Contemporary Center for the Arts in New Orleans, Louisiana. The sound tapes were then converted back to video images at the exhibition's slowscan/video work station. Life-O-Mation was conceived and produced by Mr. Willard Van de Bogart of Pittsburgh.) [http://www.digitalartexchange.net/e/txt\\_11.html](http://www.digitalartexchange.net/e/txt_11.html)

- **1985** \_\_ **Free Software Foundation** (The Free Software Foundation (FSF) is a non-profit corporation founded by Richard Stallman on 4 October 1985 to support the free software movement, a copyleft-based movement which aims to promote the universal freedom to distribute and modify computer software without restriction. The FSF is incorporated in Massachusetts, United States of America. From its founding until the mid-1990s, FSF's funds were mostly used to employ software developers to write free software for the GNU Project. Since the mid-1990s, the FSF's employees and volunteers have mostly worked on legal and structural issues for the free software movement and the free software community.) <http://www.fsf.org>

- **1985** \_\_ **Hearsay**, Norman White (computer network (Artex/I.P. Sharp Text Language Exchange, November 11) project by Norman White, Toronto, in which a text was passed from place to place around the world in 1 day- each location receiving in one language and sending in another. The route of the message was - Toronto, Des Moines, Sydney, Tokyo, Vienna, Newport, Pittsburgh, Chicago, Toronto. The languages were - English-Spanish-Italian-Japanese-German-Welsh-Hungarian. Designed by Norman White and organized by the SPEAK Group of Toronto, Canada, this project involved multiple language translations of the poetry by Hungarian Poet Robert Zeno. The poem was transmitted around the globe from one member computer node to another located in the I.P. Sharp computer network. Each node was assigned a specific language translation. DAX received the poem written in Welsh to be translated into English to pass on to the Art Institute of Chicago, where it was translated back into Hungarian and sent on to Toronto. The piece originated from the A-Space Gallery located in Toronto, Canada.) <http://alien.mur.at/rax/ARTEX/>

[hearsay.html](#)

- 1985 \_\_ *Les Immatériaux, Épreuves d'Écriture*, Centre Georges Pompidou, Paris (Les Immatériaux was cocurated by the French philosopher Jean-François Lyotard. Les Immatériaux highlights the way that artists and theorists were challenging the gallery environment to incorporate works in which art exists exclusively within telecommunication spaces. The philosophical issues of immaterial materials and their new sensibility (typical of what Lyotard had understood as the "postmodern condition") framed the exhibition. Les Immatériaux, which has been strangely ignored by history, was significant in the way it touched on art, philosophy, computerization, automation, microelectronics, and of course telecommunication. In Les Immatériaux he made the visitor realise that the existence of 'new materials' (new technologies, computerized spaces, telecommunication) would alter man's relationship with the world even more extremely. These 'new materials' would force him to recognize that the old Cartesian programme of mastering and posses-sing nature was history. These 'new materials' were not, as Lyotard explained, materials that are new, but materials that 'work' or 'talk' themselves and thus question the idea of Man being the only one who works, talks, plans and remembers. Goods, images and signs themselves generate new processes, resulting in ever new goods, images, signs and meanings. The sphere of influence of these processes extend far beyond the conscious intentions and interpretations of those who make and absorb it. This is the most fascinating proof of the ability of 'a work' to work and to affect its own operations. It has a 'life' of its own. [Ine Gevers]. Set in a radically new scenography, with exhibits from science, art, and high-tech industry, Lyotard and Chaput, the second co-curator, posed the question: Can the 'immaterials' change the relationship of humans with the material, as it is fixed in the tradition of modernity, for example in the Cartesian programme: 'to turn oneself into the master and owner of nature'? Lyotard believed that the development from an industrial society (handling matter) to an information society (processing data) would have profound effects on the human spirit. Now, he presumed, when technologies, above all telecommunications and computer sciences, are able to take over the tasks of the logos – by storing and processing dematerialised data – the relationship of humans with the material will have to change fundamentally. New technologies were simultaneously the starting point for Lyotard's philosophising Les Immatériaux, the central model for the exhibition's layout, and the principal artistic means of the exhibition. Through the large number of computers, projections, and other high-tech devices, the exhibition as a whole functioned as a vast database, in which visitors, objects, scenographic elements, and sounds were in a steady exchange with one another. With these features Lyotard and Chaput transformed a picture of the future into an actuality, where visitors would glimpse the disconcerting experiences they would encounter a few years hence.) [Anthony Hudek, "Museum Tremens of the Muasoleum without Walls : Working through les Immatériaux at the Centre Pompidou in 1985", M.A. Thesis, Courtauld Institute, London, 2001] (Une expérience télématique sur terminaux était lancée en septembre 1984 sous le titre Les Immatériaux, Épreuves d'écriture. Cette expérience réunissait en réseau quelque trente auteurs, des écrivains, des scientifiques, des artistes, des philosophes, des linguistes, auxquels était proposé un petit lexique de cinquante mots qu'ils étaient priés de commenter, de définir à leur guise. Chaque auteur transmettait à un serveur central ses commentaires et définitions que tout autre auteur connecté pouvait immédiatement consulter sur sa console et à son tour commenter. Le sujet de l'exposition est analysé comme « un questionnaire sur l'homme et son environnement auquel l'évolution des technosciences et des modes de vie induits nous confrontent à l'aube du XXIe siècle ». Pour Lyotard, « de nouveaux genres apparaissent reposant sur les nouvelles technologies ». Les nouvelles technologies, qui sont des « substituts d'opérations mentales et non plus physiques », obligent à des réévaluations et des redéfinitions. Les Immatériaux sont donc des matériaux composés « d'éléments discrets (ondes électroniques, ondes sonores, ondes lumineuses, corpuscules élémentaires, etc. »). On se trouve face à des éléments qui n'ont plus de « substance » stable mais sont dans une structure instable d'interactions. Plus encore, « le modèle du langage remplace celui de la matière ». Le point de vue suppose donc une dose certaine de dématérialisation globale induite par les technologies. Ce thème est, on le sait, cher à Lyotard. « Certaines activités de l'esprit sont donc maîtrisées. La nouvelle technologie poursuit ainsi et parachève le projet moderne : « se rendre maître et possesseur ». Mais par là même, elle oblige ce projet à se réfléchir, elle l'inquiète, elle le déstabilise. Elle révèle que l'esprit de l'homme à son tour est une partie de la « matière » qu'il projette de maîtriser ; et que convenablement traitée, la matière peut s'organiser en machines qui supportent avantageusement la comparaison avec l'esprit. De l'esprit à la matière, la relation n'est plus d'un sujet intelligent et volontaire à un objet inerte. Ils sont cousins dans la famille des Immatériaux. » L'exposition elle-même prendra une forme inédite : Il n'y a pas de cimaises, pas de cloisons mais des « trames » (qui sont des grilles – immatérielles autant que faire se peut), il n'y a pas non plus de parcours tracé dans l'exposition ; le trajet doit rester aléatoire et appartenir au choix de chaque visiteur. De plus des écouteurs sont distribués à l'entrée qui diffusent des textes contemporains (de philosophie ou de littérature) ; en immergeant dans un univers sonore précis celui qui visite, ils empêchent délibérément toute communication entre les différents spectateurs : « la solitude est le prix à payer pour la complexité », dit Lyotard. Du coup, l'exposition est effectivement multiple, difficile à cerner et atteint son but premier de montrer la difficulté de la communication qui s'oppose à une certaine idée moderniste de « transparence ». Le visiteur se trouve dans cet univers complexe et mouvant, avec, semble-t-il, une certaine incapacité à maîtriser l'ensemble et expérimente ainsi sa propre plasticité : « nous sommes nous-mêmes des matériaux », dit Lyotard. « Le visiteur est en situation d'investigation ; il se fait interpellé par les voix et les musiques, en même temps que par les sites visibles. Son parcours singulier pourra être enregistré sur une carte magnétique à mémoire et restitué par imprimante à la sortie ». La mise en présence de ces divers objets s'opère autour de cinq concepts qui les relient entre eux : matériau, matrice, matériel, matière et maternité. Chacun d'eux est relié à l'un de ces thèmes. Lyotard définit ainsi les différents termes et leurs interactions : - « le matériau est le support du message ; - le matériel est ce qui assure la saisie, le

transfert et la capture du message ; - la maternité désigne la fonction du destinataire du message ; - la matière du message est son référent (ce dont il est question, comme dans « table des matières ») ; - la matrice est le code du message. » Il le dit aussi autrement : - « Matériau = au moyen de quoi ça parle ? - matériel = à destination de quoi ça parle ? - maternité = au nom de quoi ça parle ? - matière = de quoi ça parle ? - matrice = en quoi ça parle ? » Enfin il y a un autre ouvrage qui renvoie à une expérience d'écriture en réseau (avec des minitels ?), la première du genre. Sous le titre d' « Epreuves d'écriture », ce volume retranscrit la tentative de 26 auteurs de se confronter à une expérience d'écriture électronique collective. A partir de 50 mots, pour lesquels on leur demande des définitions et qui sont mises en réseau, s'engage une réflexion écrite à plusieurs voix. - les textes sont envoyés à une mémoire centrale. - les auteurs sont invités à enchaîner à la suite des textes des autres. - Il n'y a donc pas de destinataires précis (pas de communication « privilégiée », entre auteurs : tout s'adresse à tous. - pas un auteur à proprement parler et pas vraiment un lièvre collectif car il n'a pas de destinataire (« ce qui a prodigieusement inquiété les auteurs », dit Lyotard) - diversité d'écriture, de style - « trouble » sur la notion d'auteur pour l'auteur lui-même. Un participant, Philippe Lacoue-Labarthe estime que « cette expérience (que lui-même n'a pu mener jusqu'au bout) met en jeu dès son principe ce qui reste sourdement impliqué dans l'expérience de l'écriture, ou l'écriture comme expérience. La télégraphie, les envois et les renvois, le réseau hétérogène, le croisement des différences, tout cela fait qu'on ne peut plus ignorer jusqu'à la moindre phrase, on s'expose à être repris, déporté, surpris, mécompris, surinterprété, entraîné, etc. Dès le principe, ça échappe, on ne peut se faire la moindre illusion sur le contrôle. Même avec un nombre limité de destinataires-destinataires, on s'adresse sans très bien savoir ce qu'on adresse ni à qui exactement on l'adresse. Dépossession, solitude désarroi. La technique, dans l'affaire, ne facilite pas ou n'allège pas, ne désacralise pas la sacro-sainte écriture. Elle l'aggrave. » Participants: Hubert Astier – Nanni Balestrini – Mario Borillo – Christine Buci-Clucksmann – Daniel Buren – Michel Butor – Paul Caro – Michel Casse – Daniel Charles – Francois Chatelet – Philippe Curval – Jacques Derrida – Marc Guillaume – Philippe Lacoue-Labarthe – Bruno Latour – René Major – Jean-Claude Passeron – Francois Recanati – Jean-Loup Rivière – Maurice Roche – Pierre Rosenstiehl – Jacques Roubaud – Isabelle Stengers – Dan Sperber – Tibon Cornillot – Jean-Noël Vuarnet) <http://www.medienkunstnetz.de/works/epreuves-d-ecriture/> <http://www.medienkunstnetz.de/exhibitions/lesimmateriaux/> <http://latlucui.unige.ch/framo/articles/consultation/article.php?id=17>

- 1985 \_\_ **Langue de Pierre** (Stone Tongue), David Ryan & Jérôme Joy, Frac Aquitaine (After performances and live "interventions" as an artists' duo with the help of their generous mentor and "catalyst", humanly speaking, Christian Boltanski, and always within this duo, Joy had developed site-specific soundworks by displacements of selected sound (live recorded) from one place to another. The projects proposed to install sound diffusions from a location into the architecture of another location. A sound situation (of listening) unfolded and folded up on another one. Sound diffusion systems were set up in "sites" and continuously broadcasted unadulterated and raw sounds selected from another "site", such as a displaced sound phonography (term borrowed by Joy at this time from François-Bernard Mâche, a french composer). The extension of spaces such as 'acousmatic' volumes mixed together acoustically with the help of 'displaced' recordings and 'reconstructed' sound diffusions with located loudspeakers, was a first attempt in Joy's work to create virtual distances within existing architectures. To open troubled perceptions and a way of 'composing' listenings by the audience's displacements and walks, was paramount in this work. Between 'ambiances' and 'phonographies' based on field recordings, this work permitted a lot of combinations of situations with inside and outside sound diffusions, by making the architecture more fluid and the music extended out its limits. Thus articulations of sonic rooms were created by the audience's walks and by modifying acousmatically the existing resonances and acoustic volumes. With the use of field recordings (ie without adding or writing narratives or fictions), the work opened a lot of permeability of spaces between inside and outside dimensions.) <http://jeromejoy.org>

- 1985 \_\_ « **Machines of the Visible** », Jean-Louis Comolli (As Jean-Louis Comolli notes in "Machines of the Visible," all analogical representation is false representation, and not reduplication. The camera, Comolli acknowledges, is at the intersection of two discourses: ideology and science. The phenomenological position of this intersection results in the repression of the invisible (the mode of production) by the visible (final product), thus tying photography and cinema to the Western tradition of seeing and vision, the hierarchy of Arts. Ulmer defines apparatus as "an interactive matrix of technology, institutional practices, and ideological subject formation". In "Machines of the Visible," Jean-Louis Comolli offers a critique of cinematic apparatus that may help to enrich this definition: "If the social machine manufactures representations, it also manufactures itself from representations—the latter operative at once as means, matter and condition of sociality. Thus the historical variation of cinematic techniques, their appearance-disappearance, their phases of convergence, their periods of dominance and decline seem to me to depend not on a rational-linear order of technological perfectibility nor an autonomous instance of scientific 'progress' but much rather on the offsettings, adjustments, arrangements carried out by a social configuration in order to represent itself, that is, at once to grasp itself, identify itself and itself produce itself in its representation." So an apparatus is a set of technical and cultural practices by means of which an ideological system represents itself to its subjects (i.e. to itself) and thereby perpetuates itself. Comolli's choral hyphenation of "appearance-disappearance" is a condensed way of saying that when a new set of techno-cultural practices is introduced into an ideological system it must first make its appearance known in order to become generally adopted and distributed. Later, it will be necessary for the techno-cultural set to make its appearance unknown, to become invisible or transparent, if it is to persist in reproducing the more general apparatus of which it is a part. Taken together, all of this recommends to me a puncept conducting

between apparatus (Latin for "preparation, arrangement") and apparitus (Latin for "appearance"). We might call it "apparation" to draw in the sense of "apparition" as spirit (zeitgeist), as ghost in the machine, as well as the Heideggerian grammar of "presencing": a choral flickering between the gerund and the present continuous. The apparation is that which prepares (for) its own appearance, its continued appearance (i.e. its persistence). And in the realm of chora, appearance requires erasure, disappearance. Jean Louis Comolli claims that the discursive values of film had been there before its technology, thereby highlighting the notion that film is always governed by the social structure of its society. Apparatus ("Dispositif") in Comolli's sense expresses the heterogeneity of technical and social techniques, their interactions and their mutual influences. Although the notion of apparatus is developed in film theory, it should be transferred to scientific disciplines working with visual apparatuses. "The cinema machine, which is not essentially the camera, the film, the projector, which is not merely a combination of instruments, apparatuses, techniques. Which is a machine: a "dispositif" was required which implicate (sic!) its motivations, which be the arrangement of demands, desires, fantasies, speculations ( in the two senses of commerce and the imaginary): an arrangement which give apparatuses and techniques a social status and functionin. (...) Thus what is in question is a certain image of the camera: metonymically it represents the whole of cinema technology, it is part for the whole. It is brought forward as the visible part for the whole of technics. This symptomatic displacement must be examined in the very manner of posing the articulation of the couple Technology/Ideology. (...) The tools always presuppose a machine, and the machine is always social before it is technical". Comollis highlights the cultural aspects of a certain technology. For Comolli the cultural and social values shape the respective technology and define its use. Comolli refers to the Hollywood Cinema, which in his regard functions as an ideological machine. Widening this understanding of the social as constructing meaning and structuring the use of technology, Comolli's understanding of the term 'dispositif' comes very close to Michel Foucaults understanding of it. Gilles Deleuze picks up on the concept of 'dispositif' formulated by Michel Foucault and points to the general processual energy of the term (Deleuze, Gilles. 1991. "Was ist ein Dispositiv?" Bernhard Waldenfels (Hgg.) Francois Ewald. In *Spiele der Wahrheit*. Michel Foucaults Denken. Frankfurt am Main. KiO).. Highlighting the processual aspects of the dispositif, Deleuze underlines its dynamic aspects: On the one hand it safeguards established forms of knowledge, subject - constitution and social organization, on the other it allows for new dynamics and its partial self organization. In the sense of Deleuze the dispositif is a flexible structure, organizing epistemic structures along traditional lines and undermining them similarly (Deleuze 1991, 154) [Angela Krewani]. Against Bazin's "idealist" and evolutionary account, Jean-Louis Comolli proposes a "materialist" and fundamentally non-linear reading of the history of cinematic technology and style. The cinema, Comolli tells us, "is born immediately as a social machine... from the anticipation and confirmation of its social profitability; economic, ideological and symbolic". Comolli thus proposes to read history of cinema techniques as an intersection of technical, aesthetic, social and ideological determinations; however, his analyses clearly privilege an ideological function of the cinema. For Comolli, this function is "'objective' duplication of the 'real' itself conceived as specular reflection". Along with other representational cultural practices, cinema works to endlessly reduplicate the visible thus sustaining the illusion that it is the phenomenal forms (such as the commodity form) which constitute the social "real" -- rather than "invisible" to the eye relations of productions. To fulfill its function, cinema must maintain and constantly update its "realism." Comolli sketches this process using two alternative figures -- addition and substitution [Lev Manovich]. Mast & Cohen (eds.) *Film Theory and Criticism* (3rd edn), Oxford: Oxford Uni. Press, 1985, pp. 741-760. in *The Cinematic Apparatus*, ed. Teresa de. Lauretis and Stephen Heath (New York: St. Martin's Press, 1980). in *Electronic Culture : Technology and Visual Representation*, ed. Timothy Druckrey, 1996) <http://home.comcast.net/~thepriest/x/chora07n1.html>

- **1985** \_\_ **Maggy Harsch-Fischbach** (Maggy Harsch-Fischbach and her husband Jules Harsch of Luxembourg began to get spectacular voice contacts through radio systems early in their experiments in 1985. A high-pitched, computer-like voice came through their radios with growing frequency to announce the beginning and end of experiments and to share amazing insights with the couple. The entity producing the voice identified himself (or herself) as an ethereal being who was never human, never animal, and never in a physical body. "I am not energy and I am not a light being. You are familiar with the picture of two children walking across a bridge, and behind them is a being who protects them. That's what I am to you, but without the wings. You can call me Technician, since that is my role in opening up this communication bridge. I am assigned to Planet Earth." The small flat inhabited by the Harsch-Fischbach couple became a place of miracles, as visiting scientists and reporters saw spirit-world images flash across the TV screen and heard long discourses by various deceased personalities through radio sounds. The spirit of Nelson D. Rockefeller told German physicist Ernst Senkowski, "The Mahatmas are a reality." Nineteenth-Century chemist Henri Ste. Claire de Ville told American and German researchers, "It is our job as well as your job to set fire to minds—to set fire to minds in your world, and in that moment to try to master time." When I visited the couple in 1994, spirit friend Konstantin Raudive told us in English, through the radios, "It can only work when the vibrations of those present are in complete harmony and when their aims and intentions are pure." He then went on to address the five of us individually, with a very personal message for each of us. [Mark H. Macy, *The Phenomenal History and Future of ITC Research*]) [http://www.worlditc.org/a\\_02\\_macy\\_itc\\_history.htm](http://www.worlditc.org/a_02_macy_itc_history.htm)

- **1985** \_\_ **Media Spaces** , Xerox PARC (1985-1988) (Audio-video link between Palo Alto and Portland.)

- **1985** \_\_ **Metropolis Cologne**, Bill Fontana (live microphones installed at 18 locations throughout the center of Cologne simultaneously transmitting to loudspeakers mounted on the facade of the Cologne Cathedral, and simultaneously broadcast to USA

and Europe.) [http://www.resoundings.org/Pages/musical\\_resource.html](http://www.resoundings.org/Pages/musical_resource.html)

- **1985** \_\_ *Netiquette* (In 1985 two computer scientists who were thoroughly familiar with electronic mail wrote a report at the request of the National Science Foundation, on the ethics and etiquette of electronic mail. The question of etiquette seemed particularly important to them, "because certain standard social norms must be reinterpreted and extended to cover this quite novel medium". These ideas were very soon codified and rules of electronic *savoir-vivre* circulated on Usenet. General principles of any social interaction (identifying oneself, thinking of one's interlocutor, contributing new ideas, etc.) were found alongside rules pertaining to the written media (read before answering, don't answer in the grip of emotion, etc.) or to electronic media (choose the right newsgroup, control the feeling of ubiquity, think that messages are archived, etc.) and, more precisely, to the format of messages (give a title, be brief, etc.). "Net etiquette" was to become *netiquette* for short. Articles dealing specifically with this question and intended for new users were published, primarily in electronic form. In a biblical tradition, some proposed "the ten commandments for computer ethics". This *netiquette* gradually became a code of chivalry that real internauts respected and got others to respect.) <http://www.albion.com/netiquette/corerules.html>

- **1985** \_\_ *Netweaver* (*Netweaver* was the electronic newsletter of the Electronic Networking Association (ENA). ENA was formed in April, 1985 by a group of folks who were interested in the social and human aspects of the new medium of electronic networking. At the time, other organizations were focused on the engineering issues and/or the challenges of large scale users (for example, The Electronic Mail Association). ENA's mission was: To promote electronic networking in ways that: - enrich individuals - enhance organizations - and build global communities. *Netweaver* was an early example of a "virtual" venture in that the editors, writers, and readers were distributed on networking systems around the world. It was published from 1985-1991. The "newsroom" was an online conference. *Netweaver* pre-dated the wide availability of electronic mailing lists and other internet-based tools. When each issue was complete, volunteer "porters" - people who had accounts on more than one online system - downloaded copies from one network and uploaded it to others, thus serving as a vast HUMAN internet. There was tremendous excitement about the ability to share ideas, values, and concerns across network boundaries.) <http://cgi.gjhost.com/~cgi/mt/netweaver/>

- **1985** \_\_ *NSFNET* (In 1985, the United States' National Science Foundation (NSF) commissioned the construction of the NSFNET, a university 56 kilobit/second network backbone using computers called "fuzzballs" by their inventor, David L. Mills. The following year, NSF sponsored the conversion to a higher-speed 1.5 megabit/second network.)

- **1985** \_\_ *Organe et Fonction d'Alice au Pays des Merveilles*, Roy Ascott, Les Immatériaux, Centre Georges Pompidou, Paris (Interactive videotex project with the use of Minitel.)

- **1985** \_\_ *Place Works*, Max Neuhaus ("My place works are about creating a new place by transforming a given place. This idea of what 'place' means in English at least, that a place is not just a physical place. The idea of place carries many aspects: the people there, the people who use it, who own it, who does what in it, its visual character, its aural character – its character. A place has a character; a space doesn't have a character. So calling them 'sound spaces' didn't make sense. They are about building a place, a new place from my imagination, out of a specific place. (...) Drive-in Music [1967/68; 1975] is about passage. Or all the underwater pieces, they aren't place works either.." [Max Neuhaus]. Unlike music, in his *Place Works*, Max Neuhaus places a single sound in the existing aural context. This sound, even though it has a vibrant inner complexity, does not undergo a temporal development. Its time is endless, recognising no difference between past, present and future. Neuhaus defines a sounding area with boundaries which can be sharply drawn. Thus he replaces the temporal condition of music with the 'place' of a sound. Insofar as the place's constant sound originates in the noise or the rustle to which it reconnects, Max Neuhaus' work is free of the distain that music displays towards environmental sounds, and also free of the fascination of noise and silence that advanced music – Russolo and Cage – seeks to incorporate. The sound of a work by Max Neuhaus belongs to the sounds present in its environment, whatever form they may take, and at the same time it is distinguished from them – sometimes so little that it can barely be perceived, or the sound is assumed to be a 'natural' ambient noise. Elaborately designed, the sound does not exclude the ambient noises, but incorporates them, providing them with a particular quality which Neuhaus describes as a sonic 're-colouring'. The formation of a place has been one of the crucial concerns of sculpture since the sixties. It no longer seeks to face the beholding and moving individual as a form or structure, as an object in relation to a subject. But even in the 'expanded field of sculpture' (Rosalind Krauss), mazes, surfaces made of metal plates, steel walls and earth banks in the desert all rely on the subject-body as a solid unit, and demand that it make sure of itself in an even intensified manner. On the other hand the place of Neuhaus' work, free of all physical mass, neither music nor sculpture, promises to exonerate the subject from the compulsion to self-assertion. We enter a sounding zone, as we immerse ourselves in the time-space of music, but without being released from everyday noises. And we are released from them nonetheless, in that as we listen to the constructed sound they reach our ears, along with it, coloured by it, in a way that we have never heard them before. The difference arises out of the fact that the sounds are no longer merely present, undesired, obtrusive, a disturbance of whatever our momentary concerns might be, but that they are sought with the ear as special sensations, rich offerings of a despised world. They convey the strange experience of an immanent transcendence. We cut ourselves off from the world which is defined by sound, daily traffic, the

*rustling of the trees, as it is foreign and unwelcome to us, although at the same time we strive to open ourselves into it. We do not leave it, however. We are at a place in which this world is transformed, in which we ourselves enter a curious state of ambiguity, abandoned to the sounds and noises as in a trance, as we want nothing but to hear what is to be heard, to succumb to the sound of the work, the noise of the traffic and the rustling of the trees. The duration of this immersion depends on our own time, it lasts until we walk on. It could be endless, unlike when we hear music which forms and bounds our time. [Ulrich Loock]*

- **1985 \_ Planetary Telephonic Sculpture**, Fred Forest (Surrounded by paintings by the Belgian Surrealists Magritte and Delvaux, the artist stands before two side-by-side red and blue telephones. He picks up the receiver of the blue telephone and dials the number of a correspondent in Brussels, whom he asks to transmit a message, made up entirely of gibberish, to a second correspondent in Cologne. The same message is successively transmitted by phone to ten more correspondents stationed in different cities around the world, the last of whom calls the artist on the red phone 42 minutes and 30 seconds later.) <http://fredforest.org>

- **1985 \_\_ Reabracadabra**, Eduardo Kac (Videotex animated poem shown in 1985 in the group exhibition Arte On-Line, a national videotext art gallery presented by Companhia Telefônica de São Paulo. In 2003 Reabracadabra was adapted for cell phones.) <http://www.ekac.org/VDTminitel.html>

- **1985 \_\_ Sonart : l'image à distance par le son**. Directed by Roy Ascott and Robert Adrian X (Slowscan TV by short wave radio transmission, Language Plus Exchange, Alma - Quebec, Pittsburgh. Alma, Québec: ANNPAC/RAC.)

- **1985 \_\_ SOUND = SPACE**, Rolf Gehlhaar, Les Immatériaux, Centre Georges Pompidou, Paris (SOUND=SPACE is an electronic musical instrument that is played - by one person or several at the same time - by moving around in an empty space. It consists of a system of ultrasonic sensors - an ultrasonic echo location system - that very accurately picks up the positions and movement of people within the space, linked to a computer and a synthesiser and/or sampler that produces sounds accordingly. The effect is like walking or moving some part of your body across imaginary keyboards which are spread around the floor of a room. The system can be programmed to accommodate spaces of almost any shape and to produce many different styles of music, employing an endless variety of sounds, e.g. instrumental sounds like sitar, drums, piano, trumpets, sampled sounds, sounds of the environment and even spoken words. SOUND=SPACE is one of the most exciting applications of high technology and computers in the field of music, projected images and communication. It has colossal possibilities for education, entertainment and therapy, for the general public, for the disabled and the unsighted alike. It was conceived and designed by Rolf Gehlhaar in 1984 and the first version of it was developed in 1985, in collaboration with P.Prevot and LIMCA, a small computer music studio in Gascony, France. A second, improved and expanded version was developed in the UK in 1987-89, assisted by the technical expertise of ZINGARO Designs Ltd. and the formidable programming skills of Per Hartmann. The latest version, much enhanced, was developed by Rolf Gehlhaar in 1998/99, employing the object oriented music programming environment MAX / MSP with a parallel possibility of using the measurements in the context of Director programs to manipulate images and generate graphics which are projected onto the walls that delimit the space. For a detailed description of SOUND=SPACE see: Rolf Gehlhaar: SOUND=SPACE, the interactive musical environment, CONTEMPORARY MUSIC REVIEW, Vol 6, Part 1, ISBN 3-7186-5116-5, Harwood Academic Publishers, 1991) <http://www.undeadarmy.org/gehlhaar/pages/soundspace.htm>

- **1985 \_\_ Synthetic Rehearsal**, Barry Vercoe (Barry Vercoe added the "Synthetic Rehearsal" program to the "Synthetic Performer" program written the previous year. This update enabled the computer to "learn" a particular performer's interpretation of a piece and thus accompany the performer more effectively.) <http://sound.media.mit.edu/resources/EMS/EMSt11.html>

- **1985 \_\_ « T. A. Z. - The Temporary Autonomous Zone, Ontological Anarchy, Poetic Terrorism »**, Hakim Bey (Peter Lamborn Wilson (born 1945) is an American political writer, essayist, and poet, known for first proposing the concept of the Temporary Autonomous Zone (TAZ), based on a historical review of pirate utopias. Wilson also writes under the name Hakim Bey. T.A.Z.: The Temporary Autonomous Zone, Ontological Anarchy, Poetic Terrorism is Hakim Bey's most famous work. It is composed of three sections, "Chaos: The Broadsheets of Ontological Anarchism," "Communiqués of the Association for Ontological Anarchy," and "The Temporary Autonomous Zone." The Temporary Autonomous Zone (TAZ) describes the socio-political tactic of creating temporary spaces that elude formal structures of control. The essay uses various historical and philosophical examples, all of which attempt to lead the reader to the conclusion that the best way to create a non-hierarchical system of social relationships is to concentrate on the present and on releasing one's own mind from the controlling mechanisms that have been imposed on it. In the formation of a TAZ, Bey argues that information becomes a key tool that sneaks into the cracks of formal procedures. A new territory of the moment is created that is on the boundary line of established regions. Any attempt at permanence that goes beyond the moment deteriorates to a structured system that inevitably stifles individual creativity. It is this chance at creativity that is real empowerment. "We've spoken of the Net, which can be defined as the totality of all information and communication transfer. Some of these transfers are privileged and limited to various elites, which gives the Net a hierarchic aspect. Other transactions are open to all--so the Net has a horizontal or non-hierarchic aspect as well. Military and Intelligence data are restricted, as are banking and

currency information and the like. But for the most part the telephone, the postal system, public data banks, etc. are accessible to everyone and anyone. Thus within the Net there has begun to emerge a shadowy sort of counter-Net, which we will call the Web (as if the Net were a fishing-net and the Web were spider-webs woven through the interstices and broken sections of the Net). Generally we'll use the term Web to refer to the alternate horizontal open structure of info-exchange, the non-hierarchical network, and reserve the term counter-Net to indicate clandestine illegal and rebellious use of the Web, including actual data-piracy and other forms of leeching off the Net itself. Net, Web, and counter-Net are all parts of the same whole pattern-complex--they blur into each other at innumerable points. The terms are not meant to define areas but to suggest tendencies. (...) The present forms of the unofficial Web are, one must suppose, still rather primitive: the marginal zine network, the BBS networks, pirated software, hacking, phone-phreaking, some influence in print and radio, almost none in the other big media--no TV stations, no satellites, no fiber-optics, no cable, etc., etc. However the Net itself presents a pattern of changing/evolving relations between subjects ("users") and objects ("data"). The nature of these relations has been exhaustively explored, from McLuhan to Virilio. It would take pages and pages to "prove" what by now "everyone knows." Rather than rehash it all, I am interested in asking how these evolving relations suggest modes of implementation for the TAZ. The TAZ has a temporary but actual location in time and a temporary but actual location in space. But clearly it must also have "location" in the Web, and this location is of a different sort, not actual but virtual, not immediate but instantaneous. The Web not only provides logistical support for the TAZ, it also helps to bring it into being; crudely speaking one might say that the TAZ "exists" in information-space as well as in the "real world." The Web can compact a great deal of time, as data, into an infinitesimal "space." We have noted that the TAZ, because it is temporary, must necessarily lack some of the advantages of a freedom which experiences duration and a more-or-less fixed locale. But the Web can provide a kind of substitute for some of this duration and locale--it can inform the TAZ, from its inception, with vast amounts of compacted time and space which have been "subtilized" as data. At this moment in the evolution of the Web, and considering our demands for the "face-to-face" and the sensual, we must consider the Web primarily as a support system, capable of carrying information from one TAZ to another, of defending the TAZ, rendering it "invisible" or giving it teeth, as the situation might demand. But more than that: If the TAZ is a nomad camp, then the Web helps provide the epics, songs, genealogies and legends of the tribe; it provides the secret caravan routes and raiding trails which make up the flowlines of tribal economy; it even contains some of the very roads they will follow, some of the very dreams they will experience as signs and portents. The Web does not depend for its existence on any computer technology. Word-of-mouth, mail, the marginal zine network, "phone trees," and the like already suffice to construct an information webwork. The key is not the brand or level of tech involved, but the openness and horizontality of the structure. Nevertheless, the whole concept of the Net implies the use of computers. In the SciFi imagination the Net is headed for the condition of Cyberspace (as in *Tron* or *Neuromancer*) and the pseudo-telepathy of "virtual reality." As a Cyberpunk fan I can't help but envision "reality hacking" playing a major role in the creation of TAZs. Like Gibson and Sterling I am assuming that the official Net will never succeed in shutting down the Web or the counter-Net--that data-piracy, unauthorized transmissions and the free flow of information can never be frozen. (In fact, as I understand it, chaos theory predicts that any universal Control-system is impossible.) (...) ) [http://www.hermetic.com/bey/taz\\_cont.html](http://www.hermetic.com/bey/taz_cont.html)

- **1985** \_\_ *The Ultimate Contact* \*1, SAREX, The DAX Group (In August. Sponsored by NASA and Robot Laboratories of San Diego, California cooperating with the Amateur Radio League and the Carnegie Mellon radio club members. DAX exchanged images with the shuttle Challenger using slowscan television imagery VHF radio. Michael Chepponis of the DAX Group was the principal radio Operator.) [http://www.digitalartexchange.net/e/txt\\_11.html](http://www.digitalartexchange.net/e/txt_11.html)

## 1986

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- **1986** \_\_ *Internet* (By the end of 1985, the number of hosts on the Internet (all TCP/IP interconnected networks) has reached 2,000. Between the beginning of 1986 and the end of 1987 the number of networks grows from 2,000 to nearly 30,000. TCP/IP is available on workstations and PCs such as the newly introduced Compaq portable computer. Ethernet is becoming accepted for wiring inside buildings and across campuses. Each of these developments drives the introduction of terms such as bridging and routing and the need for readily available information on TCP/IP in workshops and manuals.)

- **1986** \_\_ *Le bras de fer transatlantique*, Doug Back, Norman White & Carl Hamfeldt (w/ Mario Costa & Derrick de Kerkhove) (A mechanical arm remotely activated by a computer and modem with the sensation of transmission and of strength, between Paris and Toronto.)

- **1986** \_\_ *Burning Man* (Burning Man is an eight-day annual event that takes place in Black Rock City, a temporary city on the playa of the Black Rock Desert in the U.S. state of Nevada, 90 miles (150 km) north-northeast of Reno, ending on the American Labor Day holiday in September. The event is described by organizers as an experiment in community, radical self-expression, and

radical self-reliance and takes its name from the ritual burning of a large wooden effigy on Saturday evening. The annual event now known as Burning Man is the result of a merger of two events, one of which began as a bonfire ritual on the summer solstice in 1986 when Larry Harvey, Jerry James, and a few friends met on Baker Beach in San Francisco and burned an 8-foot (2.4-meter) wooden man as well as a smaller wooden dog. Harvey's inspiration for burning these effigy figures as he's described it was a spontaneous act of radical self-expression. Evans conceived it as a dadaist event with temporary sculpture to be burned and situationist performance art. The event has gone through several changes, including growing from a small handful of people to over 47,000 people attending the event in 2007. Because of the variety of goals fostered by participatory attendees, known as "Burners", Burning Man does not have a single focus. Features of the event are subject to the participants and include community, artwork, absurdity, decommodification, and revelry. Participation is encouraged. The Burning Man event is governed by the 10 principles of Burning Man, which are radical inclusion, gifting, decommodification, radical self-reliance, radical self-expression, communal effort, civic responsibility, leaving no trace, participation, and immediacy. The Burning Man event is often quoted by William Gibson as a autonomous temporary zone - another one was for him Plastic People of the Universe in Prague) <http://www.burningman.com/>

- 1986 \_\_ « **A conversation on music** » (Morton Feldman with Iannis Xenakis), in Res n°15, 1988, p. 177-181 (The present text is an edited transcription of a conversation between Morton Feldman and Iannis Xenakis which took place on Friday, July 4, 1986 at De Kloveniersdoelen, Middelburg, The Netherlands. Morton Feldman describes his music with terms used when describing a room, such as measures, proportions and scale. He describes his music like walking along the streets in Berlin – where all houses look the same, even if they are not. Or like a stationary procession, not unlike a motif from a Greek temple frieze ("Essays", Zimmermann, 1985). The comparison with an antique thympanon indicates his will to deconstruct classical elements to make something new. Very similar to the intricate details of the Greek temple, whose subtle distortions in the perspective increases the tension of the visual appearance, Feldman writes detailed instructions for the musician how to act in every situation. What you might experience as extended, monotonous chords over immense time is in fact thoroughly notated clusters of sound with a constant change of measures, proving his will to give every bar a unique character. Feldman is thus aware of the relation between the phenomenological room and the notion of interpretation. What you might hear as an open, floating space of sounds, is in fact an exactly notated, concentrated flow of superimposed clusters of sound. The case of Morton Feldman is an example of how to connect architecture and music on the level of perception, where the construction of mental objects and cultural constructions in both discourses can give a new understanding of objectiveness and the notion of space. By avoiding structuralistic methods of analysis, instead using a phenomenological perspective (based on the experience of the subject), a fruitful connection between music and architecture can be established. These two disciplines meet in the metaphysical room, the non-geometrical place, where it can appear as a mental construction or a discursive object. But even if Feldman succeeds to melt down sound and space to meta reality, many questions are still to be answered. Is it possible to describe this room in terms of topography or morphology? Is there a new terminology to explore, invent or analyze beyond what we can physically measure? What does this world look like? [Christian Hörgren, "Place, Space and Sound"]. No passion, brilliant sonorous fireworks, miraculous forms or novel artistic arrangements; no confessions or accusations. Just this sound suspended in silence, as if to make the silence itself audible. Almost always soft, so as not to drown the sound of silence - we can hear silence as spatial noise. We become aware of this spatiality through the smallest noises and their echoes, like breathing, the rustling of clothing, involuntary movement. Morton Feldman's music gives us far more tangible spatial perception. We come to realize that we are no longer in random space, but in the particular "musical space" which Feldman's music has appropriated in its unobtrusive way. Arnold Schönberg had already spoken of a "musical space" in which "musical thoughts" are expressed, a concept involving the composer's as well as the listener's innermost feelings. Music has always been an interior language. The Romantic period so emphatically forced intimacy upon us that it seemed intent on conquering the world and its listeners paradoxically through subjectivity. In contrast, Feldman approaches this world and his listeners very quietly - even shyly - unfolding his finessed creation in sound space and reinforcing it with frequent repetitions that function like the rows of pillars in a gothic church. In this way he invites the listener to connect with this imaginary space and to sense the repeated sounds. The listener's experiences occur within an area transcending the borders between inner and outer, triggering a kind of liberation. The inner space opened by Feldman's music should not however be regarded in architectural terms. Feldman has pointedly eschewed structural principles. Rather, Feldman's conception of musical space is as a highly sensitive, plasmatic framework in a constant state of renewal and stabilization. Thus the musical repetitions in Feldman's music, in contrast to the mechanical repetitions in "minimal" music, are perpetually evolving composed pitch movements, which he brings together and assembles with loving precision into a "musical space". The high notes, rather than depicting a dramatic culmination, simply define the uppermost dimension of the sound space, just as the low notes define the lower dimension. What, then, is the significance of this artistic musical space? Why is it capable of being more moving than many an emphatic *Espressivo*? Our life progresses in reference to the space around us. We cannot conceive of it otherwise. Even the thought, the idea, and the Word in the Old Testament function as creative points in space, which need room to develop, expand and construct their own new spaces. Feldman's music demonstrates how space itself consistently builds new spaces. Feldman spoke of the canvasses onto which he "sticks" his music - that is, how he writes into the space of the picture plane. A painting's surface implies a space imagined then created by the painter. Likewise the aural spaces composed by Feldman. The idea of composed aural space becomes a metaphor for living and evolving, as opposed to black holes in which space terminally collapses. For perhaps the first time in musical history, the depth of this conceived space and its plasmatic activity has

been expressed in a straightforward and masterful manner. The room in each of us, alluded to by Kafka, is subtly opened by Mr. Feldman. He and his musicians invite themselves in. The musical guests don't simply draw near, they glide, thanks to Feldman's evasive rhythmic indications, and begin conversing with the listener by producing weightless suspended sounds and by paying meticulous attention to intonation. In principle, the notation avoids stress points which might cause the space to collapse, the plasma to stiffen and hence, like magic losing its spell, the music to become grey, diffuse, boring. It is essential to get that particular weightless sound - the "Feldman sound" - so admirably rendered on this recording. "May this silence sound for you", wrote Schönberg in reference to Webern's Bagatelles. May Feldman's sound world open for you, a world he has composed with such precision, care, discipline and mastery. [Ernstalbrecht Stiebler] <http://www.hz-journal.org/n10/horgren.html> <http://grace.evergreen.edu/~arunc/texts/music/xenakisFeldman.pdf>

- **1986** \_\_ **Harbour Symphony**, Vancouver, Hildegard Westercamp (Music for Ships Horns. This piece was commissioned by the Canada Pavilion for its Expo opening. It is probably the largest environmental music event ever to be mounted in Vancouver. On May 2, 1986, 150 boats of all sizes and shapes gathered in Vancouver Harbour around Canada Place to perform the premier of the Vancouver Harbour Symphony for boathorns. "The sound was like that of a herd of happy elephants caught in a traffic jam." [Globe and Mail])

- **1986** \_\_ **The Heart of the Machine**, Ian Ferrier and Fortner Andersen, Dromostexte (- of ACEN = Art Com Electronic Network, available on CompuServe and USENET via WELL since 1986- Ian Ferrier is one of the core poet/performers in the North American spoken word and performance poetry scene. The Heart of the Machine, one of the first Internet novels, was being sent chapter by chapter through computer information services such as Compuserve, based in Columbus, Ohio. Tire Heart of the Machine, apparently a psycho-sci-fi fantasy, is delivered every two weeks; soon to appear is the first subscriber-suggested character, a San Francisco barmaid into heavy metal. The autobiographies of network users are integrated into the sequels of an "experimental novel")

- **1986** \_\_ **The Line of the Horizon**, Mit Mitropoulos (Fax Project: An Example of Geopolitical Art) (Podemos assinalar também um outro projeto fax, Line of the Horizon, de Mit Mitropoulos, que se apresentou como um projeto de arte geopolítica<sup>54</sup> que consistia na criação de uma rede com 27 nós, em que os participantes enviavam representações de suas respectivas linhas de horizonte, criando assim um horizonte conceitual em escala global. Este projeto foi apresentado na Bienal Mediterrânea, na Grécia.)

- **1986** \_\_ **MaxMSP** (Max is a graphical development environment for music and multimedia developed and maintained by San Francisco-based software company Cycling '74. It has been used for over fifteen years by composers, performers, software designers, researchers and artists interested in creating interactive software. Max's history starts with the Patcher editor, written by Miller Puckette for the realization of Philippe Manoury's piece Pluton (synchronizing the computer to the piano and controlling a Sogitec 4X, which performed the audio processing) and to give composers access to an authoring system for interactive computer music. Patcher was running on a Macintosh and did only MIDI and control processing, the 4x doing the DSP. Patcher was then licensed to Opcode, where it was re-engineered by David Zicareli and became known as Max/Opcode, introducing many enhancements in the GUI and the "external objects" development kit. In 1989, IRCAM developed and maintained a concurrent version of Max ported to the IRCAM Signal Processing Workstation for the NeXT (and later SGI and Linux), called Max/FTS (FTS standing for "Faster Than Sound", and being analogous to a forerunner to MSP enhanced by a hardware DSP board on the computer). The Ircam Musical Workstation project, started in 1989, introduced a new version of Max which added real-time processing of audio signals, the processing algorithm being described in the same patching paradigm. This software was distributed under the name "Max/ISPW", ISPW (Ircam Signal Processing Workstation) being another acronym for the Ircam Musical Workstation. Max/ISPW was in fact made of two components, one being the graphical user interface running under NeXTSTEP, the other being a small real-time execution engine named FTS (for "Faster Than Sound" :-)) running on the ISPW board based on Intel's i860 processor. The Ircam "Real time systems" team, created in 1995 by François Déchelle, began new developments based on the ISPW components. Based on the evidence that hardware development was no longer worth the cost, the decision was taken to give up expensive hardware development. As a consequence, Max/ISPW was then re-engineered with the goal of obtaining a high level of portability. At the same time, the development of PD was started by Miller Puckette. He was aiming to remedy some weaknesses of Max in the field of dynamic data structure management, using some of the ideas of the ISPW Animal program. PD uses a two-component architecture similar to Max/FTS and brings portability to the graphical side via the adoption of the Tcl/Tk toolkit. Reusing the PD audio part, David Zicarelli released late 1997 the MSP ("Max Signal Processing") package for Max/Opcode that brings real-time synthesis and signal processing to Max/Opcode on PowerPC Macintosh platforms. Finally, the emergence of Java gave, among other advantages, the possibility to realize graphical user interfaces that are multi-platform. The re-implementation in Java of the Max/FTS graphical user interface started late 1996, and the name jMax was given to this new variant of the MAX family. The Max program itself is highly modular, with most routines existing in the form of shared libraries. An API allows third-party development of new routines (called "external objects"). As a result, Max has a large userbase of programmers not affiliated with Cycling '74 who enhance the software with commercial and non-commercial extensions to the program. Because of its extensible design and graphical interface (which in a novel way represents the program structure and the GUI as presented to the user simultaneously), Max is widely

regarded as the lingua franca for developing interactive music performance software. The current commercial version of Max has since been distributed by Zicarelli's company, Cycling '74 (founded in 1997), since 1999. Max is named after Max Mathews, and can be considered a descendant of MUSIC, though its graphical nature disguises that fact. With the increased integration of laptop computers into live music performance (in electronic music and elsewhere), Max/MSP and Max/Jitter have received quite a bit of attention as a development environment available to those serious about laptop music / laptop video performance.) <http://www.maxobjects.com> <http://www.cycling74.com>

- **1986 \_\_ Network Muse**, Automatic Music Band Festival, The Lab San Francisco, The Hub, John Bischoff, Tim Perkis, Scott Gresham-Lancaster, Richard Zvonar, Phil Burk, Larry Polansky, Phil Stone, Chris Brown, Mark Trayle (Four evenings of music for interactive computers networks designed, programmed, and performed the composers. "Food Chain (multiMac<=>Midi)" Scot Gresham-Lancaster, Richard Zvonar, Thursday July 31, "Buy 1 for Spare Parts (3 Composers/3 Amigas)" Phil Burk, Larry Polansky, Phil Stone, Friday, August 1, "The Hub" John Bischoff, Tim Perkis, Saturday August 2, "Falling Edge" Chris Brown, Mark Trayle, Sunday August 3. "In 1986 Bischoff, Perkis, and I began producing experimental music concerts at galleries and community music spaces, and in the summer of 1986 we decided to produce a minifestival at The Lab, a converted church building on Divisadero Street in San Francisco devoted to automatic music bands. The festival featured performances by a collection of composers working with computers whoe were collaborating in duos and trios, connecting their computers in various ways in networks to share sound, control data, or both. We called the festival The Network Muse - Automatic Music Band Festival. Bischoff and Perkis called their duo performance The Hub, because they were using a small microcomputer as a mailbox to post data used in controlling their individual music systems, which was accessible to the other player to use in whatever way and at whatever time he chose. This was the beggining of the band The Hub : The other composers who jioned to become The Hub were also performing on different nights in different groups using uniquely different network architectures. After the festival, using the stand-alone computer to serve as a mailbox for a group (which Perkis had initiated) seemed like the best way for all of us to continue. The original KIM-based hub had four UARTS to allow four players to network using 300-baud serial connections. Perkis and Bischoff soon began to use the KIM hub in a trio with Mark Trayle called Zero Chat Chat." [Chris Brown]) <http://crossfade.walkerart.org/brownbischoff/>

- **1986 \_\_ Planetary Network** (Laboratorio Ubiqua, XLII Esposizione d'Arte La Biennale di Venezia), Roy Ascott, Don Foresta, Tom Sherman (Slow scan TV, FAX and Computer network (Artex/IPSharp) project. Live activity in Venice lasted for 14 days followed by a 2 month conference on Artex funded by IPSharp. Artists in three continents interacting through computer networks, videotex, slowscan TV, fax ). Locations included Venice, Vienna, Sydney, Honolulu, Vancouver, Los Angeles, San Francisco, Chicago, Toronto, Pittsburgh, Atlanta, Boston, Bristol, Paris and Milan. Concept - Roy Ascott. Network organisation/coordination - Robert Adrian X. The «daily news» was the theme of this project in which more than 100 artists on three continents participated. The artists worked with computers, video text, slow-scan-TV, and telefax. The live activities in Venice lasted a period of 14 days, followed by a two-month-long Artex Conference financed by the I. P. Sharp Network. The term artist is expanded here to «participant» without it limiting the professional status. In this way too, the «artwork» becomes the work of several individuals. The participating cities were: Venice, Sydney, Honolulu, Vancouver, Los Angeles, San Francisco, Chicago, Toronto, Pittsburgh, Atlanta, Boston, Bristol, Paris, and Milan. DAX was invited by the Italian government and the commissioners of the Venice Biennale to participate in the section Laboratorio E Informatica in three categories: Slowscan television, text over the I. P. Sharp computer network, and telefax, Sponsored in part by the Italian government, Mr. Bryan Buckley, Pittsburgh, Harris-3M Corporation, and the College of Fine Arts, Carnegie Mellon University. Bruce and Helen Breland represented the DAX Group in Venice.) <http://alien.mur.at/rax/UBIQUA/index.html>

- **1986 \_\_ RC Robot**, Eduardo Kac (In 1986 Kac worked with radio-controlled telerobotics in the context of the exhibition "Brasil High Tech", realized at the Centro Empresarial Rio, in Rio de Janeiro. Kac used a 7-feet tall anthropomorphic robot (above) as a host who conversed with exhibition visitors in real time. The robot's voice was that of a human being transmitted via radio. Exhibition visitors did not see the telerobot operator, who was telepresent on the RC Robot's body.) <http://www.ekac.org/telep86.telecom.html>

- **1986 \_\_ Real Electronic Music**, Nicolas Collins (For scanning radio and trombone-propelled signal processor. Premiered at Tin Pan Alley, New York, 1986.) <http://www.nicolascollins.com>

- **1986 \_\_ « The Songlines »**, Bruce Chatwin (In Bruce Chatwin's marvelous book The Songlines we are presented with the idea that the world was initially sung into being. [Bruce Chatwin, The Songlines. London, Picador, 1988]. This 1987 travelogue, Bruce Chatwin's most famous and hotly disputed text, is the autobiographical fulfilment of a writerly dream which the author had been unable to pursue in the late 1960s and early 1970s. The Songlines is a 1986 book written by Bruce Chatwin, combining fiction and non-fiction. Chatwin describes a trip to Australia which he has taken for the express purpose of researching Aboriginal song and its connections to nomadic travel. Discussions with Australians, many of them Indigenous Australians, yield insights into Outback

culture, Aboriginal culture and religion, and the Aboriginal land rights movement. In the book Chatwin develops his thesis about the primordial nature of Aboriginal song. The writing does not shy away from the actual condition of life for present day indigenous Australians, it does not present the songlines as a new-age fad but from an appreciation of the art and culture of the people for whom they are the keystone of the Real. While the book's first half chronicles the main character's travels through Outback Australia and his various encounters, the second half is dedicated to his musings on the nature of man as nomad and city builder. The junction between the book's halves is challenging for the reader, not unlike Chatwin's descriptions of Land Cruisers navigating the Outback roads. But the reward for ploughing on is substantial. In the second half Chatwin puts his phenomenal knowledge and experience on display in the service of an overarching theory of mankind. The basic idea that Chatwin posits is that language started as song, and the aboriginal dreamtime sings the land into existence. A key concept of aboriginal culture is that the aboriginals and the land are one. By singing the land, the land itself exists; you see the tree, the rock, the path, the land. What are we if not defined by our environment? And in one of the harshest environments on Earth one of our oldest civilizations became literally as one with the country. This central concept then branches out from Aboriginal culture, as Chatwin combines evidence gained there with preconceived ideas on the early evolution of man, and argues that on the African Savannah we were a migratory species, moving solely on foot, hunted by a dominant brute predator in the form of a big cat: hence the spreading of "songlines" across the globe, eventually reaching Australia (Chatwin notes their trajectory generally moves from north-east to south-west) where they are now preserved in the world's oldest living culture.) [http://en.wikipedia.org/wiki/The\\_Songlines](http://en.wikipedia.org/wiki/The_Songlines) <http://tesugen.com/archives/04/05/songlines>

- **1986** \_\_ **Sonic Mirror**, David Dunn (Dunn (b. 1953) has planned a large-scale utopian project in which a stationary cybernetic sound sculpture will be satellite-uplinked to analogous structures in other locations. These systems would serve as sonic mirrors to process electromagnetic data from a given environment. The sculpture could serve as an autonomous entity interacting within an autonomous environmental intelligence. Dunn perceives this "interactive reflection back into the environment" as a means of rediscovering natural magic, invoking a primal relationship to nature by uniting music and leading-edge technology. "hat began to move in the direction of the last project called Sonic Mirror, the idea that these technologies could afford a level of macro self-reference to the environment itself. Sonic Mirror was definitely a utopian proposition. The idea was to build a stationary cybernetic sound sculpture capable of processing acoustic data within an outdoor environment. My hope was that the sculpture might eventually function as an autonomous system, structurally coupled to its environment such that learning between machine and environment might take place. After going through several major attempts at refining these technologies, I began to feel that the technology had not reached the point that I needed it to be at. One of the initial modelings was generated from a soundscape recording of the Cuyamaca Mountains of California.") <http://www.daviddunn.com/~david/writings/Interv2.pdf>

- **1986** \_\_ **Transatlantic Copy-Art/Performance**, Toni Calvet (O projeto fax de Toni Calvet, Transatlantic Copy-Art/Performance, realizou-se da KGB de Barcelona (Espanha) à Galeria 2, no Soho, Nova York.)

- **1986** \_\_ **Undirected (1986/1996)**, Christophe Charles ("undirected 1986-1996" is a 60 minutes CD-ROM which features compositions like "Kalkutta Kreis", in full or in parts, some of them are described above or hereafter. On the audio part, two layers of these compositions have been mixed together with a third layer using a max program triggering a K-2000 sampler. which appears on the data part of the CDR, together with sound samples (AIFF), picture (PICT) and texts, a documentation about my concert and installation works. The max program is autonomous and has been presented / used as is in different events, among others at the ZAC event of the ARC / Museum of Modern Art in Paris (1999). In "Kalkutta Kreis", the recordings of the different places have been edited according to the dynamic of their structure: each part thus features a special tension. The first unit features mainly urban sounds: taxis, tramways, motorbikes and all kinds of horns. The second unit introduces organic life : birds and human voices come from the parks, the river and the markets. The trains horns of the South Eastern Railways in the fourth unit represent speed. The wind of the fourth unit gives the feeling of time, and the Indian Ocean of the fifth unit recalls eternity. The whole structure goes from "Urbanity" to "Eternity", but doesn't intend to order things or to determine any kind of hierarchy between them-it is possible to change the order of the parts. The sounds appear according to an arbitrary global rhythm, which is repeated as a long loop: as soon as it ends, it is ready to start again. The edited soundscapes part of "Kalkutta Kreis" has been mixed together with a piano piece, named "Dialectic Chords", where the main idea is to play a (group of) sound(s), and to wait until it has disappeared before playing the next. The next sound is determined by measuring the release of the preceding one. Once mixed together, the sounds of the piano appear as a counterpoint with some elements of the Indian soundscapes: the difference of timbre gives them another dimension, and lets them appear more clearly.) [http://home.att.ne.jp/grape/charles/texts/systems\\_of\\_decomposition\\_E/006/index.html](http://home.att.ne.jp/grape/charles/texts/systems_of_decomposition_E/006/index.html)

- **1986** \_ **VNS, Very Nervous System**, David Rokeby (1986 : reception by telephone, video, computer, MIDI and synthesizers, sensations coming from two dancers located in Paris and in Toronto. "Very Nervous System is the third generation of interactive sound installations which I have created. In these systems, I use video cameras, image processors, computers, synthesizers and a sound system to create a space in which the movements of one's body create sound and/or music. It has been primarily presented as an installation in galleries but has also been installed in public outdoor spaces, and has been used in a number of performances. I

created the work for many reasons, but perhaps the most pervasive reason was a simple impulse towards contrariness. The computer as a medium is strongly biased. And so my impulse while using the computer was to work solidly against these biases. Because the computer is purely logical, the language of interaction should strive to be intuitive. Because the computer removes you from your body, the body should be strongly engaged. Because the computer's activity takes place on the tiny playing fields of integrated circuits, the encounter with the computer should take place in human-scaled physical space. Because the computer is objective and disinterested, the experience should be intimate.") <http://homepage.mac.com/davidrokeby/vns.html>

- **1986 \_ The Wave Organ**, Peter Richards, George Gonzales (*The Wave Organ is a wave-activated acoustic sculpture located on a jetty in the San Francisco Bay. The concept was developed by Peter Richards and was installed in collaboration with sculptor and master stone mason George Gonzales. Inspiration for the piece came from artist Bill Fontana's recordings made of sounds emanating from a vent pipe of a floating concrete dock in Sydney, Australia. A prototype, built at the same location, was presented as part of the New Music '81 Festival. The Wave Organ is located on a jetty that forms the small Boat Harbor in the Marina district of San Francisco, walking distance from the Exploratorium. The jetty itself was constructed with material taken from a demolished cemetery, providing a wonderful assortment of carved granite and marble, which was used in the construction of this piece. The installation includes 25 organ pipes made of PVC and concrete located at various elevations within the site, allowing for the rise and fall of the tides. Sound is created by the impact of waves against the pipe ends and the subsequent movement of the water in and out of the pipes. The sound heard at the site is subtle, requiring visitors to become sensitized to its music, and at the same time to the music of the environment.*) [http://www.exploratorium.edu/visit/wave\\_organ.html](http://www.exploratorium.edu/visit/wave_organ.html) <http://www.roadsideamerica.com/story/12103>

## 1987

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- **1987 \_\_ Blackstone Bicycle Works**, Dan Peterman (*For years, artist Dan Peterman had labored to make something of the building at 6100 South Blackstone Avenue. In the mid-'80s, he joined a group that ran different ventures at the site, including arts studios and a recycling center. In 1987 Dan Peterman, a Chicago artist, established a studio on the site and began exploring issues of art and ecology. In 1993 Peterman began working with the Resource Center to develop a plan which would reassess some of their early objectives, introduce new approaches to the use of the site, and develop a plan for renovation and future operations. This culminated in the formation by Peterman of 6100 Blackstone Inc., which purchased the building and part of the adjacent property in 1994. 6100 Blackstone Inc. provided a new structure and strategy for housing and developing small-scale cultural, ecological, and business ventures from the surrounding community. Before long, the site was the home for several small businesses and community groups, including Peterman's Blackstone Bicycle Works, which teaches kids bike-repair skills and lets them trade hours of bike work for bikes of their own. Taking its name from a speech given by Frank Lloyd Wright in 1901 ("The Art and Craft of the Machine"), the Experimental Station exceeds even Wright's dream of a place where art and technology would embrace one another under the same roof, where such an encounter would lead to new ideas and innovative designs and practices. A century later, the Experimental Station draws upon the ecological principle of diversity, recognizing the dynamic treasure of resources that a diverse and complex environment brings. Like Wright, we believe that monocultures are deadening, and that the path to innovation is one that draws together people engaged in a broad range of disciplines, practices and interests. It is this aim that gives coherence to the array of projects that we support. Currently among these: independent publishing, contemporary art, experimental music, visiting writers, organic gardening, bulk food purchasing, ecological initiatives, a bicycle shop/youth education program.*) <http://www.experimentalstation.org>

- **1987 \_\_ Borrowing and Stealing**, The Hub, Phil Stone (*"A much more demanding protocol for using the shared memory resource that the hub provided was created by Stone for his piece "Borrowing and Stealing". Its subject and title anticipated what would eventually become the battleground for networked musical technologies : the plunderphonic reality that digital information as symbolic representation of sound is all too easily and perfectly replicated, and that such information cannot really be owned, but to be kept alive must be continually transformed : Melodic riffs are composed by individual participants and sent to the Hub's shared memory, where they become fair game to be appropriated by the other participants. A "borrowed" (or "stolen", depending on one's perspective) riff may then be transformed in any of a multitude of ways, and replayed. The transformed riff is in turn sent to the Hub and made available to the other players. In this way, musical information flow instantly and reproducibly among the members of the ensemble without regard for copyright, attribution, or other proprietary notions. Musically speaking, this was a tight spec: it defined a texture made entirely from repeating melodies, a kind of metamorphosing minimalism. As in Simple Degradation, The Hub once again was used to deliver common musical material to all the players; but in this piece not one but every member of the group was contributing to it. This made the piece more evolved in an interactive sense -- there was no one conductor controlling the musical direction, but six equal players borrowing and stealing equally from each other but still intertwined and interdependent. Phil had*

coded a graphical input system for melody generation on his Amiga computer, in which he drew melodic contours with a mouse that would be instantly rendered as melodies published to the Hub. In practice, most of the rest of the group simply grabbed his melody and started transforming it, so that the music rarely had more than one melodic source for the whole texture that evolved. This could have led to a very formal, tightly controlled music made entirely out of subtle variations, or reflections, on the same material. But instead there was a more anarchic response as our musical proclivities favored radical transformations, such as changing the tuning of the melody, stretching its shape by exploding interval sizes or rhythmic relations beyond recognizable connection to the original, applying frequency and rhythmic proportions of the melody to timbral control parameters of un-pitched sounds, etc. The piece specification did not prevent individual members from creating realizations that became an algorithmic free-for-all spinning off from its central core. Realizing a good performance of the piece became a balancing act between revealing the organizational process at its core without making it too dominating of the music. Phil liked to emphasize the former by directing additionally that the melodies become shorter and shorter towards the end of the piece. Our renditions of this piece probably reflected a creative internal tension in the band behind its minimalist and improvisational tendencies." [Chris Brown] [http://crossfade.walkerart.org/brownbischoff/hub\\_texts/Borrowing\\_Stealing.html](http://crossfade.walkerart.org/brownbischoff/hub_texts/Borrowing_Stealing.html)

- 1987 \_\_ **Conversation**, Eduardo Kac (Six frames from "Conversation" a Slow-Scan TV work by Eduardo Kac realized at the Centro Cultural Três Rios, in São Paulo, on November 17, 1987. Slow-Scan TV allowed the transmission/reception of sequential still video images over regular phone lines. It took from eight to twelve seconds to form each image. Instead of considering each picture as a final form or the sequence of images as illusion of movement, Kac explored the live process of image formation.) <http://www.ekac.org/kacsstv87.html>

- 1987 \_\_ « **Digital Art Exchange** » (DAX), Trudy Ludwig, Accent on Research (Imagine what it would be like to be able to electronically link the creative energies of artists and have them simultaneously collaborate on the creation of a single artistic masterpiece. Artists from Africa, South America, Europe, Australia and North America could combine their talents to create new images flavored by their distinct cultural, social and political world views. No longer isolated in their individual studios, artists worldwide would participate in an electronic studio forum. The result of such an endeavor could very well revolutionize contemporary art as we know it today. (...) "For years", notes Bruce Breland, professor of intermedia and video arts at Carnegie Mellon's College of Fine Arts, "many artists like myself have expressed a keen interest in creating a network for the artistic community. We envision a publicly accessible network where one could utilize existing technology to create art and to facilitate the exchange of ideas and images. We fundamentally want a new way to share ideas expressed through art with other artists". Breland's desire to bring these plans to fruition led to the formation in 1982 of Carnegie Mellon's Digital Art Exchange Group (DAX). Since its inception, DAX has become one of the world's leading pioneers in the merging of electronic communications with the arts. Its staff, under the direction of Breland, is comprised of three engineers (Gregg Podnar, Eugene Hastings and Michael Chepponis), four artists (Jim Kocher, Matt Wrbican, Robert Dunn and Phillip Rostek), one archivist (Henry Pisciotta) and one project director (Bess Adam). (...) For Breland, the excitement of electronic art exchange is attributable to what he describes as the dematerialization of the art: "When we send an image from one node to another through the network, the image becomes dematerialized and no longer exists in the process of transmission. We are relinquishing the object in an electronic exchange in order that it can become modified by the responses of other artists in an ongoing process. Artists can simultaneously interact with the art, critique it, store it in the computer's memory, change its color or content and, in a manner of about 12 seconds, transmit the new image to any number of people. "With the dematerialization of art, were now left with how we as artists relate to each other and to our art: artist to artifact; artist to beholder; beholder to artifact. What was once the traditional space of graphics, painting and sculpture has now been transformed by a dynamic new order of relationships".) [http://www.digitalartexchange.net/e/txt\\_1.html](http://www.digitalartexchange.net/e/txt_1.html)

- 1987 \_\_ **Digital Body Exchange**. Directed by Roy Ascott (Digital image network between artists in Gwent, Perth, Sidney, Vienna, and Pittsburgh. Vienna: Hochschule fuer angewandte Kunst.)

- 1987 \_\_ **Echoes From the Moon (Lunar Opera)**, Pauline Oliveros, Morgan Ohara, Andres Bosshard (This project aims to help the audience direct their voices to the moon to hear the echoes come back. It could also be possible to have an INTERNET broadcast with many people participating from different parts of the world. Pauline Oliveros, aided by composer Scot Gresham-Lancaster and several technicians, realized her piece Echoes From The Moon in 1987 with Mark Gummer, a ham radio operator in Syracuse, NY, using the 48-foot dish in his back yard with Oliveros sending signals over a phone line from Hayward, CA (the return was 2 & 1/2 seconds), and again in 1998 using several large Yagi arrays and the Moon and Mars mapping radio telescope at Stanford University. The recorded signal was sent by phone line to the radio telescope, converted to radio waves, and then bounced off the surface of the Moon and back. The returning radio waves were converted to audio and played back. At light speed, the sound delay was about 1.8 seconds, 900 milliseconds each way. There was a slight Doppler shift on the echo because of the motion of both Earth and Moon. The first sounds bounced were mid-range in pitch: a conch shell, gas pipe whistle, Tibetan cymbals, woodblock, and temple block, but eventually anyone who wanted to participate could join in. Oliveros's conception was that each individual was actually touching the moon with his or her voice.) <http://www.deeplisting.org/pauline/writings/moon.html> <http://www.deeplisting.org/pauline/writings/moon.html>

[www.orbit.zkm.de/?q=node/409](http://www.orbit.zkm.de/?q=node/409)

- **1987 \_\_ Synthetic Performer & Hyperinstruments**, Barry Vercoe (*The Washington Post* highlighted various projects at the EMS, Experimental Music Studio MIT MediaLab, including the "Synthetic Performer" and "Hyperinstruments", a project aimed at reshaping the way sound and music is produced at the performer-instrument interaction level. "And now computer technology is on the verge of freeing the sound of music from virtually all physical limitations and its creation from any formal skills of the composer." [Curt Supplee]) <http://sound.media.mit.edu/resources/EMS/EMSt1.html>

- **1987 \_\_ The Hub**, NYC multisite concert (Clocktower / Experimental Media NYC - Nicolas Collins, Phill Niblock), John Bischoff, Tim Perkis, Mark Trayle / Chris Brown, Scot Gresham-Lancaster, Phil Stone (1985 – 1995) (*In 1987, composers Nick Collins and Phill Niblock invited members of the first live interactive computer music group called The Hub, whose members are all composers as well as designers and builders of their own hardware and software, to create a performance linking two performance spaces at some distance to each other, and to exemplify the potential of network music performance to link performances at a distance. These were Experimental Intermedia and The Clocktower in New York City. Two distinct trios were formed to perform in each space, each networked locally with one of two new, more robustly built, identical hubs which communicated with each other automatically via a modem over a phone line. The various programs designed by each performer would intermodulate and interfere with those of the others. The Hub composers often like to incorporate "artifacts" or electronic quirks and other unintended behaviors of their devices in the compositions. The Experimental Intermedia trio was the "Zero Chat Chat" ensemble of John Bischoff, Tim Perkis, and Mark Trayle, while the Clocktower position was taken by a trio of Chris Brown, Phil Stone, and Scot Gresham-Lancaster. More information on The Hub and computer network music in the Bay Area can be found in "Indigenous to the Net," a web-based article by Chris Brown and John Bischoff, and also in "The Emergency Committee to Make Time Go Forward presents The History of Experimental Music in Northern California. The sound of the gong is heard everywhere," compiled by the late Jim Horton. Each trio performed music that sounded different from that performed in the other space, but data generated from each ensemble were shared within The Hub, so the trios were informationally linked. This was the premiere concert of The Hub. The idea of having musicians play with one another from distant locations was then, and has been since, of considerable interest to promoters, publicists, and audience. Kyle Gann's Village Voice review titled "Musica Telephonica" emphasized the idea of the physical disconnect, the capability of creating music without being physically present, "phoning it in". But the band itself was always more interested in the aspects of performer interactivity, algorithmic complexity, and the web of mutual influence that the network provided. The network was a way for computer musicians to create a new kind of musical ensemble that allowed them to interact in ways that were unique to their medium. We were interested in the sound of idiosyncratic, personal computer music instruments that could influence, and be influenced by, one another. The Hub became a way to extend compositional ideas from the solo electronic performer to an ensemble, creating a new form of chamber music. (The fact that the chamber could be expanded in distance was not entirely irrelevant, but never really the point). It was also part of The Hub's mission to point the development of computer music away from the paradigm of dominance to one of creative anarchy. To quote Perkis: "I see the aesthetic informing this work as perhaps counter to other trends in computer music: instead of attempting to gain more complete control over every aspect of the music, we seek more surprise through the lively and unpredictable response of these systems, and hope to encourage an active response to surprise the playing. And instead of trying to eliminate the imperfect human performer, we try to use the electronic tools available to enhance the social aspect of music making". Yet what Perkis later called "the gee-whiz aspect" never really escaped us. Constructing and coding were the way we practiced and were the "chops" that were required to make the music happen. But as in any music, the mechanics need to be transcended to reach to the aesthetic goal; and in the technology-dominated context that fed our publicity engine (modest though it was), it became hard to get the audience, much less ourselves, to always focus on the musical issues. The real musical work The Hub was able to achieve can nevertheless be described as the sound of individual musical intelligences connected by networked information architectures. What is the sound of the network? It goes beyond whatever sound-producing means we as artists chose in voicing the compositions we made to the ways in which those individual voices interacted with one another. These modes of interaction were themselves the specifications for Hub compositions: A Hub piece was defined as a protocol defining the types of musical information to be automatically shared within the group and the means of sharing it among the members. Each composer was responsible for programming his unique computer/synthesizer to communicate within these protocols. (...) The common memory provided by the twin-hub hardware was the new musical resource explored first by the group. In effect, this was a simple server-client architecture in which requests from each player to read or write to common memory were responded to by the two linked servers. There was a nonuniform latency to this process, which could be up to one second because the two servers had to update a mirror of each other's memories over a 9600-baud connection, but the group made designs that were forgivable of temporal precision, and this in turn affected the music's character." [Chris Brown]) <http://crossfade.walkerart.org/brownbischoff/> <http://www.o-art.org/history/Computer/Arifact/TheHubCd.html> <http://www.o-art.org/history/Computer/Arifact/Wreckin'Ball.html> <http://hub.artifact.com/>*

- **1987 \_\_ International Radio Syndicate**, Documenta 8 / Kassel 1987 (a project for Documenta 1987 by Ponton with Radio Bellevue/Code Public (F), radio x (D), Radio Rabotnik (NL), Radio Onde Rossa (I), Subgenius (USA)) <http://www.emaf.de/>

[1988/ponton.html](#)

- **1987** \_\_ **Fritz Malkhoff and Adolf Homes** (Fritz Malkhoff and Adolf Homes began ITC experiments independently in 1987, and each began to get spirit voices on tape rather quickly. In a few months, they learned of each other's work, and they became colleagues and friends. During their experiments, small voices on radio quickly developed long, clear voices. Then they began to receive phone calls from their spirit friends, and in 1988 they set up Malkhoff's computer in the house of Adolf Homes, where they did most of their experiments. They posed a short question, and two days later a short answer appeared miraculously on their computer screen. As years passed, Malkhoff received many phone calls from spirit friends, including nature spirits. Homes received spirit images on his television and messages on his computer screen rather routinely. One morning in 1994, Homes climbed out of bed in a trance, aimed a video camera at his television, and received the first color picture from the spirit worlds. It was a picture of deceased EVP pioneer Friedrich Juergenson. At the same time, a message from Juergenson printed out of Homes's computer, stating, "This is Friedel from Sweden. I am sending you a self-portrait... The projection since January 17, 1991, has been in the quantum of spacelessness and timelessness. All your and our thoughts have their own electromagnetic reality which does not get lost outside the space-time structure... Consciousness creates all form...." [Mark H. Macy, *The Phenomenal History and Future of ITC Research*] [http://www.worlditc.org/a\\_02\\_macy\\_itc\\_history.htm](http://www.worlditc.org/a_02_macy_itc_history.htm)

- **1987** \_\_ **MINIX** (MINIX, a Unix-like system intended for academic use, was released by Andrew S. Tanenbaum in 1987. While source code for the system was available, modification and redistribution were restricted (that is not the case today). In addition, MINIX's 16-bit design was not well adapted to the 32-bit design of the increasingly cheap and popular Intel 386 architecture for personal computers. In 1991, Torvalds began to work on a non-commercial replacement for MINIX while he was attending the University of Helsinki. This eventually became the Linux kernel.)

- **1987** \_\_ « **Musica Telephonica** », Kyle Gann, *Village Voice* 6-23-87 (As though the aesthetic distance between composer and audience weren't great enough, technology is now increasing the physical distance. Texas composer Jerry Hunt performs his music in far-away cities via telephone cables. Pauline Oliveros bounces hers off the moon, whence it can be picked up "live" in any location. A chilling scenario emerges: Composer (in bathrobe and slippers): "Hey Mildred, keep the phone line open, will ya? As soon as *Dynasty's* over I'm giving a concert in Cleveland." But this development harbors an even more world-shaking corollary: someday anyone with a modem can have the same experience of a concert as the people who are actually there. I mean, a critic could listen to a performance computer-transmitted through the stereo system in his beachfront home in Oahu, write the review (preferably via brain-wave sensors wired directly to a dictionary file), and modem it 4000 miles away to the *Voice* that night, without leaving the comfort of his Naugahyde recliner! Ahhhh, the possibilities. All the more commendable, then, that the six composers of a unique musical think tank called the Hub -- Chris Brown, Scot Gresham-Lancaster, Phil Stone, John Bischoff, Tim Perkis, and Mark Trayle -- actually showed up for their June 6 and 7 performances, rather than transmit from their San Francisco homes. The first three musicians played at the Clocktower, the latter three at the Experimental Intermedia Foundation. The idea of performing in two spaces at once, linked by modem, came from EIF's Phill Niblock, that soft-spoken master of people-linkage; next he wants to arrange simultaneous concerts city-to-city and coast-to-coast. But the Hub had long ago developed the technology to make the idea work; their "hub" is a circuit box that combines information from six computers into a communal memory bank. (...) Equally peculiar (for those who attended a different space each night) was the oblique correspondence of identical pieces between the Clocktower and EIF, for the two audiences did not hear the same sounds. Each group fed information into the others' performance, but basic materials differed, making each piece a kind of sonic conceptual butterfly: same body, wildly different wings. (...) For the listener the excitement lay in the reemergence in these performances of music as process: the original province of minimalism, long since abandoned. Unlike written out tape music, details of sound and contour were not always perceptually important, and unlike normal improvisation, one could rarely hear an player's individual contribution. In giving up control of the music to group decisions, the Hub created a sonic entity larger than the sum of its members' ideas, truly a music with its own life. Relevant listening required zeroing in on the logical process (not a physical one, as in early Steve Reich), the structural skeleton embedded in the software that formed the piece's curiously flexible identity.") <http://www.o-art.org/history/Computer/Hub/HubTel.html>

- **1987** \_\_ **Ordinary Conversation / Dialogue Ordinaire** (György Galántai, co-fondator of Artpool Archive, took part in the 'Ordinary Conversation/Dialogue Ordinaire' visual communication project: he teamed up with French artists to create computer compositions with the help of the modem link between Paris and the Institut Français in Budapest. [Hervé Gauville - *Modem, Paris-Budapest. Vestiges d'une civilisation future, "Libération"*, 19. October 1987]) <http://www.galantai.hu/appendix/biography.html>

- **1987** \_\_ **Orient Express**, Stephan Barron (Stephan Barron rode the Orient Express from Paris to Budapest and every hour took a Polaroid of what he saw. In Budapest the 25 Polaroids of that one-way trip were scanned on computer and sent to Paris by modem. The same process was used from Budapest to Paris and the 25 digitalised Polaroids of the return trip were sent from Paris to Budapest - Institut Français, Budapest October 1987) (*Pour Orient Express en 1987, j'ai pris l'Orient Express de Paris à Budapest.*

Toutes les heures précises, j'ai fait une photo polaroïd. À Budapest, les vingt-cinq polaroïds de l'aller sont numérisés sur ordinateur et renvoyés par modem à Paris. Le même "processus" est réalisé de Budapest à Paris et les vingt-cinq polaroïds numérisés du retour sont renvoyés de Paris à Budapest. Cette œuvre est une réflexion sur l'espace, la modification du voyage (voyage immobile et imaginaire) à l'ère des communications instantanées. Orient Express est aussi une réflexion sur le temps, ou comment un instant banal, choisi à l'avance devient un moment important. L'essence de l'image, c'est le temps.) [http://stephan.barron.free.fr/technoromantisme/barron\\_projets.html](http://stephan.barron.free.fr/technoromantisme/barron_projets.html)

- 1987 \_\_ **The Palais Ideal**, DAX Group (Toulouse, France, April 4-7. A conference event: The DAX Group was invited by the French Ministry of Culture to participate in celebrating the biennale of European art schools in a text exchange utilizing the I. P. Sharp network to coordinate the first attempt by Carnegie Mellon and the Dax Group to use Bitnet and E.A.R.N. as a collaborative art medium. Produced in Toulouse by Roy Ascott.) [http://www.digitalartexchange.net/e/txt\\_11.html](http://www.digitalartexchange.net/e/txt_11.html)

- 1987 \_\_ **RazioNalnik**, Entgrenzte Grenzen Graz, Josep Klammer, Seppo Gruendler, Gabor Pesser (Budapest), Lado Jaksa (Ljubljana), De Carli Claudio (Trento) (Telematic concert between three European cities, Graz, Ljubljana, Budapest. Razionalnik added the phenomenon of telepresence ot the exchange models of simultaneously produced and networked art. Razionalnik was initiated, organized, and programmed by Seppo Gruendler and Josef Klammer in Graz with partners in Budapest (Gabor Plessler), Ljubljana (Lado Jaksa) and Trento (Claudio Carli). "Acoustic couplers, samplers (digital storage of nature sounds), synthesizers, personal computers and the international telephone network are the means to connect musicians from different countries. These connections make it possible to realize a concert, whose musicians are not in the same space, but realize a collaborative concert from different countries. They use instruments, which are not producing sounds, but so-called MIDI data. These data are either transformed into sounds by sound modules, or they are converted by computers and acoustic couplers into data which can be transmitted via telephone. At the other end of the line these data are again rendered into MIDI data and after that into sounds. The sound material used consists on the one hand of sampled sound quotations, and on the other hand of traditional synthesizer sounds, produced by all the musicians. The result can be heard live, in Graz as well as in all the participating locations. Due to the data delays, not one of the locations will offer the same sounds simultaneously. In Graz, the computers will additionnaly manipulate the MIDI data according to certain algorithms, i.e., the computers not only are converting data, but also take on an important role in the structuring of the concert. Each participant, by his personal choice of sounds, is granted the possibility to render the concert at his local site into a very special version by transforming his own or the MIDI data received from Graz [Richard Kriesche, excerpt of the Entgrenzte Grenzen catalog]. As it turned out, Carli, in Trento, was not able to participate because of a strike of the Italian post office. Before the event, Gruendler and Klammer, who sometimes called themselves "media-musicians" in analogy to the "media-artists" with whom they frequently collaborated, were obliged to travel to all the locations of Razionalnik to personally brief the participants "due to the newness of the technology ... Because of the Coordinating Committee for Multilateral Export Controls (COCOM) list - which prohibited the import of computers into the East - we also had to smuggle acoustic couplers (300 baud) into Hungary ... as PTO-approved (Post and Telecommunications, Austria) modems were prohibitively expensive in Austria we smuggled German parts into Austria". From these parts the artists built the modems (1200 baud) for their Commodore C64 computers in Graz. The program to convert the modem data into MIDI was written by Gruendler. during the event, "the slow data rate led to big delays, e.g., a chord would turn into a melody; there were great difficulties in keeping the lines up, we had to redial several time. Most people (in the audience at the Kuenstlerhaus in Graz) believed that we were playing in analogue via telephone." [Heidi Grundmann]) <http://www.kunstradio.at/SPECIAL/XR/razionalnik.html>

- 1987 \_\_ **Satellite Soundbridge Cologne/San Francisco**, Bill Fontana (Live duet via satellite of environmental sounds from San Francisco and Cologne. In 1987 the first satellite bridge in the history of radio was produced with two sound sculptures: Soundbridge Köln - San Francisco. The «orchestra» consisted of 18 sound sources in the city of Cologne and 18 in San Francisco. Simultaneous events in the two cities, parallel but completely independent of one another, were brought together and mixed into a collage by Bill fontana from a mixing board at the WDR, producing the live composition, Satellite Soundbridge Köln - San Francisco. For an hour the listeners entered into the sound world of two widely separated cities though the medium of Fontana's sound composition. Many listerners have mentioned that this work had a soothing effect which was almost therapeutic in nature. "One example of an art of sound conceived under a Cagean musical conceit is that of the well-publicized work of Bill Fontana, in particular, the recent coordinated radiophonic project SATELLITE SOUNDBRIDGE BETWEEN SAN FRANCISCO AND KÖLN linking the sound sculptures SOUND SCULPTURES THROUGH THE GOLDEN GATE and METROPOLIS KÖLN. I'll say at the outset that the celebration these works have received appears to be attributable to a displaced admiration of a formidable technological apparatus mobilized for the goal of artistic purposes, not attributable to artistic purposes themselves. They would have run less a risk of being mundane and might have been better equipoised with the technology had he not abided by the imposition of musical ideas on the aural environments." [Douglas Kahn - in "The Sound of Music", Ars Electronica 1987]. "The sounds were gathered from the surrounding areas, dominated by "natural" sounds from physical (e.g., river water) and animal (e.g., zoo, offshore wildlife) sources, mechanical sounds (e.g., expansion joints in bridge) and non-discursive human sounds (pedestrian sounds). These were presented under a Duchamp-inspired ploy of "found objects," without very much alteration and were organized along simple

lines of simultaneity. In the iconography of the work, the Köln Cathedral and the Golden Gate Bridge functioned, in their respective areas, as architectural loci, symbolic antennae, around and within which sounds were gathered and distributed. They also functioned as fixed sites, monuments and monumental scale, sculptural solidity in the absence of any provided by the displaced aurality. Other reductive operations at work, besides the musical conceit proper, include: the status of "sculpture" applied to communicative and social processes, the naturalization of urban realities through the figure of "landscape," the artworld rhetorical currency of "sound object" without the institutional and discursive critiques originally attendant upon Duchamp's usage, exhuming the cubist/orphic notion of "simultaneity" to dignify basically mundane contemporary experiences of telephonic or radiophonic displacement or "relocation," the modernist media arts idea of a technology's proper perceptual object, psycho-acoustics as the scientific surrogate for the socio-cultural aspect of sound, etc." [Bill Fontana] [http://www.resoundings.org/Pages/musical\\_resource.html](http://www.resoundings.org/Pages/musical_resource.html)

- 1987 \_\_ **Simple Degradation**, The Hub, Mark Trayle ("Trayle's Simple Degradation exemplified the idea of using the hub's common memory to contain information that all players used to directly control the sound output of their systems. Its interactive architecture was one way : Mark conducted the ensemble electronically by feeding information to the hub that governed the behavior of all the players. At the same time, as in most Hub Pieces, the instructions specified only one aspect of the sound each player could produce, in this case the moment-to-moment volume : "One performer generates and processes a waveform, simulating the response of a plucked string. This waveform is then broadcast on the computer network, the other performers using it for amplitude modulation (loudness variation). The rate at which the waveform is played back by the performers is determined by the performer who generated the waveform. The performers are free to choose whatever timbres and pitches they wish. The waveform may only change after one complete cycle of waveform". Such a simple idea was a great place to start. When a new interactive musical instrument (like the Hub itself) comes to life, it makes good practical sense to start by creating a piece for it that demonstrates both that the concept is working technically, and that it can provide new musical resources. The key to the success of this piece was that it provided a simple constraint that defined its musical character while leaving everything else open for each musician to determine. This established a character for the band: while our individual computers are machines which slavishly wish only to follow instructions, and the network is a means by which multiple machines may co-ordinate this behavior, we as players remain free to voice their behavior individually, both ahead-of-time in the way we program them to follow the specification of the piece, and in real musical time, by providing them with interactive controls that allow us to adjust them as they play. In Simple Degradation, only one musical parameter is constrained. Not only are the players freely improvising their choice of pitch and timbre (though only one pitch per waveform cycle is allowed), but the timing of when they begin to play is open: this produces a music that is canonic, rather than monophonic. And although Mark (who always produced the waveform) provided the materials that controlled the shape of everyone's amplitude thus controlling the shape of phrases and the form of the piece, the moment-to-moment mix of amplitudes resulted from timing choices made by each individual player. [Chris Brown]) [http://crossfade.walkerart.org/brownbischoff/hub\\_texts/simple\\_deg.html](http://crossfade.walkerart.org/brownbischoff/hub_texts/simple_deg.html)

- 1987 \_\_ **Snowball Project**, DAX Group (at the Cafe New York, Documenta 8, Kassel Germany, June 20. A text/file telematic event using the I.P. Sharp network between the Canadian art centers, the Banff Centre For the Performing Arts, Western Front in Vancouver. The American groups led by Dana Moser in Boston at the Massachusetts College of Art, and the DAX Group, Carnegie Mellon University.) [http://www.digitalartexchange.net/e/txt\\_11.html](http://www.digitalartexchange.net/e/txt_11.html)

- 1987 \_\_ **Sound Sculptures through the Golden Gate**, Bill Fontana (Live duet between the Farallon Islands National Wildlife Refuge and the Golden Gate Bridge, thus combining natural and urban based sound sources. "One of the Acoustical Views, entitled Sound Sculpture through the Golden Gate, conducted the simultaneous mix of natural sounds with engineered sounds and urban noise through the placement of recording instruments twenty-eight miles off the coast of San Francisco on the Farallon Islands, as well as several locations along the span of the Golden Gate Bridge. Fontana's sound mapping of the ocean environment connected a hydrophone - a marine microphone used to convert underwater sound waves to electrical energy - and a set of outdoor microphones at each site to live telephone lines installed at various points at the two locations. The audible surge of tides against land, calls of sea mammals and birds, mixed with the mechanical creaks and pops of expansion joints, cable and wind, fog horns, and the roar of bridge traffic linking the two environments were then aurally relocated seven miles inland via telephone lines to loud speakers to a public square in the San Francisco Civic Center. Fontana explains that his instrumentation of architectural forms and field recordings musically deconstructs our normal sense of telling time. The enlivening of sound generating qualities of solid forms and materials through technical means is particularly significant at a time people prefer not to listen due to the audible interference and distraction technology produces. John Cage stated that all technology must move in its evolution toward the way things were before man changed them." [Robert Riley]) [http://www.resoundings.org/Pages/Urban\\_Sound\\_Sculpture.html](http://www.resoundings.org/Pages/Urban_Sound_Sculpture.html)

- 1987 \_\_ **Thaon / New York**, Stephan Barron (Satellite audiotransmission and slow-scan TV between the medieval church of Thaon in Normandy, France, and the Cloisters in New York City - June 1987) (Thaon / New York réalisée en 1987, est une transmission par satellite audio (Satellite cable telephone) et télévision lente (slow scan TV) entre l'église médiévale de Thaon en Normandie et les Cloîtres (Cloisters) de New York. Le but de ce projet était de réactiver les Cloîtres américains emportés pierre par

*pierre à New York, par la transmission via satellite d'un "supplément d'âme" à partir de l'église médiévale de Thaon. Cette installation planétaire voulait confronter deux lieux chargés émotionnellement : le Bronx, et l'église isolée au fond d'un vallon, et ainsi créer une collision de deux univers, celui du nouveau monde et de la ville de New York, celui de l'ancien monde et de la nature.)*  
[http://stephan.barron.free.fr/technoromantisme/barron\\_projects.html](http://stephan.barron.free.fr/technoromantisme/barron_projects.html)

- 1987 \_\_ **Tucker-Boatwright Festival: The Tri-city Interaction, and the Magical Dax 3**, DAX Group (March 9-11. Sponsored by the University Richmond. "...Tri-city" was part of a three day event consisting of a slowscan television workshop, lecture, and panel participation by Bruce Breland, director of the DAX Group. This activity culminated in a simultaneous three City slowscan television exchange between: Richmond, Virginia, Boston, Massachusetts, and Pittsburgh, Pennsylvania.) [http://www.digitalartexchange.net/e/txt\\_11.html](http://www.digitalartexchange.net/e/txt_11.html)

- 1987 \_\_ **Vague Notions of Lost Textures**, The Hub, Scott Graham-Lancaster (In "Vague Notions of Lost Textures", each player wrote text messages to his own data area in the hub and could read all other players' data areas, scanning for new messages. The topic of conversation in this primitive chat room was the coordination of the improvised music around a formal shape : a simple ramp of increasing note density, timbral brightness, and amplitude that peaked around 80 percent of the prearranged duration of the piece, followed by a smooth return of texture of low density, brightness, and amplitude, where the music stopped. Chats kept track of the progress of the band through this shape and were often used to describe the character of the music that resulted, providing a running commentary on how the performance was going. During the band's New York premiere, the audience was free to wander around, observing the band's evaluation of its own performance on the computer screens of the band's members" [Chris Brown])

- 1987 \_\_ **Video Crossing-Magical Dax**, DAX Group (September 17. A telematic art event with the Institute for Art and Technology in the Museum of Image and Sound at the University of Sao Paulo, Brazil. This was the first time DAX employed live professional musicians and a dancer: Roger Dannenberg, Chris Koenigsberg, Carnegie Mellon University, and Scott Timm of the Pittsburgh Alloy dance company. Images were transmitted by slowscan television.) [http://www.digitalartexchange.net/e/txt\\_11.html](http://www.digitalartexchange.net/e/txt_11.html)

- 1987 \_\_ « **The Virtual Community : Homesteading on the Electronic Frontier** », Howard Rheingold (It was the first book on the Internet that was neither technical nor a practical manual. The author discussed at length The Well and his own experience as a newsgroup user and host. He also presented other electronic communities such as Arpanet. Through his account he constructed a representation of the Net in which virtual communities brought together people from all corners of the globe, many of whom remained attached to their locality. These individuals developed conversations that were as intellectually and emotionally rich as those in real life, in a world of balanced interaction between equals. The Net was presented as helping to recreate a social link and to breathe life into public debate and, more generally, into democratic life. Howard Rheingold is the authority on virtual communities. His book "The Virtual Community" was the first ever to deal with the phenomenon of social communications in cyberspace when it was published in 1993. His forthcoming book, "Smart Mobs – the next social revolution", was published in October 2002 and focuses on the emergence of mobile communities. Rheingold gives an insight into how the mobilization of communication leads to the formation of new kinds of communities. Social revolutions follow communications revolutions. "I studied, described, participated in, and created some of the first virtual communities on the landlocked Internet of the 1980s and 1990s, so I knew that new social forums were certain to emerge when the many-to-many multimedia capabilities of the Web started to escape the desktop and go mobile. During the past two years, I visited communication hotspots around the world in pursuit of the social phenomenon I call "smart mobs," the subject of my forthcoming book. In Tokyo and Helsinki, Stockholm and New York City, I watched the first generation of mobile virtual communities emerge. Some of the groups and businesses I observed on my travels provide clues to the kinds of communities that might grow out of mobile communications and pervasive computing: A group of young Finns have opened a social club in the middle of downtown Helsinki that combines physical location, virtual community, and mobile text messaging. They call it "Aula, an urban living room for the network society.". Virtual communities are: 1/ Organized around affinities, shared interests, bringing together people who did not necessarily know each other before meeting online. 2/ Many to many media. Unlike few to many (broadcast) or one to one (traditional telephony) media, virtual communities enable many people to communicate with many others. 3/ Text-based, evolving into text plus graphics-based communications. Web-based media bring inline graphics, animations, video, sounds, formatted text, links into text-based conversation. 4/ Relatively uncoupled from face to face social life in geographic communities. People communicating worldwide about shared interests very often do not live close enough to meet regularly face to face. Mobile communications are: 1/ Organized around known social networks – people call and send messages to people they already know. Most of the time, you communicate with people who are already in your address book. 2/ Accessible anywhere, anytime, always on. The Internet, and all it affords, is no longer tied to the desktop computer and wired network, but has diffused to every place a mobile telephone can be carried. 3/ Text-based evolving to text and sound and graphics-based communications. Cameras and telephones are merging. 4/ Closely coupled to the behaviour of people in physical space, and have strong effects on how small social groups coordinate activities in local communities. Mobile virtual communities are: 1/ Many to many, desktop and mobile, always on – virtual communities and the resources of the Internet are instantly available to people and their software agents wherever people are

located. 2/ Used to coordinate actions of groups in geographic space – teenagers swarm in shopping centres, young adults club-hop, activists mobilize on the street. Although special circumstances can mobilize large groups, most mobile communities consist of small groups of 4-8 close friends or associates. 3/ Game environments, social arenas, artistic media, business.tools, political weapons – like other virtual community media mobile virtual communities start with young people as means for entertainment and light social interaction, then spread to other institutions.” <http://www.rheingold.com/vc/book/>

- **1987 \_\_ Wasserkorso, Waterworks** (1989), Alvin Curran (“I have often described my ship-horn concerts to those who have never heard one, as if a jazz Big-Band of Dinosaurs were playing playing on colossal sized saxophones each tuned to one random low tone. A number of these concerts took place on three continents ( in Amsterdam, Kiel, La Spezia, Philadelphia and Sydney Harbors) culminating in two works where large ship horns were transported and installed by themselves, far from the sea. In 1987 I was commissioned by the City of Berlin for its 750th anniversary to compose a piece for large ship horns on installed on the banks of the Tegelsee - WASSERKORSO. Using 11 large horns from the Zoellner Co. in Kiel, I wrote a normally notated score which was then translated into a computer language in order to play these horns automatically - a cumbersome engineering feat but one allowing remarkable precision. For WATERWORKS, the same technique was used in Linz, as the final (KlangWolke) concert of Ars Electronica '89 but this time using 22 ship horns - 11 installed on the roof of the Brucknerhaus and played manually by students, and 11 (computer controlled) placed along a kilometer of river bank, opposite the Brucknerhaus. To this gigantic sound machine were added a brass choir, tapes of roaring lions and the sky-drum fire works of Pierre-Alain Hubert. It was certainly the largest physical space I'd ever worked in and one which was audible for kilometers in every direction. The entire city of Linz heard this concert without ever having to enter a concert hall. People were heard to say that they thought we were celebrating the end of a war.” [Alvin Curran - Published, in German, in Positionen, issue 42 (“Orte”), February 2000]) <http://www.alvincurran.com/writings/out%20of%20place.html>

- **1987 \_\_ « What is a Fax art installation ? »**, György Galántai ( ...) 3. It is an exhibit that consists of simultaneous events occurring in real time in which the interactive communication becomes the artwork as it is transmitted to a collection site. (...) 5. It is an installation in a state of flux where form and content develop over a period of time as new fax material is submitted in a tele-meeting between faxers. Signals are emitted into the world for others to find a resonance with their own particular concerns and work, by means of chance and juxtaposition. 6. It is an exhibit where individual fax pieces may not be striking aesthetically but are the “connecting tissue” that presents a whole world view, with the whole being more important than the parts. 7. It is an event that intermingles human presence with space and time, where creative people meet in data space “between presence and absence”. (...) 9. It is an event where the aesthetics are in the interactions between faxers, since the art objects and artists are absent. 10. It unites creative individuals of an emerging worldwide telematic culture who use current technology in pursuit of a collective imagination. 11. It links multiple authors and artists who become part of a network and cooperate to change and transform the images, as well as presenting multiple views of a selected theme. 12. It presents the aesthetics of communication as a kind of intellectual spirituality for a shared aesthetic consciousness. 13. It presents a tele-art piece that can be described as a living being flowing in the telecommunications space (Carlos Fadon Vicente, Sao Paulo, Brazil). 14. It presents fax art as a mass produced uniqueness! [http://www.digitalartexchange.net/e/txt\\_10.html](http://www.digitalartexchange.net/e/txt_10.html)

- **1987 \_\_ World Broadcast Premier**, Jim Horton, Sam Ashley and Ben Azarm (“WORLD BROADCAST PREMIER! Listen to drive-by electronic music. 87.9 on your FM dial. 4:00-8:00pm, December 10, 11, 17, 18. Channing Way between Milvia and M. L. King.” The piece was by Jim Horton, Sam Ashley and Ben Azarm. Horton’s computer music system was plugged into a FM transmitter built from a kit by Ashley and Azarm. The antenna was spread on Horton’s Channing Way studio floor. The continuously playing, Forth based, highly interactive, automatic music composition/program was written by Horton and later was modified and augmented for the Clouid/Key/Horton collaboration “Music for Keyboard and Interactive Computer System 1-6” (Aug 1988). The sixteen hours of music were structured by playing all 100 scales in Tim Perkis’ TuneUp scale collection, the files of which were integrated into the Forth program. That’s an average of 9 min 36 sec per scale. A log was kept and signed. Besides Jim, Ben and Sam, John Bischoff and Paul DeMarinis also took turns at playing the system. Several cars (including Scot Gresham-Lancaster and possibly the landlady Helen Corbett) drove by with the music blasting away on their radios. Someone walked by with a Boombox and several cars (including Larry Polansky) parked for a while. Neighbors called in with reception reports.) <http://www.o-art.org/history/LongDur/JimHorton/jh-music4.html>

- **1987 \_\_ Yamaha Disklavier** (The Disklavier is essentially a player piano that uses electro-mechanical solenoids and optical sensors connected to LEDs that allow it to play notes and use the pedals independent of any human operator. It can store data, such as a performance played on it by a human pianist, and replay it accurately. Disklaviers also have inputs for data from MIDI and from several storage devices including floppy disks, CD-ROM, serial cables, and USB.)

- **1987 \_\_ Zero Chat Chat**: John Bischoff, Tim Perkis, Mark Trayle (The KIM-based Hub had four UARTS to allow four players to network using 300 BAUD serial connections. Perkis and Bischoff also used the Kim-Hub in a trio with Mark Trayle called “Zero

Chat Chat".)

**1988**

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- **1988 \_\_ Internet** (The upgrade of the NSFNET backbone to T1 completes and the Internet starts to become more international with the connection of Canada, Denmark, Finland, France, Iceland, Norway and Sweden. In the US more regionals spring up - Los Nettos and CERFnet both in California. In addition, Fidonet, a popular traditional bulletin board system (BBS) joins the net. The Morris WORM burrows on the Internet into 6,000 of the 60,000 hosts now on the network. This is the first worm experience and DARPA forms the Computer Emergency Response Team (CERT) to deal with future such incidents.)

- **1988 \_\_ 100 of the World's Most Beautiful Melodies**, Nicolas Collins (After Devil's Music, Nic's interest moved into a new area of music: improvisation. He wanted to retain the 'live sampling' element that Devil's Music had used, but somehow to combine it with a 'real instrument' to allow the music to be more of a performance. The results was the MIDI-trombone, the shell of a real trombone fitted out with a multitude of electronic devices. Sensors in the slide, the mouthpiece and on a finger-operated control panel are used to control a connected sampler. As far as providing a flexible real-time control system for sampling, it looks bizarre, but it works. "It turned out to be a very fortuitous instrument for improvisation, and 100 of the World's Most Beautiful Melodies was recorded in the first years of this instrument's existence. It really amazed me how open the improvised music scene was. These people would respond to a phone call or a conversation at a concert by a guy who they may have met once before in their life, and they'd truck their stuff over to my house, and they'd set up and we'd play, and have a wonderful time. Unlike any other sector of the music business, the openness of those people to experimentation was really quite astonishing. The only ground rules for the record were that stuff was supposed to be very short. With every musician I asked them to do a couple of specific sounds, mostly to do with playing very high, because the nature of the trombone was that it generated all these side-bands on high frequencies." The album consists of short improvised duets between Collins and fifteen other performers (John Zorn, Elliott Sharp, Robert Poss, Christian Marclay, Tom Cora, Shelley Hirsch etc). The guests generally stick to their acknowledged speciality, while Collins showcases the ability of his electronic trombone to sample his guest in real-time, loop back the results and modify it as desired. Not everything works well, some pieces sounding more like musical sketches than finished music, but some of the results are indeed beautiful, and on several pieces (e.g. with Zorn), the improvisations shine. "Even the solo pieces that I've been doing for the last few years don't have very sophisticated computer programs or processes in them. They're much more active from a performance standpoint. I had this little ensemble with Robert Poss, my wife Susan Tallman, and Susan Lyall, which was an ensemble of backwards guitars, where instead of using your right-hand to strum, you'd use your right-hand to trigger all these different sounds into the instruments. I had a few different pieces for various configurations of that group. It wasn't until after 100 Melodies that I started to work with bringing players of normal instruments into non-improvised pieces, it was sort of a watershed for me." A "backwards guitar" employs an ordinary electric guitar, where the electromagnetic pickups are used to "drive" the strings, translating sonic input back into string vibration. The result is most often a shimmering sound, retaining the rhythmic qualities of the source material, but tonally completely altered. On Collins's side of the split Inverse Guitars tape, the resulting recordings mix the original sound source (for example, a baby's voice or a computer-looped Ron Reagan speech) alongside the delicate rippling sounds that the guitar produces. The technique is inspiringly simple, the results straightforward and effective. One track, Like A Falling Stone, ditches the inverse guitar in favour of a battery of electronically-controlled distortion devices applied to Poss' guitar; try to imagine a rock soloist trying to cope with 2001's HAL at the mixing desk controls [Brian Duguid]. "From found sound material I branched out to "found musicians." 100 of the World's Most Beautiful Melodies features my "trombone propelled electronics:" a home-made hybrid of digital and acoustic technology that is an "instrument with no voice," designed for live sampling and signal processing. On stage I am mute until another musician starts to play, at which point I can catch, extend and modify a few seconds of his or her sound into several minutes of variations. This instrument put the brakes on improvised music, which I had hitherto shunned for (among other things) having too many notes. All my music can probably be generalized by my wife's withering critique of the field of sociology: "an insightful look into the obvious." From my early compositional paralysis under the spell of Cage, I have spent most of my musical career slowing down and revealing the details of fleeting sonic events, in pursuit perhaps of the question of "what exactly makes any sound a musical sound?" [Nicolas Collins] <http://media.hyperreal.org/zines/est/intervs/collins.html>

- **1988 \_\_ Acoustical Views**, Bill Fontana (Monumentally-scaled sound relocation projects. "While the notion of noise today implies a disturbance that reduces the clarity of a recorded signal or electronic information, the distraction perpetuated by random iterations of noisy sound fragments in social space punctuate what Fontana would call the acoustically viewed environment. Fontana realized a series of monumentally-scaled sound relocation projects over a period of twenty years collectively titled Acoustical Views. This series of sound sculptures commissioned for Venice, Kyoto, Paris and other locations over the past few years, stresses the range of sound vibration in natural environments as related to the intensity of light, and observes the perception and conundrum of time

through the mapping of sound. As a series of installations *Acoustical Views* also charts the evolution of technical instruments in digital and analogue sound recording in their development and articulation. One of the *Acoustical Views*, entitled *Sound Sculpture through the Golden Gate*, conducted the simultaneous mix of natural sounds with engineered sounds and urban noise through the placement of recording instruments twenty-eight miles off the coast of San Francisco on the Farallon Islands, as well as several locations along the span of the Golden Gate Bridge.” [Robert Riley] [http://www.resoundings.org/Pages/Bill\\_Fontana\\_Speeds\\_of\\_T.htm](http://www.resoundings.org/Pages/Bill_Fontana_Speeds_of_T.htm)

- **1988** \_\_ *Berlin / Pékin*, Stephan Barron (7 televisions showing images from the Berlin Wall and Berliners facing at 7 televisions showing images from China and the Great Wall) (Berlin / Pékin est une installation vidéo qui devait être réalisée en 1988. Dans cette installation, sept téléviseurs montrant des images du Mur de Berlin et des berlinois et sept téléviseurs montrant des images de la Chine et de la Grande Muraille se font face. Au début de l'exposition, cette pièce doit être "activée". Un texte est lu par téléphone de Pékin par un Chinois. Un texte est lu par téléphone de Berlin par une Allemande. Les deux voix se mêlent dans le lieu de l'exposition. Le but de ce projet est de mettre en place un lien symbolique et imaginaire entre la Muraille de Chine et le Mur de Berlin. Le mur, limite spatiale entre les hommes, est un symbole de l'enfermement et de l'isolement. Confronter dans un même lieu (le lieu de l'exposition) ces deux murs-symboles, distants dans le temps et dans l'espace, c'est mettre en question la validité de toute barrière entre les hommes. C'est aussi mettre en question les propres limites et cloisonnements de notre pensée. En 1988, cette installation est refusée par le Ministère de la Culture, et ne peut être réalisée faute d'argent. En 1989, le mur de Berlin disparaît. En 1994, la revendication de liberté des étudiants chinois est réprimée dans le sang.) [http://stephan.barron.free.fr/technoromantisme/barron\\_projets.html](http://stephan.barron.free.fr/technoromantisme/barron_projets.html)

- **1988** \_\_ *Big Sky Telegraph*, Dave Hughes (The Big Sky Telegraph, 1988-1999, was one of the first rural networks to offer online courses in the world and was cited for excellence, and providing a model for the future by four congressional reports and the 1992 White House NII (National Information Infrastructure) report. Its growth became inseparable from the online life of the small communities from whence it sprang. It insured that they would not remain on the other side of the 'digital divide.' It has become part of the history, legend, and literature about Community Networking and has inspired and informed many other networking efforts, from Alaska to Texas. While the technology has changed many times, the vision behind the Big Sky Telegraph has yet to be fully realized, even with today's technology. Its model still needs to be disseminated widely. Perhaps West Point recognition of Dave Hughes contribution to it will help its spread. It is still a valid vision, being centered more on communicating the values and purposes of being connected, while preserving the unique and valuable characteristics of American communities, than just the technical methods used to connect them up. In 1989, Dave Hughes held a workshop where we showed Native American youth from five Montana reservations how to create computer art graphics for online display. This preceded the WWW. We were challenged by visions of cultural art as "share-art," (Dave's idea) similar to shareware, as a culturally supportive economic activity. Also, in 1989, half-a-dozen remote Montanan and Wyoming rural schools had high school students being taught credit courses in the Math and Physics of Chaos by Dr. George Johnston from the Plasma Fusion Center of MIT, through Big Sky Telegraph in Montana, with Dave Hughes providing technical links through his systems in Colorado, and offering his ever-present advice to all. Text-only, at 1200 baud, with \$18/hour long distance phone tolls via Apple IIs, but it worked wonderfully! Proving once and for all that the best teachers in the world can teach the best students in the world no matter where they are in geographical relationship to each other. Over the ten years of directing the Big Sky Telegraph network, which offered free self-directed lessons on how to get online to learn and communicate with others, many of the rural teachers thought everyone was getting online, and did their best to access and share resources. Over 700 lessonplans were collected from these rural teachers through a project with the Columbia Education Center involving teachers in 19 states, and Finland. These lesson plans became the first lesson plan collection to go on the Internet, sponsored by the U.S. Dept. of Education.) <http://www.west-point.org/academy/dgrad/Sky.html>

- **1988** \_\_ *Caged Beast*, Erik Samakh (A computer manages animal sounds according to the public's presence.) <http://www.documentsdartistes.org/artistes/samakh/repro10.html>

- **1988** \_\_ *Crystal Psalms*, Alvin Curran (In October 1988 I expanded this form in CRYSTAL PSALMS to include some 300 musicians from 6 European nations broadcasting from 7 cities - Copenhagen, Hilversum, Paris, Berlin, Frankfurt, Vienna, Rome in a work which commemorated the 50th anniversary of the infamous Reichskristallnacht. This 53 minute work infused with the sounds of Jewish life created a complex layer of places, memories, cities, forgotten people, extending from Yemenite Jews praying at the Wailing Wall in Jerusalem to the brutal sounds of broken glass in some unidentifiable radio studio in Europe. What place is that? Where history and horror and the musical arts meet in one electronic audio mixer and broadcast grid. What is the possible locus of such sounding chaos? At what point does natural sound lose its powers of evocation and memory and become pure sonic energy, unambiguous abstraction? Or is radio still and only our modern bard of - simply our mythical story teller who recites the words, songs and noises of the ancient tales over and over, then moves on to the next place? In short, is pure abstraction at all possible through the medium of Radio? These were some of the questions I asked myself during this emotionally exhausting creative process. [Alvin Curran - Published, in German, in Positionen, issue 42 ("Orte"), February 2000]. In his 1988 piece *Crystal Psalms*, Alvin

Curran uses the powerful spiritual nature of music to commemorate the 50th anniversary of Kristallnacht, the "Night of Broken Glass," which was the first major attack on German Jews. After two nights of so-called "spontaneous" rampages, thousands of Jewish businesses, synagogues, and homes were looted and burned, hundreds of Jews were injured, almost one hundred people were killed, and thirty thousand people were deported. Curran writes about Crystal Psalms: "By focusing on this almost incomprehensible moment in our recent history, I do not intend to offer yet another lesson on the Holocaust, but simply wish to make clear a personal musical statement and to solicit a conscious act of remembrance -- remembering not only this moment of unparalleled human madness of fifty years ago, but of all crimes against humanity anywhere anytime." Curran's vision for this piece required international participation. On October 20, 1988, much of western Europe heard what was to become a legend in radio history -- a concerto for musicians in six nations, simultaneously performed, mixed and broadcast live in stereo to an audience that spanned from Palermo to Helsinki. Some 300 musicians and technicians collaborated to bring the piece to fruition, with a chorus, a quartet of strings or winds, a percussionist, and an accordionist present in each of the six locations. In addition, Curran used pre-recorded sounds (including Yememite Jews praying at the Western "Wailing" Wall, famous Eastern European cantors taken from old sound archives, and Curran's young niece singing her Bat Mizvah) as an accompaniment to the live performance. Ship horns, trains, crows, and breaking glass also add to the texture of Crystal Psalms. The somber music and startling, explosive samples combine to create multilayered and deeply moving music that allows the listener to remember and pay homage to the atrocity of Kristallnacht. [Jeanne Acceturo] <http://www.alvincurran.com/writings/out%20of%20place.html>

- 1988 \_\_ « **Design and Immateriality: What of It in a Post Industrial Society?** », Abraham Moles, pp. 25-32. In *Design Issues*, Vol. 4, No. 1-2 - Special Issue 1988- (Discussing the new cultural and aesthetic conditions of a society that increasingly manipulates more information than objects, Abraham A. Moles states that the human spirit is now having to adjust to this new situation in which images and reality become more and more identified with one another. I find this to be nowhere more patent, in terms of applied technology, than in new virtual reality systems under development by NASA that allow a person immersed in cyberspace to mediate force at a distance. In this case, the operator or user acts or performs at the level of reality and virtuality simultaneously. "As we enter the age of telepresence," writes Moles, "we seek to establish an equivalence between "actual presence" and "vicarious presence." This vicarious presence is destroying the organizing principle upon which our society has, until now, been constructed. We have called this principle the law of proximity: what is close is more important, true, or concrete than what is far away, smaller, and more difficult to access (all other factors being equal). We are aspiring, henceforth, to a way of life in which the distance between us and objects is becoming irrelevant to our realm of consciousness. In this respect, telepresence also signifies a feeling of equidistance of everyone from everyone else, and from each of us to any world event." [Eduardo Kac])

- 1988 \_\_ **Electronic Café International**, Kit Galloway & Sherrie Rabinowitz ( After the opening of the original Electronic Café Network in 1984 we felt that we had reached "the limits of models." All of our previous work begged to be developed. The next step was "community," a permanent multimedia collaborative public network. In 1988 ECI opened with its first international link with Paris. -- ECI creates a networked lab, to support collaboration and co-creation between people in different cultures, countries and language groups. ECI is about Creative Integration -- technically, socially, and artistically. ECI operates simultaneously and interactively on many levels. All of these Highlights have some off-line video recorded and, in some cases site documentation, paper documents, drawings, and photos. Many Highlights were technological firsts and many of them represent different collaborations with various hardware and software vendors. They represent original telecollaborative projects, many of these original projects and series, for example the Tele-PoetryNet, have spun-off autonomous projects. This body of work has always been about the multitudes of creative ways and contexts in which people can come together to cultivate new ways of collaborating together across distance and divides both technical and cultural. It's about the quality of the "actual human-to-human experience," not the post-mortem, or an exhibit, or traveling installation. It's been about a way of life inseparable from the collaborations of friends, fellow travelers, and constituencies defined by ideas not geography. Each of the events and activities over the years at ECI have opened up new opportunities for pioneering, development and cultivating telecollaborative art genres like Tele-Poetry, and The Musical Conversation between globally dispersed performers work quite well using both internet-based and non-internet broadband and narrowband technologies. In the ongoing Global Tele-Arts-Lab spirit cultivated across the ECI-Network of Friends & Affiliates, multiple-media telecollaborative performances and activities incorporate the visions of several geographically dispersed collaborating artists and activists. ECI-Network patrons participate in venues around the world and often have an important role in completing the work, or are the in fact the nature of the telecollaborative work/event. Philosophically, the ECI concept, context, and content has been about the creation of a virtual social commons where the convergence of intimate terminal space, public space, and virtual space comes together as an experience. Analog telephone lines, digital ISDN lines, and Internet networking capabilities are often used in concert to create hybrid multimedia networks not available from any one service provider, thus enabling us to model emerging telecom environments years before they are alleged to arrive in our homes. As of 1997, all of the public ECI events and activities are video & audio cybercast (Streamed live over the internet), using a JAVA-based technology requiring no plug-ins to view, thanks to our strategic partner, Graham Technologies Solutions, Inc. Over the years ECI-HQ, Santa Monica has used all types of broadband communications services to provide its connectivity - T1 lines have been installed and taken down as needed for special projects requiring full-motion video. In the early '90, ECI-HQ, Santa Monica was the first to have official ISDN service lines installed in the

city thanks to the efforts of Byron Wagner (also our free ISP). The VRML-ECI, and Multi-user VRML-ECI was made possible by Pascal Baudar of the LAVUG & Cybertown.com. Tod Foley and the artists at Hands of Time Productions created ECI's Palace site. ECI-HQ is a physical place, however several online virtual version of ECI-HQ have come into existence over the years. Some have been 2D multiuser environments, and a few architecturally exact 3D versions enabling event planners and telecollaborators to both get a "feel" for the place, and to lay-out plans to fit the space. Pictured is a group shot of the LA-VRML SIG community that sponsored and created the ECI VRML Barn Raising in the summer of 1997.) <http://www.ecafe.com/museum/history/ksoverview2.html>

- 1988 \_\_ *Une Excursion de l'Esprit: une Voyage sur la Mer Telematique, Mind Excursion-Travelling Through the Telematic Sea: An Interactive Art Event*, DAX Group (July 16. Slowscan interactive television with representatives from 20 Francophone African countries, and Haiti attending the 10th anniversary session of the Francophone Development Management Seminar. Hosted by the University of Pittsburgh's International Development Institute held on the Oakland campus. The DAX Group participants were Robert Dunn, Matthew Wrbican, Philip Rostek, and Bruce Breland. The exchange took place between the University of Pittsburgh and the DAX Group studios located in the College of Fine Arts at Carnegie Mellon University.) [http://www.digitalartexchange.net/e/txt\\_11.html](http://www.digitalartexchange.net/e/txt_11.html)

- 1988 \_\_ « *Extropianism* » (Extropy, coined by Tom Bell (T. O. Morrow) in January 1988, is defined as the extent of a living or organizational system's intelligence, functional order, vitality, energy, life, experience, and capacity and drive for improvement and growth. Extropy expresses a metaphor, rather than serving as a technical term, and so is not simply the hypothetical opposite of Information entropy. Extropianism, also referred to as extropism or extropy, is an evolving framework of values and standards for continuously improving the human condition. Extropians believe that advances in science and technology will some day let people live indefinitely and that humans alive today have a good chance of seeing that day. An extropian may wish to contribute to this goal, e.g by doing research and development or volunteering to test new technology. In 1988, "Extropy: The Journal of Transhumanist Thought" was first published. This brought together thinkers with interests in artificial intelligence, nanotechnology, genetic engineering, life extension, mind uploading, idea futures, robotics, space exploration, memetics, and the politics and economics of transhumanism. In late 2006, Extropy Institute closed. "It's a doctrine of self-transformation, of extremely advanced technology, and of dedicated, immovable optimism. Most of all, it's a philosophy of freedom from limitations of any kind. There hasn't been anything like it - nothing this wild and extravagant, no such overweening confidence in the human prospect - since way back to those bygone ages when people still believed in things like progress, knowledge, and - let's all shout it out, now - Growth! Their gung-ho attitude reflects the success of digital technology, which these days allows us to create - at least in cyberspace - anything conceivable. You can create your own simulated universe if you want to. What's more, you can actually get it right this time: you can start at the bottom and remake things as you'd want them to be, as they should have been made in the first place, perhaps. The Extropians take that same attitude and apply it to the real world: they extrapolate out in every dimension, along every parameter, pushing technology to its outermost limits." [Ed Regis, <http://www.wired.com/wired/archive/2.10/extropians.html>] <http://www.extropy.org>

- 1988 \_\_ *Global Business Network* (In 1988 Stewart Brand, along with futurologists who had worked for Shell and graduates from Stanford Research Institute, formed a forecaster's club which they called the Global Business Network (GBN). This institute sold services to firms and administrations. As one of its clients commented: "the network is a curious blend of scientists, musicians, artists, economists, anthropologists, and information technology gym rats who form a mosaic by which us capitalists can view our business environment and even our company". GBN was thus to act as an interface between the business world and heterodox future scenarios in which information technologies and ecology were to have prime importance. Apart from a small core of permanent members, the institute used a network of experts : Michael Porter, Thomas Malone, Brian Arthur (Economists), Sherry Turkle (Sociologist), Francisco Varela (Cognitician), Peter Gabriel, John Cage (Musicians), William Gibson, Bruce Sterling (Science Fiction), etc.)

- 1988 \_\_ *Intercities: Sao Paulo-Pittsburgh*, DAX Group (January 25. Interactive slowscan television/sound exchange with Sao Paulo, Brazil marking the anniversary of the city's founding. DAX presented images and sound including the co-creation of global icons in which the public in both cities participated. Position papers were exchanged. Pittsburgh participation was called "Floating in a Telematic Sea" by Bruce Breland.) [http://www.digitalartexchange.net/e/txt\\_11.html](http://www.digitalartexchange.net/e/txt_11.html)

- 1988 \_\_ *IRC - Internet Relay Chat* (Internet Relay Chat (IRC) is a form of real-time Internet chat or synchronous conferencing. It is mainly designed for group communication in discussion forums called channels, but also allows one-to-one communication via private message, as well as chat and data transfers via Direct Client-to-Client. IRC was created by Jarkko Oikarinen in late August 1988 to replace a program called MUT (MultiUser talk) on a BBS called OuluBox in Finland. Oikarinen found inspiration in a chat system known as Bitnet Relay, which operated on the BITNET. IRC gained prominence[citation needed] when it was used to report on the Soviet coup attempt of 1991 throughout a media blackout. It was previously used in a similar fashion during the Iraqi invasion. Relevant logs are available from [ibiblio](http://www.ibiblio.org) archive. IRC client software is available for virtually every computer operating

system.) <http://www.irc.org>

- **1988** \_\_ « *La Machine de Vision* » (*The Vision Machine*), Paul Virilio (Paul Virilio addresses such questions as they concern the new social role of the image and telepresence. Suggesting that live transmission of video images over great distances becomes in itself a new kind of place, a "tele-topographic locale," he states that a tele-bridge of sorts, made of sound and image feedback loops, gives origin to telepresence or telereality, of which the notion of real time is the essential expression. This telereality, he says, supersedes in real time the real space of objects and sites. In other words, we now see the continuity of real time overcoming the contiguity of real space. It seems to me that we experience this new condition daily, when we are in the office or studio and activate by remote control our answering machine at home to retrieve recorded messages or when we withdraw money from an automatic teller machine, after interacting with a machine that by its turn communicates with a remote mainframe. The impact of fiberoptics, monitors and video cameras on our vision and on our surroundings will go beyond that of electricity in the nineteenth century: "In order to see," Virilio observes, "we will no longer be satisfied in dissipating the night, the exterior darkness. We will also dissipate time lapses and distances, the exterior itself (Paul Virilio, *L'Inertie Polaire* (Paris: Christian Bourgois, 1990), p.72)." For Virilio, one of the most important aspects of the new technologies of digital imaging and of synthetic vision made possible by optoelectronics is the "fusion/confusion of the factual (or operational) and the virtual," the predominance of the "effect of the real (Paul Virilio, *La Machine de Vision* (Paris: Galilée, 1988), p.128)" over a reality principle. In other words, everything now involves images in one way or another. Not necessarily images in the traditional sense of representation, but images of light that are part of the contemporary landscape as electricity invaded towns in the late nineteenth century, an "electronic lighting." Images now are invasive and they are used by such diverse social groups as artists and the military. The role of the image, Virilio says, is "to be everywhere, to be reality (Interview with Paul Virilio in "The Work of Art in the Electronic Age," Special Issue of *Block*, N. 14 (1988), Middlesex Polytechnic, Hertfordshire (UK), p. 7)." Virilio reminds us that through telepresence, "the inhabitant of telematic places is in the position of a demiurge: to the omnivision of the trans-appearance of things, it is added another divine attribute, i.e., omnipresence from afar, a sort of electromagnetic telekinesis (Virilio, *L'Inertie Polaire*, p. 129. Virilio coined the term "trans-appearance" (p. 108) to indicate that in this age of real-time transmission of sensible appearances it is no longer light alone that lets us see, but its speed. Virilio: "Transparency is not only that of the appearance of objects seen at the instant of the gaze. It suddenly becomes that of appearances transmitted instantaneously over distance; therefore I propose the term TRANS-APPEARANCE of 'real time,' and not only the TRANSPARENCY of the 'real space'." The use of remote surveillance for social control is already rooted in our public space, and now its scrutinizing gaze invades the privacy of the home. [Eduardo Kac] )

- **1988** \_\_ *Making the Invisible Visible*. Directed by Roy Ascott, Paul Thomas (Perth), Eric Gidney (Sydney) (*Telematic image/text exchange between artists at University of Applied Arts, Vienna, Carnegie-Mellon University and University College London: Robert Pepperell (Gand/London), Robert Dunn & Bruce Breland (Pittsburgh), DAX ("Digital Art Exchange", University of Carnegie-Mellon, Pittsburgh), Don Foresta ("Center for Media Art - American Center", Paris), Zelko Wiener. Vienna: Hochschule fuer angewandte Kunst.*)

- **1988** \_ *Matrix*, Jeff Mann, InterAccess ("I worked with InterAccess, a non-profit artist-run centre in Toronto, to establish the world's first public-access UNIX server dedicated to telecommunications art and artists, called Matrix. From 1988-1992 I led the project, including the design and programming of the user interface for the system, which featured international e-mail and Usenet, interactive online artworks, and full-colour graphical pages by artists - six years before the invention of the World Wide Web! [Jeff Mann]) <http://jeffmann.com/Site/works%201987-1994.html>

- **1988** \_\_ *Mountains, Rivers, and Glaciers*, DAX Group (March 20. A telematic celebration of the Spring Equinox between the Center for the Visual Arts of Alaska/Anchorage and DAX in Pittsburgh. Electronic sounds were created by manipulating recorded data of seismic activity collected on the campus of the Virginia Polytechnic University, Blacksburg, the recorded sounds of the New River watershed, the Allegheny River and the Allegheny and Appalachian mountains all layered with Eskimo chants and sounds of aquatic animals.) [http://www.digitalartexchange.net/e/txt\\_11.html](http://www.digitalartexchange.net/e/txt_11.html)

- **1988**\_\_ *The Number Readers*, Joel Ryan (Joel Ryan's *The Number Readers* for live computer-driven electronics, video and spoken text is based on those mysterious shortwave radio transmissions heard mostly in the evening hours of women's voices reading numbers in German, and sometimes Spanish and Czech, with great precision sometimes preceded by electronic chime patterns. No nation or agency has claimed authorship of these broadcasts. Joel observed a middle-aged woman in Amsterdam sitting at the front window of a well-kept old house, who sat with pad and pencil in semi-darkness by an old style model radio; he soon began to realize that there was a "synchrony of the number readers broadcasts with the woman's vigils." Ryan weaves a variety of musical imagery using this central "coding" idea as a stepping-stone: "Codes to protect property," "Julius Caesar's code to confuse the Gauls =  $c + 3\text{Mod}24$ ," "Code as reason contradicting itself," "The Language of Flowers," "Codes you can eat," and many others.) <http://www.steim.org/steim/texts.php?id=3>

- **1988 \_\_ Satellite Symphony: Beethoven and One Woman's Dream**, Francoise Legrand (*In December, 1988, at Montréal's Place des Arts, a little-known French conductor named Françoise Legrand conducted an international all-star symphony, the World Philharmonic Orchestra she had founded, in a very special concert. It was a performance of Beethoven's Ninth Symphony and its great Ode to Joy, incorporating a live satellite broadcast of choirs from Moscow, Geneva and San Francisco [National Film Board of Canada]. Two articles in RISKS 9.26, namely "Man-Machine Failure at 1989 World Rowing Championships", and "An Interesting Answer to the Distributed Time Problem" reminded me of a certain performance of Beethoven's Ninth Symphony on December 12, 1988, in which I sang in the tenor section offstage in Montreal. The National Film Board of Canada has just released a video documentary about this event, entitled "Satellite Symphony --- One Woman's Dream". The dream in question was to conduct an orchestra in Montreal, with choirs in San Mateo, Geneva and Moscow. Unfortunately, as the links between these places were via satellite, there were perceptible delays in satellite transmission, making it difficult to get everyone in sync. One solution tried was to send a cue to the remote choirs ahead of the conductor in Montreal, so that their sound would come back in time with the orchestra. This proved to be unworkable, for the delay required was in terms of milliseconds, and not in terms of beats and fractions thereof. Also the response times of the remote choir conductors and their singers was difficult to assess, and the main conductor might not be at the same tempo from one performance to another. The solution that was finally adopted was to transmit a recording of the dress rehearsal of the previous evening to the remote choirs, ahead of the live sound. With the aid of an earphone, the conductor in Montreal would hear and follow the same recording, with a delay to compensate for the two-way satellite transmission of her cues and the choirs' singing in response. (I'm glossing over the technicality that number of satellite "hops", hence the delay, was different for each choir.) So far, we have seen the master-clocking difficulties. What happened on concert night? Yes, a proverbial loose wire. The conductor's earphone malfunctioned, although the choirs heard the recorded sound by satellite! After a 45-second wait, and a fruitless call for assistance (she couldn't get a reply on the defective earphone without leaving the podium, or having someone come out on stage), she decided to start anyway. Radio Canada technicians sent the live sound to the remote choirs. The end result was that the choirs missed their first entry. Fortunately, the Montreal Symphony's choir was on hand backstage in Montreal as a backup, providing the illusion to the audience that the other choirs had indeed come in. The rest of the choirs managed to come in further on, more or less on time. The resulting sound was, as Spock of Star Trek would say, "Fascinating". [Peter Jones] <http://catless.ncl.ac.uk/Risks/9.27.html>*)

- **1988 \_ « The Sources of Innovation »**, Eric Von Hippel (*User innovation refers to innovations developed by consumers and end users, rather than manufacturers. Eric von Hippel of MIT 'discovered' that most products and services are actually developed by users, who they give ideas to manufacturers. This is because products are developed to meet the widest possible need; when individual users face problems that the majority of consumers do not, they have no choice but to develop their own modifications to existing products, or entirely new products, to solve their issues. Often, user innovators will share their ideas with manufacturers in hopes of having them produce the product, a process called free revealing. In 1986 Eric von Hippel introduced the lead user method that can be used to systematically learn about user innovation in order to apply it in new product development. His definition for lead user is: 1/ Lead users face needs that will be general in a marketplace – but face them months or years before the bulk of that marketplace encounters them, and 2/ Lead users are positioned to benefit significantly by obtaining a solution to those needs. In other words: Lead users are users of a product that currently experience needs still unknown to the public and who also benefit greatly if they obtain a solution to these needs.) <http://web.mit.edu/evhippel/www/>*)

- **1988 \_\_ Les Transinteractifs**, Canadian Cultural Centre Paris, Ontario Science Centre Toronto, Derrick De Kerckhove (*"Transinteractivity is conceived of as a kind of intimacy at a distance, a dialogue of bodies interacting in a virtual tactile space. Many of the performances designed for Les Transinteractifs, a transatlantic colloquium in Paris at the Canadian Cultural Centre and in Toronto at the Ontario Science Centre (OSC) in 1988, emphasized telephatic communication: Christian Sevette's Le toucher transatlantique would have allowed members of both audiences to bring together two pieces of Michelangelo's The Creation of Man in an act of divine inspiration; in Le baiser transatlantique, performance artist Orlan proposed to project on a screen the profiles of two persons from each city, turned toward one another, whose lips would meet in a kiss as they continued to speak French and English respectively" [De Kerckhove and Christian Sevette]. Presented works during the conference : Le ruban de 7253 kilomètres entre Paris et Toronto by Fred Forest; Le toucher Transatlantique by Christian Sevette; Découvrez o Canada by Patrick Lee; Alice by Stéphan Barron; Échange de Neurones entre Paris et Toronto by Philippe Héлары; Apartés by Wolfgang Ziemer-Chrobattzek; La pensée musicale transatlantique by Randy Raine-Reusch; Champs informatiques by Christian Lavigne; Transitercaricatures by Natan Karczmar; Méridiennes by Denise Bertrand; Corps vibratoire by Bure-Soh; L'aube de l'ère nouvelle by Doug Hamburg; La danse transatlantique by David Rockeby; Le mandala by Vincent John Vincent; Satellite Breaks by Muhtadi and Keith Holding; Toparontoris by Jean-Claude Anglade. [Gary Genoskol] <http://www.chass.utoronto.ca/epc/srb/cyber/gen1.html>*)

- **1988 \_\_ Up-down-v?**, Jim Horton (*"Up-down-v?" computer music played over the telephone. « I called a party put on by B. Golden and S. Ashley at Rose street in SF where the receiver was placed on a table and people would occasionally pick it up and listen. ») <http://www.o-art.org/history/LongDur/JimHorton/jh-music4.html>*)

- 1988 \_\_ « *When Old Technologies Were New - Thinking About Electric Communication in the Late Nineteenth Century* », Carolyn Marvin ("When Old Technologies Were New" has the primary thesis that technological change echos existing social structures. In other words, new technologies, when introduced, usually fall into patterns of use that do not reorganize economic, gender, and social strata. "New media may change the perceived effectiveness fo one group's surveillance of another, the permissible familiarity of exchange, the frequency and intensity of contact, and the efficacy of customary tests for truth and deception. Old practices are then painfully revised, and group habits are reformed. New practices do not so much flow directly from technologies that inspire them as they are improvised out of old practices that no longer work in new settings. Efforts are launched to restore social equilibrium, and these efforts have significant social risks. In the end, it is less in new media practices, which come later and point toward a resolution of these conflicts (or, more likely, a temporary truce), than in the uncertainty of emerging and contested practices of communication that the struggle of groups to define and locate themselves is most easily observed. (...) The history of media is never more or less than the history of their uses, which always lead us away from them to the social practices and conflicts they illuminate. New media, broadly understood to include the use of new communications technology for old or new purposes, new ways of using old technologies, and, in principle, all other possibilities for the exchange of social meaning, are always introduced into a pattern of tension created by the coexistence of old and new, which is far richer than any single medium that becomes a focus of interest because it is novel. (...) Ordinarily, we think of wireless telegraphy, cinema, and telephony as the direct ancestors of mass broadcasting, but this genealogy overlooks the role of electric light in the social construction of twentieth-century mass media. The communicative capacity of electric light survives today in illuminated signs, but its most important contribution to modern mass communication was to a vocabulary of popular forms in mass entertainment spectacles and to the reorganization of traditional audiences. In that sense, the glittering television special is as much the fruit of electric light as of any other invention. (...) New media were recognized as new because they exhibited certain features. New media "truthfully transferred," in Thomas Edison's words, an increasing number of the auditory, visual, and kinesthetic details of the occasion of communication. New media also addressed expanding audiences, whether across time or space... The more any medium triumphed over distance, time, embodied presence, the more exciting it was, and the more it seemed to tread the path of the future. Such achievements were often imagined in great detail. And always, new media were thought to hail the dawning of complete cross-cultural understanding, since contact with other cultures would reveal people like those at home.")

- 1988 \_\_ *Wrap Around The World*, Nam June Paik (Slightly before the current speed and resolution of the Earth-based Net was available, Nam June Paik created *Wrap Around the World* (1988), a spectacular satellite link-up, coordinated by Paik, which connected artists in the United States, Brazil, France, Germany, Ireland, Israel, Japan, and several other countries. The event was similar to Paik's video collages or assemblies of that time in which he starkly contrasted and/or blended world cultures, with the images modulated by his original video synthesis techniques and graphics. In this piece the rock n' roll world was represented by David Bowie, the band La, La, La Human Steps, and Japanese composer/musician Ryuichi Sakamoto. Other aesthetic worlds were represented by avant-garde dancer Merce Cunningham, the Viennese Art Orchestra, a game of elephant soccer in Thailand, and an Irish car race.)

## 1989

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- 1989 \_\_ *Internet* (The number of hosts increases from 80,000 in January to 130,000 in July to over 160,000 in November! Australia, Germany, Israel, Italy, Japan, Mexico, Netherlands, New Zealand and the United Kingdom join the Internet. Networks speed up. NSFNET T3 (45Mbps) nodes operate. At Interop 100Mbps LAN technology, known as FDDI, interoperates among several vendors. The telephone companies start to work on their own wide area packet switching service at higher speeds - calling it SMDS. In Switzerland at CERN Tim Berners-Lee addresses the issue of the constant change in the currency of information and the turnover of people on projects. Instead of an hierarchical or keyword organization, Berners-Lee proposes a hypertext system that will run across the Internet on different operating systems. This was the World Wide Web.)

- 1989 \_\_ *Aspects of Gaia: digital pathways across the whole earth* . Roy Ascott with Mathias Fuchs (communications), Peter Appleton (sound), Miles Visman & Robert Pepperell (programming) (Interactive art installation and telematic project with artists in three continents. Linz: Ars Electronica Festival of Art and Technology. Interlinks, Artificial Intelligence, and Human Intelligence, coupled together, provide no end to interconnectivity possible in the telematic model of creativity. This new model has room to include both personal, individual values, and cultural differences, interacting together in a "telematic embrace" that Ascott likens to the scientist James Lovelock's concept of Gaia - i.e. that the planet functions \*as if\* it were an intelligent organism to maintain the conditions for life. Ascott suggests that there is so much information traveling around our growing networks, that a PLANETARY CONSCIOUSNESS may emerge, as people are now able to interact without problems of place or time. The installation, "Aspects of Gaia," which was presented at the 1989 Ars Electronica Festival in Linz, Austria) is a 2-level schematization of this telematic Gaia.

One level is presented in tents, with computer graphic images contributed by networkers around the world, and which can be further manipulated by participants in the tents. Each tent provides a "Bird's-Eye" view from above, with different kinds of interaction. The second level is a tunnel, representing the inner earth. Participants propel themselves, on their backs, on a small rail-car, down a tunnel which presents thoughts, comments, and ideas about the earth on LED signs, which have been submitted by networkers from around the world. These signs can be ever-changing as networkers continue to input new ideas. We hope to be able to present the tunnel portion at ENA in San Francisco. Digital Paths Across the Globe, Telefax, and digital file exchanges were made continuously over the three day period. DAX group utilized Macintosh workstations: modern to Bitnet to E.A.R.N. between Pittsburgh, Seattle and the Bruchnerhaus in Linz (first DAX digital audio file exchanges). There was also a slowscan exchange built into the network between Chicago and Pittsburgh.)

- **1989** \_\_ **Biosphere** (Biosphere 2 was originally run by a private company partly funded by ecology-minded oil millionaire Edward P Bass and was called Space Biosphere Ventures. Space Biosphere Ventures investors expected to find commercial applications for the techniques developed in the course of the project. Experiments with biospheres that contain relatively simple life forms have been carried out for decades, and a 21-day trial period in 1989 that included humans preceded the construction of BS2. However, BS2 is not in fact the second in a series: the Earth is considered to be Biosphere 1. Biosphere 2 is an ecological test project, a 'planet in a bottle', in Arizona, USA. Constructed between 1987 and 1991, it was used to explore the complex web of interactions within life systems. It also explored the possible use of closed biospheres in space colonization, and allowed the study and manipulation of a biosphere without harming Earth's. Under a sealed glass and metal dome, different habitats are recreated, with representatives of nearly 4,000 species, to test the effects that various environmental factors have on ecosystems. Simulated ecosystems, or 'mesocosms', include savannah, desert, rainforest, marsh, and Caribbean reef. The response of such systems to elevated atmospheric concentrations of carbon dioxide gas (CO2) are among the priorities of Biosphere 2 researchers. At a size comparable to two and a half football fields, it was the largest closed system ever created. The sealed nature of the structure allowed scientists to monitor the ever-changing chemistry of the air, water and soil contained within. The health of the human crew was continuously monitored by a medical team. Originally, people (called 'Biospherians') were sealed in the dome. They were self-sufficient, except for electricity, which was supplied by a 3.7-megawatt power station on the outside (solar panels were considered too expensive). The original team of eight in residence 1991-93 was replaced in March 1994 with a new team of seven people sealed in for six and a half months. In 1995, it was decided that further research would not involve sealing people within the biosphere. Researchers and students routinely go in and out of the Biosphere 2 facility. The facility has been open to the public for limited access and over 2 million people have visited Biosphere 2 since the early 1990s. Public access was expanded on 9 February 2004 to fully open the site to the public as a tourist attraction. As of June 5, 2007, the property including surrounding land, totaling 1650 acres (668 hectares), was sold to a residential home developer for US \$50 million. A development including homes and a resort hotel was planned for a portion of the land. The Biosphere itself will remain open for tours. Biospherians will not be isolated, but perhaps, among the most communicated with people on. Was the Biosphere a scientific experiment or a business venture? Or perhaps just an enormous art installation? "At that time the Internet was just coming alive and one of the most bizarre things we did was jam (playing music) down the phone with people in Germany and in L.A. We had a round-robin jam going, which we called "interbiospheric dialoguing." We were inside Biosphere 2 dialoguing with the other Biosphere out there -the Earth-down this proto-Internet connectivity. Communication with the outside world, through e-mail and telephone, helped alleviate the stress of hard work and isolation." [Jane Pointer, *The Human Experiment - Two years and twenty minutes inside Biosphere 2*, <http://www.orato.com/health-science/2006/10/26/living-biosphere-2-first-reality-show?page=4>) <http://www.b2science.org> <http://janepoynter.com/gallery.asp>

- **1989** \_\_ **City Portraits**, Karen O'Rourke, Art-Réseaux / Connect (An Experience in the Interactive Transmission of Imagination. Art Reseaux are an international telecommunications art group based in Paris. "CITY PORTRAITS, and networking in general, creates a common space to which correspondents bring their various experiences, skills and enthusiasms. This combination yields something more than the sum of its parts." "The social impact of the telephone sparks the idea of art as a dialogue, going beyond the notion of art as object making. The understanding of art as intercommunication moves us away from the issue of what is it that art or the artist communicates? to question the very structure of the communication process itself" (...) "Telematic art ... is inventing the multilogue of networking as a collaborative art form" [Eduardo Kac 1992]. Several international locations are linked via fax connections. Each location has two fax machines. One is receiving, the other sending. The two machines are similarly linked by a single roll of paper which constantly emerges from the receiver and tracks down a long table before being consumed by the sending system. Whilst on the table participants add to the content with drawing materials and collage. The piece is a complete loop which simultaneously connects all participants regardless of the geographical location. The long fax "scrolls" that emerged from the piece were exhibited at the Art Reseaux exhibition at the Gallery Bernanos in Paris in April 1992. Each long scroll was suspended from the ceiling forcing the viewer to walk along below and stare upward as they walked.) <http://www.paul-brown.com/WORDS/NETART.HTM>

- **1989** \_\_ « **Das Gesamtdatenwerk** », Roy Ascott (Roy Ascott wrote : "the stream of creative data which has eventuated via the interaction of artists around the world could be understood in the same way by the whole world. (...) The network resulted in the

destabilization of the Gallery-Museum-System in so far as it broadened the scope and possibly the nature of individual creativity. In that sense a whole stream of interactive communication media were activated - electronic mail, computer conferences, videotext, slow scan TV - as well as the exchange of computer pictures. On top of that the laboratorium used interfaces served by videodiscs, digital sound, paint systems and cybernetic response structures and environments" *Kunstforum International*, n°103, pp. 100-109)

- **1989** \_\_ **The Hands II** (1989 - 2000), Michel Waisovsz (*The improvements consisted of a single wooden frame as the main body for attaching the various sensors, better components and a more reliable wiring-system. Also the software was rewritten completely using the new Spider-programming-system. To increase the possibilities of using The Hands as a conductor instrument software was developed to manipulate strings of MIDI events: the Lick Machine. In the second half of the 90ties The Hands were used together with specially designed sound manipulation software: LiSa. More information about these softwares can be found at the steim.org site.*) <http://crackle.org/The%20Hands%202.htm>

- **1989** \_\_ **(He)ARTbeats**, Ars Electronica Linz, ORF Kunstradio Vienna, Wolfgang Temmel (*Heartbeat bundled the heart rhythm of five persons at five different locations in the world into a space experienced concurrently as the same the world over - the radio. The members of this quintet had in common that they were of peoples who have been hindered in living their lives freely by other peoples or nations. An aborigine in Australia, a Nicaraguan in Nicaragua, a Palestinian in occupied Palestinian territory, a Romany in Austria and a black African in South Africa each heard his or her own heart beat through a stethoscope and transmitted it, by tapping rhythmically along with it, via telephone to the Austrian Broadcasting Station (ORF) in Linz, where all five rhythms were broadcasted simultaneously worldwide for five minutes live on FM and short wave.*) <http://www.temmel.org/heartbeats/>

- **1989** \_\_ « **Heterogenesis** », Félix Guattari (*Guattari appears to be an enthusiast for biological metaphors when describing his theoretical frameworks. The most significant extractions I found from the chapter Machinic Heterogenesis, especially in relation to the serial, are the concepts of heterogenesis, ontogenetics, phylogenetics and autopoiesis. Heterogenesis is defined as "the alternation of two or more different forms in the life cycle of a plant or animal". Ontogenetics describes "the origin and the development of an organism from the fertilized egg to its mature form". Phylogenetics, on the contrary, is the "study of evolutionary relatedness among various groups of organisms (e.g., species, populations)... [and] treats each species as a group of lineage-connected individuals". Autopoiesis : It basically describes the ability to create and produce and re-generate and engender itself and its components. As Francisco Varela puts it, in contrast to the opposite allopoiesis, "allopoietic machines produce something other than themselves, (an example that of an assembly line, where the final product, such as a car, is distinct from the machines doing the producing) while autopoietic machines engender and specify their own organisation and limits" (Varela quoted in Guattari, 1995:39)) (Guattari définit l'hétérogénèse comme « un processus continu de resingularisation... L'hétérogénèse est une expression du désir, du devenir qui est toujours dans le processus de s'adapter, de se transformer et de se modifier soi même en relation avec son environnement. Si l'État se représente par homogénéisation (par des consensus macro-politiques), il est toujours en défaite face aux formations hétérogènes dont la singularité ne peut pas être représentée (des dissensions micro politiques) », cf. Félix Guattari, *Les trois écologies*, Galilée 1989.) <http://netart.incubadora.fapesp.br/portal/referencias/11chi06.pdf>*

- **1989** \_\_ **HubRenga**, The Hub, Ramon Sender (*"A virtuosic elaboration of the text communication system (used by "Vagues Notions of Lost Textures" by Scott Graham-Lancaster in 1988) occurred in 1989 when The Hub joined with San Francisco composer, writer, and performance artist Ramon Sender in a piece called "HubRenga". Ramon was already collaborating with poets in the Bay Area's pre-Web network the Well, extending concepts from the traditional Japanese collaborative poetry from called "renga", which is related in its syllabic structure to haiku. In renga, the participants trade writing lines, linking each line to the next using common themes. With the support of a grant from the InterArts Program of the National Endowment fro the Arts, we produced a poetry/music/radio performance on KPFA, the flagship Pacifica radio station in Berkeley. The KPFA program guide describes the performance : Tonight' show is a live performance from KPFA's sound studio of "HubRenga", an audience-interactive, music/poetry piece made possible by the communication between two computer networks. The collaborators in the creation of this piece are Bay Area computer music band The Hub, novelist and musician Ramon Sender, and poets from the poetry conference of The Well. During the performance poets will submit poetry to the piece through The Well. At KPFA, Ramon, as moderator, will browse through the submissions as they come in, reading them aloud as a part of the music. One Hub member will be also receiving the texts on his computer, which will be programmed to filter it for specific "key words" that have been determined in advance of the performance to trigger specific musical responses from The Hub. During the performance, poets will be listening to the piece oever the radio while they are shaping it through their communication with The Well. The purpose of the piece is to create with this technology a situation in which a large network of collaborators is tied together from various locations in creating an interactive performance. HUBRENGA "power" wordlist: embrace echo twist rumble keystone whisper charm magic worth Kaiser schlep habit mirth swap split join plus minus grace change grope skip virtuoso root bind zing wow earth intimidate outside phrase honor silt dust scan coffee vertigo online transfer hold message quote shimmer swell ricochet pour ripple rebound duck dink scintillate old retreat non-conformist flower sky cage synthesis silence crump trump immediate smack blink " [Chris Brown]) <http://www.o-art.org/history/Computer/Hub/renga/index.html>*

- **1989** \_\_ **Kits Beach Soundwalk**, Hildegard Westerkamp (In her 1974 article about soundwalking, Westerkamp says that the functions of a soundwalk are orientation, dialogue and composition. We can use a soundwalk for orientation when in an unknown environment, as a mariner would use sounding to understand unknown waters. "Or go for an orientation walk in the city, any city, asking people for directions. Besides not getting lost that way, you will also get to know a little of the character of a city by listening to the way people answer. Listen to the sounds and melodies in their voices, listen for accents." (...) "Go out and listen. Choose an acoustic environment which in your opinion sets a good base for your environmental compositions. In the same way as the architect acquaints himself with the landscape into which he wants to integrate the shape of a house, so we must get to know the main characteristics of the soundscape into which we want to immerse our own sounds. What kinds of rhythms does it contain, what kinds of pitches, how many continuous sounds, how many and what kinds of discrete sounds, etc. Which sounds can you produce that add to the quality of the environmental music? Create a dialogue and thereby lift the environmental sounds out of their context into the context of your composition, and in turn make your sounds a natural part of the music around you. Is it possible? (Westerkamp 1974). Kits Beach Soundwalk (1989), a composition that begins with a soundwalk recording at Kits Beach, comes out of Westerkamp's experience with the Vancouver Cooperative Radio show. "Kitsilano Beach colloquially called Kits Beach and originally in native Indian language Khahtsahlano is located in the heart of Vancouver. In the summer it is crowded with a display of "meat salad" and ghetto blasters, indeed light years away from the silence experienced here not so long ago by the native Indians. The original recording on which this piece is based was made on a calm winter morning, when the quiet lapping of the water and the tiny sounds of barnacles feeding were audible before an acoustic backdrop of the throbbing city. In this soundwalk composition we leave the city behind eventually and explore instead the tiny acoustic realm of barnacles, the world of high frequencies, inner space and dreams." The tape part in the first section is characterized by a relatively unaltered recording which sounds as though it could have come from a soundwalk. Waves and bird sounds are heard, as well as the hum of the city. In the second section, the tape part continues as an unedited soundwalk recording as Westerkamp alters the sound levels, bringing attention to the constructedness of this soundwalk recording, focusing attention on the relationship between self and environment by changing the amplitude balance between voice and tape parts. In section three, she uses the sound of the barnacles to lead the listener into the world of high frequencies, as the city sound is filtered out and the intricacies of the barnacle sounds are revealed. She talks about the importance of high frequencies in healing and energizing. The first dream begins as other high frequency sounds are introduced: rivulets in a creek and insect sounds. These are differentiated on the basis of timbre and rhythm, since their pitch range is similar to the barnacle sounds. Each succeeding dream can then be associated with sounds of different timbres and rhythms: the second dream is juxtaposed with bird sounds and a sound given to Westerkamp by Wende Bartley. The third dream is associated with Xenakis's *Concret Ph II*. The fourth is juxtaposed with Mozart. Westerkamp says that she did not consciously associate certain sounds with the text, but that many of these juxtapositions are due to coincidence rather than intent. [Andra McCartney, "Sounding Places with Hildegard Westerkamp") (Hildegard Westerkamp, dans sa pièce *Kits Beach Soundwalk*, remet en jeu à travers l'écoute médiatisée une telle subjectivité. Elle étend la notion de Soundwalk, à travers la composition sonore, par des moyens électroacoustiques. « The original recording on which this piece is based was made on a calm winter morning, when the quiet lapping of the water and the tiny sounds of barnacles feeding were audible before an acoustic backdrop of the throbbing city ». Cet enregistrement va subir diverses transformations (modifications de volumes, filtrages, traitements divers) en dialogue avec une voix narrative qui décrit (à la manière d'un compte-rendu de soundwalk) les divers phénomènes sonores. Ainsi la voix et la "bande-son" s'accompagnent mutuellement, s'illustrent et se complètent. De manière similaire à *Presque Rien n°2* de Luc Ferrari, il s'agit d'une plongée, onirique et réaliste, mais tandis que l'on accompagnait Ferrari dans ses introspections et dérivées nocturnes, ici on s'identifie aux perceptions subjectives de la compositrice. Et pourtant, l'aspect didactique de la pièce nous permet d'en disséquer les fonctionnements. [Yannick Dauby]) <http://www.emf.org/artists/mccartney00/chapt6.html>

- **1989** \_\_ **McCall.DEM**, Scot Gresham-Lancaster, Bill Thibault (A digital version of environmental tracing is McCall.DEM (1989), a collaborative work by Scot Gresham-Lancaster and Bill Thibault that derives melodic, timbral, visual, and rhythmic materials from a computer representation of terrain based on composer Rich Gold's Terrain Reader program. The elevation of a "traveler" at each instant was sent directly to a loudspeaker. The waveforms produced could be considered cross-sections of the terrain, cut along the traveler's path. The program initially used the McCall Idaho Sampler. This contained data files of several types (land use, water, roads, etc.). The travelers themselves can move on fixed paths or travel according to a behavior. A few of the behaviors include: the "dry drunk": who stumbles about randomly, yet avoids falling into the lake; the "drunken Jesus" who moves over land and water; the "drunken sailor" who passes out at the helm of his speed boat, traveling in a straight line until hitting the shore which wakes him up to shove off in a random direction and pass out again.)

- **1989** \_\_ **Natural VLF Radio Phenomena**, Stephen P. McGreevy (California-based artist Stephen P. McGreevy has documented recordings he made of Natural Radio - electromagnetic emissions in the very-low-frequency band caused by massive discharges and their after-effects in lightning storms and by the solar wind buffeting the earth's magnetic field, visible as Aurora Borealis and Australis. It would normally take long wires to pick up these emissions, which would hamper the mobility of a listener or recordist. McGreevy developed a portable receiver with a whip antenna, allowing him to travel to places with optimal recording conditions -

that is, anywhere in temperate to polar zones, but away from urban settlement and power cables. He further improved the unit by transforming it from a hand-held device to one that he could mount on his camper, so that he did not need to brave adverse weather conditions in order to make his recordings. We experience the sounds of the Aurora Borealis through the ears of sound recorder Steve McGreevy. Very low radio frequencies accompany the Northern Lights and at the equinoxes, when the signals are strongest, McGreevy heads north to listen. He hears the chirps, pops and choruses that play out when the Earth's Magnetic Field interacts with the Sun. "Natural Radio", a term coined in the late 1980's by California amateur listener and researcher Michael Mideke, describes naturally-occurring electromagnetic (radio) signals emanating from lightning storms, aurora (The Northern and Southern Lights), and most importantly, the Earth's magnetic-field (the Magnetosphere). Earth's natural radio emissions occur in the extremely-low-frequency to very-low-frequency (ELF-VLF) radio spectrum--specifically, at AUDIO frequencies between approximately 100 to 10,000 cycles-per second (0.1 - 10 kHz). Like the auroral lights, Natural Radio effects tend to be stronger around the spring and fall equinox, and near the earth's poles. Unlike sound waves which are vibrations of air molecules that our ears are sensitive to, natural radio waves as received at ground-level are vibrations of electric and magnetic energy (electromagnetic waves) which --though occurring at the same frequencies as sound-- cannot be listened to without an audio-frequency ELF-VLF radio receiver to convert the natural radio signals directly into the same sound frequencies. Another amazing realm of nature is thus ready to be explored and observed.) <http://www-pw.physics.uiowa.edu/mcgreevy> <http://www.archive.org/download/ird062/ird062-00-vlf-booklet.pdf> <http://www.auroralchorus.com> <http://www.spaceweathersounds.com>

- **1989** \_\_ **Parsifal 1882-38,969,364,735**, Rodney Graham (The word most often used to describe Graham's artistic practice is 'interpolation,' the alteration or corruption of text by inserting other text or foreign matter. Since 1983, Graham has been interpolating texts based on authors as diverse as Sigmund Freud, Herman Melville, Dr. Seuss, and Ian Fleming. Graham has also extended his practice of interpolation to include other art forms such as film, photography and in this case, music. His interpolations far exceed a critical interpretation of their source by exposing and amplifying an unconscious yet undeniably essential element ultimately responsible for the ironic dismantling of the original material [Hamza Walker]. In Rodney Graham's musical compositions, as with many of his literary projects, we are caught in a continuum of interpolation and extended time. Though still in motion we seem hardly to advance. Temporal tropes multiply duration and foreground detail: an ongoing sequence of presents. Most simply, Parsifal 1882-38,969,364,735 is an extended variation on a brief musical interlude composed in 1882. For the premiere performance of Richard Wagner's opera Parsifal, a sequence of nine bars was added to the original music (Wagner's 24-bar sequence for the hero's ascent) by Wagner's assistant, Engelbert Humperdinck, to accommodate scenery changes as Parsifal approaches the Temple of the Holy Grail. The resulting loop of 33 bars was to be repeated as often as necessary to synchronize music with action on stage. Following Humperdinck's principle, Graham supplemented the supplement by introducing a system of internal epicycles to open up and stretch the original score. Prime numbers were assigned to each of the fourteen playing instruments, to calculate their number of repetitions per bar and number of interpolated rests, so that the resulting phases would grow increasingly asynchronous and increasingly lengthy. In this scheme, the orchestra will rejoin its original configuration after nearly 39 billion years. Like many other "logical extensions," the results are unlikely. While the work's "completion date" has been calculated to Monday 18 June, A.D. 38,969,364,735, Alan H. Batten of the Herzberg Institute of Astrophysics points out, in a letter to Graham, that even if the universe were still to exist so far in the future, the lengths of Earth's day and year would certainly have changed, making any such date quite meaningless. Clearly intrigued by Graham's project, however, he suggests that "the 'opera' would transcend the whole life of the universe itself and is, in some sense, eternal." Graham has revisited Parsifal several times. He published a single signature for the musical score in an edition of 12 in 1989, then incorporated it in a rotating display unit as Reading Machine for Parsifal. One Signature, in 1992. In 1889-90, Parsifal. Transformation Music (Act 1). With E. Humperdinck's Supplement No. 90. The Latter Transcribed from the Original Manuscript and the Whole Typeset According to the Artist's Specifications, was produced in 12 volumes. In the work of Rodney Graham there is great pleasure in order and detail, in minutiae taken into account. Music is a fertile source for him: invisible, ordered, historical but also present. Each performance is an extended now, vigilant. [Peggy Gale])

- **1989** \_\_ **Photophonie I**, Luc Ferrari (Photophonie I : trois bandes de 30 minutes qui tournent en permanence, sans jamais se rencontrer dans les mêmes situations.) <http://www.lucferrari.org>

- **1989** \_\_ **RadioZeit**, Richard Kriesche ("What is the connection between art and radio? In my opinion, it is freedom. The freedom in public space, the art of the three-dimensional body and the freedom of the public space: the art of the electric body." (Richard Kriesche). The original performance "RadioZeit" took place in the framework of the international radioart symposium "With the Eyes Shut", Graz, 1988. Kriesche invited the participants into his - darkened - studio in Graz, which was equipped with a parabol-antenna outside its window - catching the signals from a weather-satellite -, a beamer, which projected live-images from the satellite on the wall opposite the audience and - also connected to the antenna - a digital sampling keyboard containing Mozart's "Kleine Nachtmusik". Richard Kriesche himself sat beside the projection, at a table and - in the light of a small lamp - read a text called "RadioZeit". To the frustration of the audience this text was drowned in the noise of the satellite signals and the fragments of the "Kleine Nachtmusik" triggered by these signals. The performance became a perfect image for the white noise of data, the all-devouring backdrop of a digitalised society - one of the central issues in Richard Kriesche's art and theoretical thinking. For the radio-

version of "RadioZeit" Kriesche used not only excerpts from the read text but also some freely spoken statements. Kriesche's partners in RadioZeit were: the musician and media-artist Seppo Gründler, a ham radio expert, and the Technical University, Graz. "In Radio/Zeit (Radio/Time , a performance for the Styrian Autumn Festival and ORF KunstRadio/RadioKunst in Graz in 1989, Richard Kriesche underlined this contemporary definition of radio art by bringing the line signals of a weather satellite into his studio in Graz. The signals triggered a keyboard to play Mozart's Eine Kleine Nachtmusik; at the same time the signals were represented as a weather map projected onto the wall. In the darkened studio the artist sat by a lamp in the mixed light of this projection, reading a text on radio art that was completely unintelligible for the audience. With unassisted human ears, the audience could not differentiate between the voice of the artist, the white transmission noise and the music from the keyboard. An image developed that underlined the fact that "the digital representation of form loses its identity as form and ... digital recording media do not give up their content without appropriate decoding technology." A mix of excerpts from Kriesche's text and recording of Eine Kleine Nachtmusik was broadcast later, but the real piece of radio art was the performance itself. It was a striking image of our situation - immersed in and surrounded by the white noise of transmitted data." [Heidi Grundmann]) [http://kunstradio.at/1989A/19\\_1\\_89.html](http://kunstradio.at/1989A/19_1_89.html) [http://kunstradio.at/THEORIE/kriesche\\_e.html](http://kunstradio.at/THEORIE/kriesche_e.html)

- **1989 \_\_ Regime Change Ballad**, Fred Forest (In development well before the tearing down of the Berlin Wall, this work took on a magical aura when it was performed in December as a celebration of the historical miracle then unfolding. The performance took place in a multimedia environment featuring LED message boards displaying a stream of important dates (offered without commentary) from Soviet history. Featuring an original musical composition performed via telephone by Alexander Alexandrov, bass clarinet in Moscow) <http://fredforest.org>

- **1989 \_\_ Resonant Landscape**, Francis White (This work was an interactive sound installation for computer and electronics where a listener would walk through a virtual landscape, guided by a map displayed on a computer screen, and experience changing sound perspectives. The pre-recorded sounds consisted of different levels of reality: birds, mysterious filtered white noise, masses of small bells, low-moaning animals, electronic hummings, water, delicate pure wave sounds in the distance, wind, barely describable electronic sounds like masses of cowbells in deep reverberation, etc. ["Blue" Gene Tyranny])

- **1989 \_\_ Simulplay 1, That Place / Simulplay 2**, ORF Kunstradio Vienna, Australian Broadcasting Cooperation ABC, Ross Bolleter, Jim Denley (Perth) (An intuitive piece for 2 musicians on opposite sides of a continent, playing at precisely the same time but unable to hear each other. The search for synchronicities and the ceremonies that are contrived to encourage their occurrence should be seen in one sense as ironic: a kind of minor theatre that informs and comments on the musical enterprise in something like the way that Satie's performance directions function in his piano pieces ( Ouvrez la tete - 'open your head'). I have a predilection for audiences working out their own notions of meaning and structure in performance, and take pleasure in setting up situations whereby the audience is not quite sure whether they are getting information about the piece or whether they are irrevocably involved in it. This is an idea which has been worked in a great variety of ways by composers as diverse as Althoff, Burt, Cage and Linz as well as by Ed Harkins and Phil Larson in the music theatre duo THE. In spite of its wide currency it seems to have the potential for further development. Another form of play which invites investigation is the subtle shifting of the boundaries in conventional concert going, especially where radios go proxy for performers, and a kind of mirror play of presence and absence results. (...) Devising and organising pieces where the musicians are widely separated in space, but are playing in the same time interval, proceeded quite naturally from improvisational circumstances which arose in conventional spaces. My earliest experiences were playing with other improvisers in situations which were highly convergent, where the musicians strove to create a highly cohesive music based on listening closely to each other and staying together, as for example in modal jazz, and similarly, modal 'reflective' or New Age music. As I became more engrossed in free improvisation, I discovered more and more divergent approaches to the creation of music; these included the limiting case where neither musician listens to the other, but resolutely pursues their own path. On listening back to tapes of the improvisations I discovered that what seemed horribly anarchic in performance actually jointed together quite well when one listened back, and that all sorts of subtle interconnections occurred between the players, of which I was quite unaware during the performance. From this I was led to consider the possibility that similar interconnections might exist, even if the players could not hear each other at all, say when they were playing in geographically separate locations. I thought of these interconnections, if they occurred at all, as being at least potentially synchronistic. To test this out, in January 1987, as part of the Rooftops Projects, a session of free improvisation was arranged with Philip Kakulas (double bass) playing at a home in City Beach and myself (playing prepared piano) at my own home in Mt. Lawley. Both performances were separately recorded. We used a countdown by telephone so that the recordings could be mixed synchronously onto 1/2" tape. The recording lasted for forty five minutes and contained many textural overlaps between double bass/piano and a glorious common synchronous silence lasting some 15 seconds (about 6 minutes from the start). Each performer devised a poem for the performance. With these poems, as with the music, style and content were left entirely up to the performer. There was no prior discussion as to the nature or placement of those poems in the piece. The Rooftops Synchronous improvisation was followed in 1989 by recordings with Michal Murin and his performance collective in Bratislava, Czechoslovakia on May 1, 1989 (Mayday), and with Stephen Scott in Colorado Springs on October 1989. Both pieces were intuitive with no guidance as to style or content of the performance specified in advance. The latter

piece, *Transglobal Musings* included an eerie cross over of myself playing in a fairly open style of solo jazz piano while Stephen Scott tuned into a radio station broadcasting a jazz program with an Australian announcer. The collaboration with Michal Murin was devoid of any musical events that might even begin to suggest synchronistic activity, interesting as it was in a theatrical-political sense. It was in early 1989 that I conceived the idea of creating performance pieces that involved an audience who could experience intuitive performances brought to them by radio(s) from different parts of the world. The first of these was *Simulplay I* (September 1989) which linked Jim Denley (flute) in Linz, Austria with myself (on piano and accordion) in the the ABC radio studios in Perth. Jim Denley was playing for a live audience with myself, somewhat delayed, coming by radio in the Brucknerhaus for *Ars Electronica*. I was joined by Caroling Henning, a work experience student, on plastic trombone. For this performance, a timing scheme was devised, whereby Jim could hear me, but I could only hear him periodically, so the relationship between the two musicians was partly interactive and partly intuitive. Because *Simulplay I* is partly interactive it falls outside the scope of any analysis for synchronistic activity. *That Time (Simulplay II)* is an intuitive piece for two musicians on opposite sides of a continent, playing at the same time, but unable to hear each other. There is no prior consultation as to the style or content of the piece. The two performances are transmitted by radio signal and landline to a concert audience listening via two separate broadcasts in one location. The two 'absent' performers - who can't hear each other - are brought into a performance space for an audience which experiences both of them. The two radio sets take on a theatrical 'performing' role. More specifically Ryszard Ratajczak played double bass in Studio 210 of ABCFM Sydney from 11.00pm - 11.27pm on the night of October 9, 1989 while I played piano and prepared piano in Studio 21 of ABCFM Perth between 9.00pm and 9.27pm of the same night. Ratajczak's performance came via land line and mine via 6UVS FM to two radio sets in a room at the Perth Institute of Contemporary Arts (PICA), where an audience of some thirty people had gathered as part of the *Artrage Festival*. Simultaneously, my performance was being sent by satellite to Sydney ABCFM and Ratajczak's was going live to air on ABCFM's programme *The Listening Room* in Eastern and Central Australia at 11.00pm, and two hours later on delay in Western Australia. In this regard the performance of *That Time (Simulplay II)* at PICA ('unencumbered by musicians') was unique to that audience and venue. Insofar as its outcome in performance could not be foreseen, *That Time (Simulplay II)* was and is an experimental piece. From the perspective of the musicians and the audience anything could happen. So it is surprising that what does happen is so orderly, so complementary and cohesive. The following general considerations may well have had an influence. *That Time (Simulplay II)* presents an 'impossible situation' for the performers - a limiting case where the ordinary channels of communication are closed. My sense is that this has a profound psychological impact on the performers rather like that described by F. David Peat as 'The Gambler'. "An extreme example of the release of psychic energy occurs with what Jungians call 'The Gambler', the person who must risk everything on the turn of a metaphoric card. In many cases a patient is at the end of his or her tether with all resources exhausted and no hope remaining. In symbolic terms this is not unlike the person who has reached the final door in a castle, who has one magical wish left, who faces a dragon, or who is on the point of death. In such circumstances all the energies are focussed and concentrated upon the final turn of a card and synchronicities are bound to occur." Technical problems with the lines, and the clear and irrevocable sense of not being broadcast at all, engendered a kind of resignation on one hand and a desperate energy on the other. This may have tapped into the kind of archetypal realm of 'The Gambler'. My sense too is that in this kind of intuitive piece the musicians are subconsciously straining to communicate across a great distance. The challenges thrown up by the 'impossible situation' of no communication, isolation and distance may have helped the musicians tap psychologic resources normally unavailable, and this in turn may have created 'an atmosphere' where synchronistic events could occur. [Ross Bolleter and Rowan Hammond - *Improvising with synchronistic experiences*, NMA 9 magazine] <http://www.rainerlinz.net/NMA/repr/Synchronistic.html>

- **1989** \_\_ **A Sound Map of the Hudson River**, Annea Lockwood (*Lockwood's A Sound Map of the Hudson River* (1990) is an aural journey from the source of the Hudson River, in the high peak area of the Adirondacks, downstream to the Lower Bay and the Atlantic Ocean. On-site recordings, in which the sounds of the moving water create complex meshings of rhythms and pitches (sound maps) in heightened detail, were made at 15 separate locations. Careful listening to these also heightens and explores changing perceptual states, as well as being a sheer pleasure for the ear.) <http://resoundings.net/Lockwood.html>

- **1989** \_\_ **Telebration** (From 1989 to 2000, *Electronic Café International -HQ* established the "New Year's Eve Around-The-World "TELEBRATION,"" and like most of the larger global events, connections of various sorts took place everywhere and anywhere using every kind of com tech possible - from Ham Radio to T1 lines. Every New Year's Eve the "TELEBRATION " network would attempt to exchange performances greetings and best wishes with every time-zone as they hit midnight.)

- **1989** \_\_ **Telecollaboration US West** (Audio-video link between Denver and Boulder, CO. Created call and lookaround functions and remotely controlled cameras.)

- **1989** \_\_ **Tele-Poetry** (With the LA poet Bruce "Bowerbird," *Electronic Café International -HQ* established the first videophone poetry network including *The Nuyorican Poets' Cafe*, NYC; *Stone Soup Poets*, Boston, and eventually many others locations in the US and abroad, including ECI's in Paris, Tokyo, Santa Fe, and Denmark. This series allows LA poets to encounter the interests, cultural diversity, and aesthetic agendas of poets in other places, circumstances, and political contexts.)

- **1989** \_\_ **Three-City Link**, Eduardo Kac (In 1989, the Three-City Link event brought together artists in Chicago (organized by Eduardo Kac and Carlos Fadon), Boston (led by Dana Moser), and Pittsburgh (the DAX [Digital Art Exchange] Group). A slow-scan television system connected to a three-way telephone conference call allowed the artists to exchange images and generate a visual reflection on the relations between urban space and telematic space. "Rather than focusing on distance as space, Kac's telepresence art emphasized the temporal dimension of distance and real time more than real space" [AnnMarie Chandler]) <http://www.ekac.org/threecitylink.html>

- **1989** \_\_ **Traits**, Stephan Barron (Stephan Barron and Sylvia Hansmann followed the Greenwich Meridian by car from the English Channel to the Mediterranean Sea and from Villers-sur-Mer to Castillon de la Plana. With their car fax they regularly sent images and texts about their trip to other faxes located in 8 different European locations (among them was Ars Electronica)) (Traits est une action réalisée en 1989 avec Sylvia Hansmann. Nous avons suivi en voiture le Méridien de Greenwich de la Manche à la Méditerranée, de Villers-sur-Mer à Castillon de la Plana. À l'aide d'un télécopieur de voiture, nous avons envoyé régulièrement des images et des textes sur notre voyage, à des télécopieurs situés dans huit lieux en Europe (dont Ars Electronica). La ligne droite réalisée dans l'espace géographique se matérialise dans les lieux d'exposition par les bandes des télécopies envoyées et dans l'esprit des spectateurs par des traits imaginaires, projections du Méridien origine. Nous souhaitons ainsi proposer une nouvelle représentation du trait, un des premiers symboles de l'homme ; une représentation mentale intégrant l'espace, le temps, et l'imaginaire de chacun. Pierre Restany parle d'une fractalisation du Méridien.) [http://stephan.barron.free.fr/technoromantisme/barron\\_projets.html](http://stephan.barron.free.fr/technoromantisme/barron_projets.html)

- **1989** \_\_ **World Wide Web (The World Wide Web)** (commonly abbreviated as "the Web") is a system of interlinked hypertext documents accessed via the Internet. With a Web browser, one can view Web pages that may contain text, images, videos, and other multimedia and navigate between them using hyperlinks. Using concepts from earlier hypertext systems, the World Wide Web was begun in 1989 by English scientist Tim Berners-Lee, working at the European Organization for Nuclear Research (CERN) in Geneva, Switzerland. In 1990, he proposed building a "web of nodes" storing "hypertext pages" viewed by "browsers" on a network, and released that web in 1992. Connected by the existing Internet, other websites were created, around the world, adding international standards for domain names & the HTML language. Since then, Berners-Lee has played an active role in guiding the development of Web standards (such as the markup languages in which Web pages are composed), and in recent years has advocated his vision of a Semantic Web. The World Wide Web enabled the spread of information over the Internet through an easy-to-use and flexible format. It thus played an important role in popularising use of the Internet, to the extent that the World Wide Web has become a synonym for Internet, with the two being conflated in popular use.) <http://www.w3.org/Proposal.html> <http://www.w3.org/History/19921103-hypertext/hypertext/WWW>



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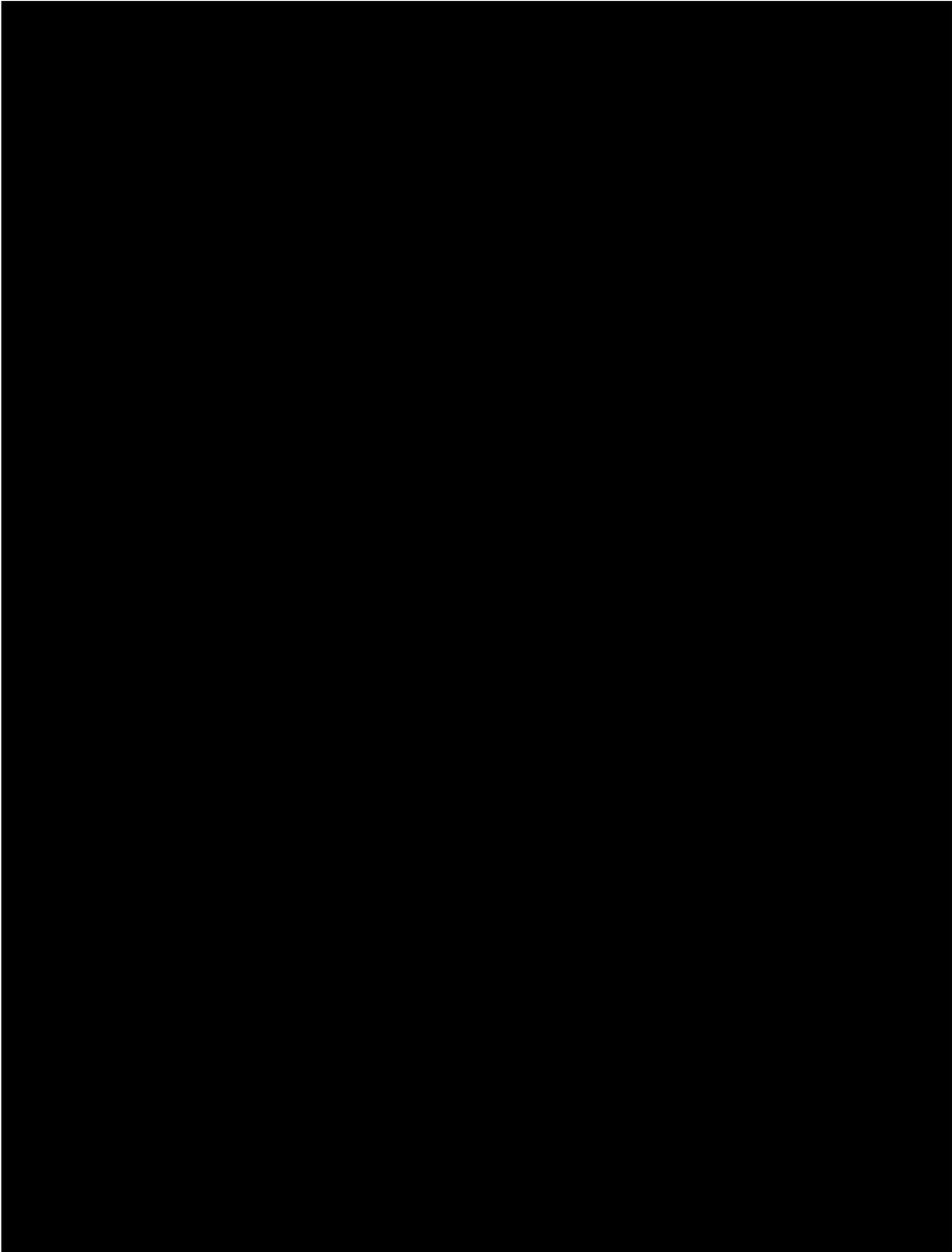
## Part 2 - Chap. 2

### (1990 - 2008)

NETWORKED MUSIC AND SOUND ART WORKS & TECHNOLOGICAL DEVELOPMENTS AND CONTEMPORARY HISTORY REFERENCES



Corpus



CORPUS : PART 2

THIS VOLUME IS NOT YET FINALIZED : NOT FORMATTED AND NOT CORRECTED.  
ENTRIES MUST BE : VERIFIED, COMPLETED, REFERENCED, TAGGED.

**1990**

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- **1990** \_\_ *Internet* (ARPANET formally shuts down. In twenty years, 'the net' has grown from 4 to over 300,000 hosts. Countries connecting in 1990 include Argentina, Austria, Belgium, Brazil, Chile, Greece, India, Ireland, South Korea, Spain, and Switzerland. Several search tools, such as ARCHIE, Gopher, and WAIS start to appear. Institutions like the National Library of Medicine, Dow Jones, and Dialog are now on line. More 'worms' burrow on the net, with as many as 130 reports leading to 12 real ones! This is a further indication of the transition to a wider audience.)

- **1990** \_\_ *Archie FTP* (Archie FTP semi-crawler search engine, built by Peter Deutsch of MacGill University, Montreal, Canada. (Zakon 1998). An archipelago of scattered FTP archives is melded into a coherent, distributed information system.)

- **1990** \_\_ *Auditory Scene*, A.S. Bregman (This perceptive process allows us to create a mental representation of a sonic environment. In the domain of cognitive science, we call these systems of representation which are relative to an individual "Auditory Scenes", linking them to the physiology and the ontology of the auditor. They allow us the possibility to evolve in a world animated by sound. This cognitive approach concentrates essentially on the cerebral procedure which controls the treatment of information that our hearing provides, and which assures us of a reliable relationship with the world, rather than preoccupying itself with the social and collective dimension of listening. But what i would like to underline here is the importance of the dimension of representation of the world through sound: the auditory scene (from the Greek "skênê", or tent, this construction built on the stage of ancient theatres) is a schematization of the environment based on its sonic emissions. To listen to an environment could be to imagine, to recreate mentally the theatre of sonic events that surrounds us. (...) Under the influence of Jakob Von Uekiüll, I would like to propose calling this dialogue between physical space and a listener "Sonic Landscape". In a given environment, it is necessary to lend one's ear, to turn one's attention to the space and to identify the composing elements, familiar or otherwise. Like an octopus, the listener feels and explores his sonic environment, his hearing lingering on certain details before assimilating them and moving on. At certain moments his hearing steps back and tries to experience the sonic environment in its globality. And thus the listener constructs his own sonic landscape based on this space. Landscape, according to common parlance and because of its visual aspect, is what a space offers to our eyes (geological forms, the formation of clouds, the light, human construction; etc.). But we mustn't forget that what is called "landscape" in photography or in painting is based on the notion of framing: the artist draws a border between that which will be included or rejected in his landscape. What is given by the space, its particular characteristics, will or will not be taken into account. In the same way the sonic landscape of the lane in which I live will perhaps include this Beethoven inspired siren which i have described, but I realise in retrospect that I have chosen (whether consciously or not, that is not the question) to not grant any particular significance to the inevitable rumble of passing airplanes. Finally, a space does not offer a sonic landscape, but a multitude of sonic landscapes according to its listeners. Sonic landscape is a concept which spans an entire spectrum based on the individual. Let's be clear: there are of course certain constants, invariables, certain outstanding features in these sonic landscapes. In certain seasons, or to certain places correspond recurring sonic events. But I insist: objective observation, neutral and devoid of a relationship to a space can not bring about a study of the sonic landscape of this space. It would be nothing but an index of the spaces different sound sources and acoustic properties. To understand a sonic landscape it is above all necessary to interrogate its users, its inhabitants, its participants. For by sorting through the different meanings given to the sounds of a space we can determine the role of hearing in the auditory relation to the environment in a social dimension. We must, therefore, describe the "community of listening" of this space. I borrow this expression from Olivier Feraud, and send back to his work in the same way one of the too rare works in the domain of sonic anthropology, Steven Feld's exemplary *Sound and Sentiment* [Yannick Dauby, "SOUNDSCAPE, UMWELT & THE PRACTICE OF PHONOGRAPHY", 2007]. « La perception doit arriver donc à une représentation utile à partir de son traitement de l'information sensorielle. Le système auditif traite l'information acoustique pour déterminer la présence, la position et la nature des sources sonores de l'environnement, afin de pouvoir comprendre leur comportement ou les messages qu'elles émettent. Tout cela implique l'organisation perceptive d'un environnement composé de sources multiples, processus que Bregman appelle "l'analyse des scènes auditives" » [Stephen MCADAMS, *Introduction à la cognition auditive in Penser les Sons: Psychologie Cognitive de l'Audition*, Oxford : Oxford Univ. Press, 1993.]

- **1990** \_\_ *DrahtVenusKörper* (Wire Venus Body), Vienna, Mia Zabelka (Radio performance for live-telephone violin and voice.)

*A radio-performance for live-telephone-violin and -voice, in which the artist performed and mixed her material not in the studio from which the program was transmitted, but in a small production studio on a different floor of the Broadcasting House in Vienna. Thus, she made use of the wiring between studios in such a building as one part of the infrastructure of her live radio project, which also included telephone lines to transmit the sound of a live violin and/or voices from a distant answering machine. The/her body wired/ interfaced to machines and networked transmission technology was part of the content of her performance [Heidi Grundmann].)*  
<http://www.kunstradio.at/BIOS/zabelkablo.html>

- 1990 \_\_ **Earth Signals**, Paul Sermon (Earth Signals - A telematic "leaf shaped" installation structure housing six Commodore Amiga computers displaying image files, received via E-mail from Artists throughout the UK, for the Omphalos Gallery in Swiss Cottage London, England, June to August 1990.) <http://www.hgb-leipzig.de/~sermon/projects/earth.html>

- 1990 \_\_ **Electronic Frontier Foundation** (While GBN developed forecasting on the information society and provided a link with thinking in the business world, another, more political, line of thought was established with the Electronic Frontier Foundation. At the origin of this association lay an event that marked the computer specialist community. In 1990 the FBI launched an inquiry that implicated a large number of hackers suspected of pirating software. John Barlow, former hippie (lyric writer for Grateful Dead) and computer journalist, Mitchell Kapor, co-founder of the computer company Lotus (later sold), and John Gilmore, another hacker who had got rich from computing, decided to found an association to defend freedom in cyberspace. The Electronic Frontier Foundation (EFF) was "established to help civilize the electronic frontier; to make it truly useful and beneficial not just to a technical elite, but to everyone; and to do this in a way which is in keeping with our society's highest traditions of the free and open flow of information and communication". More precisely, it defended individual cases and its Washington office lobbied the government and Congress. Kapor, an habitu  of The Well, naturally opened a conference on the foundation in the Californian BBS. The founders moreover considered The Well to be "the home of the Electronic Frontier Foundation". The EFF was also complementary to Wired. It provided the magazine with one of its main topics and Wired, in turn, constituted an excellent tribune for the association. Two of the three founders, half the board of directors and the legal adviser (Mike Godwin) wrote in the magazine. Jane Metcalfe was also elected to the board. Thus The Well, the Global Business Network, the Electric Frontier Foundation and Wired all had a lot in common.) <http://www.eff.org>

- 1990 \_\_ **The Globe Show**, Paul Sermon (The Globe Show - Two week fax and E-mail event and telematic workstation between Fine Art students from Newport School of Fine Art in the UK and international artist, scientists and academics. For the Oldham Art Gallery Manchester, England, Nov 1990.) <http://www.hgb-leipzig.de/~sermon/projects/globe.html>

- 1990 \_\_ **Goree/Almadies Memorial Celebration DAX Dakar d'Accord: Goree Song**, DAX Group (July 21-22. Interactive Slowscan between DAX members Bruce Breland, Matt Wrbican, Bruce Taylor on site working in the O.R.T.S. television studio in Dakar, Senegal (West Africa) and DAX members Cindy Snodgrass, Philip Rostek, Nathania Vishnevsky, Ben Horten, (Valerie Lawrence, Shona Sherif of the University of Pittsburgh), Gregg Podnar, Tim Schrock, and others working from the DAX studios on the Carnegie Mellon campus. This was the first interactive slowscan television event between artists on the African continent and in the United States, and the first step toward establishing an artist network node in Dakar connected with artists in major cities around the world. DAX Dakar d' Accord became part of a projected five year celebration for the purpose of creating a living extension of a physical memorial commemorating the history of this region and African diaspora. Goree Island, located in the Dakar harbor, is the site of La Maison des enclaves (The Slave House). Through the slave house "Door of no Return" passed forty million humans who lost their freedom, and six million lost their lives during the four hundred years of its use as a holding warehouse and embarkation point in the slave trade between Europe, Africa, and the Americas. Sponsored by The DAX Group, Carnegie Mellon University, College of Fine Arts, the University of Pittsburgh, and the Institute for the Study of African Culture.) [http://www.digitalartexchange.net/e/txt\\_11.html](http://www.digitalartexchange.net/e/txt_11.html)

- 1990 \_\_ **Landscape Soundings**, Bill Fontana (This work simultaneously listens from 16 microphones and hydrophones locations and transmits sounds from a forest to Vienna at the Maria Theresien Platz. "Fontana used both analogue and digital technology to have sounds transmitted into the centre of Vienna from microphones carefully positioned about thirty kilometres away in the Danube marshes. This was a politically sensitive site (the Stopfenreiter Au) because it was the scene of mas protests and sit-ins which, several years earlier, had saved the marshes from destruction by a hydroelectricity project. The OPT (Austrian Post and Telecommunications - the state communications monopoly) installed sixteen lines from the marshes to a nearby village, reactivated sixteen old disused telephone lines and connected them to the new ORF digital microwave transmission equipment (newly purchased for remote television sports reports) which had been mounted on a farm for line-of-sight transmissions in Vienna. The sounds from the microphones in the marshes were converted to video signals for digital transmission to the OPT Kahlenberg relay station, a high point in the Vienna Woods, and from there to the roof of the Kunsthistorische Museum Vienna, and finally down to an improvised studio in the museum. The digital signals were changed back into analogue and distributed live to seventy loudspeakers installed in shrubbery and topiary of the Maria Theresia Platz, a formal garden (with a statue of Maria Theresia) and on the facades of the

Kunsthistorische Museum and Naturhistorische Museum which flank the park. A spectacular live sound-sculpture unfolded (twenty-four hours per day without interruption) for two weeks. The work had another dimension: the signals from sixteen lines went into a stereo mixer and at the same time were transmitted in stereo to the radio station. Bill Fontana controlled the live mix both in the park and for the radio at all times - either personally or by means of a "score" based on his intimate knowledge of what sounds would arrive when and on which lines. Originally Fontana was to do two forty-five minutes live mixes for the KunstRadio program on Thursday evening during the event and produce short live mixes on the same days for other programs on Österreich 1, the ORF cultural program, as a kind of introduction to the longer KunstRadio mixes. But very soon, program makers at all three channels of the ORF started to tune into the live line, which was open twenty-four hours a day, and to incorporate the real-time sounds of frogs, birds, water, thunder-storms, and rain into their broadcasts. By the end of the fortnight, the piece became so popular that the radio director decided to have the last five minutes of the sculpture transmitted live on all three channels of Austrian Radio. An increasing number of artists, like Fontana, consider their radio work as a sculpture, not in the sense of transmitting sound sculptures but rather a declination of sculpture itself. [Heidi Grundmann] (À propos de ce travail, Heidi Grundman rappelle qu'au moment de la diffusion de sons à travers le réseau hertzien, il n'y a pas de possibilité de l'artiste de savoir où et comment sera reçu son travail. Si Umberto Eco a prouvé que même un roman écrit est une œuvre ouverte, Fontana met en jeu des conditions physiques et techniques d'indétermination de perception d'un paysage sonore. Heidi Grundman rappelle les termes utilisés par Roy Ascott à propos de ce type de travail : « position d'auteur distribuée ou dispersée » ( Heidi GRUNDMAN, La géométrie du silence). Il s'agirait, peut-être, d'un positionnement esthétique où l'artiste ne cherche pas à imposer un paradigme figé, un point de vue subjectif à propos d'un objet, mais plutôt de se retirer au profit d'une expérience, de se faire passeur de flux. [Yannick Dauby]) <http://www.resoundings.org/Pages/LandscapeSoundings.html> <http://www.kunstradio.at/FONTANA/LS/>

- **1990** \_\_ **The Minnesota Permanent Forest Terrain Instrument**, Leif Brush (Brush's The Minnesota Permanent Forest Terrain Instrument (1990) was a large installation consisting of many sound devices in 400 square feet of space connected through "tunable" brass and steel wires suspended between tree clusters: The Signal Disc, Whistler, Wind Ribbons, Rainpattern Tree Filters, Treeharps Networking, and Modified Treeways. The composer's primary interest has been to establish "an unprecedented access to nature ... in sound." ["Blue" Gene Tyranny])

- **1990** \_\_ **MOO (MUD object oriented)** (A MOO (MUD object oriented) is a text-based online virtual reality system to which multiple users (players) are connected at the same time. The term MOO is used in two distinct, but related, senses. One is to refer to those programs descended from the original MOO server, and the other is to refer to any MUD that uses object oriented techniques to organize its database of objects, particularly if it does so in a similar fashion to the original MOO or its derivatives. The original MOO server was authored by Stephen White, based on his experience from creating the programmable TinyMUCK system. There was additional later development and maintenance from LambdaMOO administrator, and former Xerox PARC employee, Pavel Curtis. One of the most distinguishing features of a MOO is that its users can perform object oriented programming within the server, ultimately expanding and changing how the server behaves to everyone. Examples of such changes include authoring new rooms and objects, creating new generic objects for others to use, and changing the way the MOO interface operates. The programming language used for extension is the MOO programming language, and many MOOs feature convenient libraries of verbs that can be used by programmers in their coding known as Utilities. The MOO programming language is a domain-specific programming language. MOOs are network accessible, multi-user, programmable, interactive systems well-suited to the construction of text-based adventure games, conferencing systems, and other collaborative software. Their most common use, however, is as multi-participant, low-bandwidth virtual realities. They are often used in academic environments for distance education or collaboration such as Diversity University; but others are primarily social in nature, or used for role-playing games (RPGs), or simply to take advantage of the programming possibilities. Most commonly, MOOs are connected to by users using a client which speaks the telnet protocol, which provides a stay-alive connection with the host, to relay output and send commands. Some however have developed web interfaces, or other such methods; however this commonly limits interaction that the user can have, usually to the point they have no interaction, but instead can browse objects and discover typical information. Developments in cross-MOO networking have also led to the creation of SunNET, a hubless network allowing cross-MOO communication and add extra possibilities to cross-MOO development, including networked channels. Every MOO stores the content and state of all its objects within a persistent object database, which keeps objects from being lost by a reset of the MOO server software or the computer hosting it. MOO, along with all of its nephews, started out with text based adventure games. With the advent of the internet, MUD was formed as a networked version of one of those games. Eventually it developed into a tree of different types of MUD, with MOO becoming one of them. Stephen White (also known by the handles "Ghondahl" and "ghond") wrote the first version of the MOO server, which was released on May 2, 1990, and used for the operation of a server called "AlphaMOO". Pavel Curtis, an employee of Xerox PARC and also known by his handles "Lambda", and "Haakon", took the basic design, language, and code, fixed bugs and added features to release the first version, called "LambdaMOO" on October 30th, 1990.) <http://en.wikipedia.org/wiki/MOO>

- **1990** \_\_ **NetJam (MIDI collaborative network)** (NetJam provides a means for people to collaborate on musical compositions, by sending MIDI and other files to each other via electronic mail, processing them, and re-sending them. All those with MIDI-

compatible (and other interesting) equipment, and access to electronic mail, data compression facilities, and Internet (send electronic mail as below for details) who are interested in making music are encouraged to participate.) <http://www.jstor.org/action/showArticleImage?image=images/pages/dtc.107.tif.gif&doi=10.2307/1513130> <http://www.o-art.org/history/Computer/MIDI/NetJam.html>

- **1990** \_\_ **Oktophonie**, Karlheinz Stockhausen (This is the 8-channel tape of electronic music in TUESDAY from LIGHT, and plays through the entire second act, INVASION – EXPLOSION with FAREWELL (about 74 min.), including a stereo bridge in PIETA. The stereo bridge is omitted when OKTOPHONIE is performed as such, and the duration of the work then is about 69 min. The composer: "In this music, vertical and diagonal movements are composed for the first time, in addition to the horizontal movements in the earlier 4-channel or 8-channel electronic music." I have heard the composition in 8-channel reproduction, with two levels of height featuring 4 loudspeakers each, at the Stockhausen Courses 2002 in Kürten, Germany, and I can testify that such experience is riveting. The movements of sounds not only in horizontal direction but also vertically, up or down, and diagonally, are fascinating. Also, the spatial resolution of sounds allows for listening into the musical fabric to an even greater extent or more easily than in the stereo version. In particular, simultaneous slow moving sounds of similar character can be heard more easily in timbral distinction from each other, due to their enhanced separation in space. [Albrecht Moritz]. "The simultaneous movements – in 8 layers – of the electronic music of INVASION – EXPLOSION with FAREWELL demonstrate how – through OCTOPHONY – a new dimension of musical space composition has opened. In order to be able to hear these movements – especially simultaneously – the musical rhythm must be drastically slowed down; the pitch changes must take place much less often and only in smaller steps or with glissandi so that they can be followed; the composition of dynamics serves the audibility of the individual layers – i.e. it is dependent on the timbre of the layers and the tempo of their movements; and the timbre composition primarily serves the elucidation of these movements." [Karlheinz Stockhausen]) <http://home.earthlink.net/~almoritz/oktophonie.htm>

- **1990** \_\_ « **Toward Polymorphous Radio** », Tetsuo Kogawa ("Throughout its history, despite efforts by the Futurists in the 1920s, radio has been considered largely a means of communication rather than an art form. Therefore, it is ironic that just as traditional forms of radio are in decline, its possibilities as an art form are reaching extreme potentials. If, as Heidegger suggests, extreme possibilities are reached at the end of something, what then ends with radio? What is radio's "most extreme possibility?" In order to rethink these questions, I will talk about my experiences in Japan with free radio, which developed out of the mini-FM movement. The term mini-FM was first used in a mass-circulation newspaper in 1982, when a very low-watt FM-station movement started. Mini-FM stations have very little power judged by any standard—usually less than a hundred milliwatts. Although such a weak signal may seem to be of no use for broadcasting, the purpose was not broadcasting but narrowcasting. (...) Guattari stressed the radically different function of free radio from conventional mass media. His notions of transmission, transversal and molecular revolution suggested that, unlike conventional radio, free radio would not impose programs on a mass audience, whose numbers have been forecast, but would come across freely to a molecular public, in a way that would change the nature of communication between those who speak and those who listen. (...) It is in this context that I gradually understood the meaning and potential of mini-FM. Radio could serve as a communication vehicle not for broadcast but for the individuals involved. Even if they have few listeners, these stations do work as catalysts to reorganize groups involved in mini-FM. Those who were familiar with conventional radio laughed at mini-FM because it had only a few listeners, listeners within walking distance of the station, and no consistent style. (...) The question in the age of satellite media is no longer whether television or radio is "free" or not but whether it is "polymorphous" or not. Whether a station can become a place of polymorphous "chaos," obtaining "order through fluctuations," in the sense of Ilya Prigogine, depends on how many heterogeneous autonomous media units can be created. Such units are not likely to be large. A "chaos unit," which could be sensed easily, might be relative to the human body. Radio stations which can only cover areas within walking distance might already exist as a form of a particular unit of polymedia, a chaos unit. Polymedia are not intended simply to link smaller units into a larger whole instead they involve the recovery of electronic technology so that individuals can communicate, share idiosyncrasies and be convivial. The satellite presents possibilities for polymedia but it does not create it. Polymedia must be based on self-controlled tools, otherwise, advanced technologies like satellites will remain as tools for the manipulation of power.") <http://anarchy.translocal.jp/non-japanese/radiorethink.html>

- **1990** \_\_ **Up-down-v17**, Jim Horton, Duet for Two Continents, ATA Gallery SF (Produced by Gunter Kreutz. From a letter to participants: A BI-CONTINENTAL, MIXED MEDIA CONCERT THAT, VIA COMPUTER MODEM, SIMULTANEOUSLY LINKS SAN FRANCISCO AND HANNOVER, GERMANY, IN A SPIRIT OF ARTISTIC COOPERATION. FRIDAY MARCH 23 10:30 p.m. ARTIST TELEVISION ACCESS 992 VALENCIA. Sponsored in part by the Technical University of Berlin. Performers/Musicians/Artists: Dave Anderson, John Bischoff, James Carman, Phil Deal, Jim Horton, Gunter Kreutz, Ron Kuivila, Tim Perkis, Frank H. Rothkamm. What's happening?: In the first half of the audio/visual performance featuring the individual artists, live music, film, slide projection, etc. at a length of approximately 45 minutes to 1 hour will be given. In the second half of the performance, however, a telecommunication link of two continents via modem/satellite will be made. Images and music will be exchanged between Hannover (Germany) and San Francisco (USA). The sound events are transmitted as a stream of MIDI information controlling various musical devices. Sound data production and manipulation originating from either side will allow a

musical interaction across the ocean.) <http://o-art.org/history/Computer/2cont.html>

- **1990** \_\_ *WWW server* (A prototype was built. "The texts are linked together in a way that one can go from one concept to another to find the information one wants. The network of links is called a web. The web need not be hierarchical, and therefore it is not necessary to "climb up a tree" all the way again before you can go down to a different but related subject. The web is also not complete, since it is hard to imagine that all the possible links would be put in by authors. Yet a small number of links is usually sufficient for getting from anywhere to anywhere else in a small number of hops. The texts are known as nodes. The process of proceeding from node to node is called navigation. Nodes do not need to be on the same machine: links may point across machine boundaries. Having a world wide web implies some solutions must be found for problems such as different access protocols and different node content formats. (...) Nodes can in principle also contain non-text information such as diagrams, pictures, sound, animation, etc. The term hypermedia is simply the expansion of the hypertext idea to these other media". [Tim Berners-Lee & Robert Cailliau, "World Wide Web : Proposal for a Hyper-Text Project, 1990])

## 1991

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- **1991** \_\_ *À Perte d'Entendre*, Stephan Barron (Linked by walkie-talkie to the Brandenburg Gate, Stephan Barron walked away from it 8 successive times in 8 different directions. Each time he lost audio contact, he there and then took a Polaroid picture. The project was carried out at the Brandenburg Gate, symbol of the immaterial border between east and west - Sakchewsky Galery, Berlin -) (*À Perte d'entendre est une œuvre de 1991 sur la perception intime de l'espace et du lien à l'autre. Je quitte la Porte de Brandebourg à laquelle je suis relié par talkie-walkie et je me dirige successivement dans les huit directions cardinales. À chaque perte de contact, je prends une photo polaroid. Le rayon du cercle, cordon ombilical immatériel, varie en fonction des conditions de transmission. Ce projet est une expression de l'espace intérieur, construit à partir de l'expérience de la perte. Il a été réalisé à la Porte de Brandebourg, symbole de la frontière immatérielle entre l'Est et l'Ouest.*) [http://stephan.barron.free.fr/technoromantisme/barron\\_projets.html](http://stephan.barron.free.fr/technoromantisme/barron_projets.html)

- **1991** \_\_ *ArtSat*, Richard Kriesche («Kriesche, the artist, transmits the image of his hand into space where an Austrian astronaut can filter it from the data-background, the data static, only with the aid of certain instruments. At a certain point, for a few minutes only, the space capsule was positioned precisely above Graz, in a way that the data transmitted by the astronaut could be filtered from the data static in Graz. The live data triggered the waltz 'On the Blue Danube', a keyboard and a welding robot. Simultaneously, the filtered out data of the astronaut's message were recorded and passed on to 10 composers who created small compositions from the data.»[Heidi Grundmann]. For the first time in the history of soviet space travel, next to scientific and technical experiments, an art project was performed - as a subproject of "AUSTROMIR". Under the title "ARTSAT" Richard Kriesche conceived a multi-dimensional project - the first outer-space-artwork of this kind. He invited ten prominent composers to collaborate on the ARTSAT-project: from the decoded digital signal of the live dispatch, that the Astronaut Franz Viehböck sent from space, they composed the short listening pieces for the ORF-Kunstradio. These acoustic bits from outer space were able to be heard in this broadcast. «The cosmonaut's message from outer space alienates the blue danube waltz on earth and vice versa. The message from outer space becomes a live conductor, as it were, of the blue danube waltz. The alienated blue danube waltz is then used as a control signal for a mute piano which is played by the imaginary hand of the cosmonaut. The cosmonaut stretches out his hand to us as he flies by overhead.» [Richard Kriesche]. In autumn 1991, Richard Kriesche developed his Radio/Zeit project even further and organized ARTSAT, another project that delineated the electronic/digital space of communications technology as the site of a contemporary non-object-oriented art in the public space. Kriesche managed to get an art project accepted for inclusion with the projects and experiments to be carried out by the first Austrian cosmonauts to travel in space aboard the Soviet MIR space station. This was an artwork using radio as a technique and strategy to connect to and control populations of electronic systems in the mostly militarily defined extraterrestrial space. To make and keep his project visible amidst the patriotic drumbeating of the media, Kriesche appropriated social and artistic clichés, for example, transmitting a live message from the austrian cosmonaut, as his orbit carried him over eastern Central Europe in the MIR space station, to a television studio in Graz. This message sent via a ham radio device, triggered a synthesizer to play the Danube waltz, directed an industrial robot to weld a pattern onto a huge steel disc and was also recorded on audio tape. The tape was mailed to ten Austrian composers who turned the data of the message into short compositions that were aired first on KunstRadio and then published as a compact disc. The compact disc is an audio (and visual) counterpart to the huge welded disc that has in the meantime become a public monument. The project had many layers, the most important of which was perhaps that Kriesche succeeded in getting, at very short notice, a live national television program on a Sunday that lasted exactly as long as the full MIR orbit - one hour and thirteen minutes. The project also made clear that a profound change had taken place in recent years in art, especially an art positioned in public (electronic) space. For instance, Christina Weiss could write in 1984: "the artist ... used sign material, communications material with the aim sharpening a 'critical' glance of the reader ... and by

that to make the manipulative behaviour of everyday information media more transparent." After the Gulf War and media events such as the "revolution" in Romania, everyone knows about the manipulative behaviour of the everyday information media. Attempts by artists to critically "make visible" the mechanisms of the media often end up in the involuntary affirmation of media structures and contents. In this situation many artists have consciously adopted affirmative strategies; their art is concerned with the balance between its own visibility and disappearance. Well-defined roles may be appropriated, disguises adopted, fictions created, just to balance barely perceptible forms of appearance and the sensation of drowning in the white noise of data. [Heidi Grundmann] <http://www.orbit.zkm.de/?q=node/268> [http://kunstradio.at/TAKE/CD/artsat\\_cd.html](http://kunstradio.at/TAKE/CD/artsat_cd.html) <http://kunstradio.at/SPECIAL/MIR/broadcast.html>

- 1991 \_\_ « **Art Works as Organic Communications Systems** », Anna Couey ("The communities engendered via computer networks are organisms. Like physical communities they evolve and are influenced and defined through user participation. Like physical organisms, the extent of their impact on the ecosystem depends on their interaction with other organisms. Creative use of computer networks implies, from a user standpoint, experimentation with forms of communication and user interaction. From a systems standpoint, creative networking involves investigations into levels of user interaction in virtual space, community building and cross-pollination, or the creation of links between previously disparate communities. As organic communications systems, telematic art can initiate previously unknown behaviors and, over time, create operative new realities. Its meaning lies not in what it is (identity or objectification), but in what it effects." [Anna Couey] Leonardo\_24, No. 2, 127-130 (Oxford, UK: Pergamon Press, 1991.) <http://www.well.com/~couey/>

- 1991 \_\_ **Autoportrait**, Stephan Barron (In the exhibition space, a robot arrow indicated where Stephan Barron could be found. Stephan Barron built this telephone operated robot in collaboration with the engineer Jerome Gilbert, a specialist in home automation) (Autoportrait est un robot téléphonique construit en 1991 en collaboration avec l'ingénieur en domotique Jérôme Gilbert. Dans le lieu d'exposition, une flèche robotisée indique la direction où je me trouve. Ce robot obéissant aux fréquences vocales du téléphone indique huit directions différentes (Nord, Nord-Est, Est, Sud-Est, Sud, Sud-Ouest, Ouest, Nord-Ouest). Je me déplace autour du lieu d'exposition et indique au robot à partir de cabines téléphoniques les différentes directions. Je fais croire ensuite à un "tour d'Europe", en restant deux semaines chez moi.) [http://stephan.barron.free.fr/technoromantisme/barron\\_projets.html](http://stephan.barron.free.fr/technoromantisme/barron_projets.html)

- 1991 \_\_ **Big Father**, Simon Penny (Steel, concrete, electromechanicals, medical hardware, ultrasonic sensors, audio and video. Over the past 20 years, an entirely new global system of digital communication has come into being, comprised of satellite relays, optical fibre and coaxial cables, and computer networks. This augments the already vast global radio traffic. This new phenomenon is referred to as the 'datasphere'. Examined as an organism, the datasphere is colonial, in the sense that an ant colony or a marine sponge is colonial. Information is transmitted and received between millions of sensor and effector 'nodes' via a distributed 'rhizomatic' network. Viewed in this way, any electronic information gathering device which is hooked into this system becomes a sense organ of it. These sense organs operate on a vast range of scales, from the galactic (outward looking satellites and ground based observatories), to the global (earth watching satellites), the local (video surveillance systems), the personal (medical imaging technologies) and the microscopic (scanning tunneling electron microscopes). One might even postulate an imagination or dreaming in the form of synthetic computer imagery. The installation is an attempt to represent this system by simulating it. The visitor is confronted with five identical, large, vaguely anthropomorphic 'stations' which breathe. Each station individually senses the visitor. The sensing triggers the transmission of audio and video material.) <http://ace.uci.edu/penny/works/bigfather.html>

- 1991 \_\_ **Connect**, Gilbertto Prado (The project Connect is a fax-action that will enable people at different locations around the globe to make a unique artwork in real time. The participants must have two fax machines in each site. When the messages start to arrive, they are invited to feed that thermal paper roll (without cutting it) into the other machine, transforming the images in the process and then sending it to another site. In this way a loop is formed and the participants will build together one integrated work. An ephemeral and interactive curve will be drawn through the artistic network of communication. The first connect action took place the 31st May 1991 between Paris (Art-Réseaux / Université de Paris I - Centre Saint Charles) et Pittsburgh (Carnegie Mellon University - Studio for Creative Inquiry) and the participants: Gilbertto Prado, Karen O'Rourke, Christophe Le François, Claudine Romeo, Isabelle Millet and Patricia Franca (at Paris) and Artur Matuck, Maria Matuck, Rachel Allard, Jeniffer, ShowBin and Pamela (at Pittsburgh). Other exchanges also took place the 22 and 23 November 1991 between Paris (Art-Réseaux) and São Paulo (Workshop Project Reflux - XXI Bienal de São Paulo - Centro Cultural Oswald de Andrade.) <http://www.cap.eca.usp.br/gilbertto/english/index.html>

- 1991 \_\_ **DARTnet** (September: First audio/video conference (H.261 hardware codec) at DARTnet.) <http://myhome.hanafos.com/~soonjip/vchx.html>

- 1991 \_\_ **The Geometry of Silence** (In October 1991, both the Museum of Modern Art in Vienna and the Tyroler Landesmuseum Ferdinandeum in Innsbruck simultaneously served as the site of an international symposium, "The Geometry of Silence". Using the

example of radio art, the symposium was dedicated to the theory and practice of an art in the electronic space and included lectures, performances, installations (on site and later in their radio versions) by international artists and theoreticians, among them Robert Adrian X, Roy Ascott, Friedrich Kittler, Richard Kriesche, Isabella Bordoni and Roberto Paci Dalò, Concha Jerez and Jose Iges, G.X. Jupiter-Larses, Pool Processing, Mia Zabelka, and, from much greater distance, Qweck Bure-Soh in Paris and Jon Rose somewhere in Australia. The telephone lines connecting the two museums were provided by ORF (Austrian Broadcasting Corporation) and by the OPT (Austrian Post and Telecommunications). The ORF support came via the regional studio in Innsbruck and the national cultural Channel, Oesterreich 1, with its radio art program Kunstradio. (...) The video-conferencing system with its unusually large monitor added an important dimension to the connection between the two sites of the symposium (...). [Heidi Grundmann]. Distributed sound installation. Vienna and Innsbruck: Museum Moderner Kunst and Ferdinandeum. "In telematic art, meaning/content is no longer something which is created by artist, then distributed through the network and received by the recipient. Meaning is rather the result of an interaction between the observer/participant and the system, the content of which is in a state of flux, of endless change and transformation. In this state of uncertainty and instability the content becomes ... embodied in data which themselves are immaterial - pure difference - until it is reconstituted at the interface as image, text or sound." [Roy Ascott] [http://www.kunstradio.at/THEORIE/geo\\_e.html](http://www.kunstradio.at/THEORIE/geo_e.html)

- **1991 \_\_ The Glass Hand**, The Hub, John Bischoff (In the specification for *The Glass Hand* each player was asked to compose a number of sonic textures. While each texture might have internal motion, its overall quality was defined as stationary. Each player then constructed methods for calling forth textures in some order and executing transitions between textures that were as smooth as possible. The transition rates were specified as variable from 1 to 10 seconds. The network patch for the piece is in the form of a ring. There are two types of network data: triggers and speeds. Triggers tell a player to begin a transition to a new texture; speeds tell a player his current transition rate. Triggers are sent by each player to the next player in line in the ring, speeds to the player after that. Therefore, each player receives control information concerning how often and how fast to move between textures from two independent sources. As the music unfolds, players actively mix their individual outputs as they listen carefully. Their mixing actions are monitored by their own systems and used to influence outgoing triggers and speeds. The musical result is a multi-layered chorus of electronic sound that is continually moving and changing shape unexpectedly. Each player hears his part unfold differently in each performance. As parts converge and drift apart within a performance, players respond by shaping their mixing actions appropriately. These actions in turn affect the flow of network data, thus completing a system of circular influence.) <http://crossfade.walkerart.org/brownbischoff/>

- **1991 \_\_ The Industrial Revolution**, a project by John Bischoff, Ed Osborn, Krystyna Bobrowski, Joel Davel ("The Industrial Revolution" is for computer-controlled sound modules; brief noise samples are "rapidly modulated in pitch, loudness and width while a virtual ensemble of electronic instruments plays along." The piece is a gradual accumulation of sounds presented in sliding rhythmic cycles)

- **1991 \_\_ Linux** (Linux is the name usually given to any Unix-like computer operating system that uses the Linux kernel. Linux is one of the most prominent examples of free software and open source development: typically all underlying source code can be freely modified, used, and redistributed by anyone. The name "Linux" comes from the Linux kernel, originally written in 1991 by Linus Torvalds. The system's utilities and libraries usually come from the GNU operating system, announced in 1983 by Richard Stallman. The GNU contribution is the basis for the alternative name GNU/Linux. The primary difference between Linux and many other popular contemporary operating systems is that the Linux kernel and other components are free and open source software. Linux is not the only such operating system, although it is the best-known and most widely used. Some free and open source software licences are based on the principle of copyleft, a kind of reciprocity: any work derived from a copyleft piece of software must also be copyleft itself. The most common free software license, the GNU GPL, is a form of copyleft, and is used for the Linux kernel and many of the components from the GNU project. Linux is largely driven by its developer and user communities. Some vendors develop and fund their distributions on a volunteer basis, Debian being a well-known example. Others maintain a community version of their commercial distributions, as Red Hat does with Fedora.) <http://www.kernel.org>

- **1991 \_\_ Multi-City Collaborative Tele-Music Event**, Electronic Café, Santa Monica / Houston / San Diego / New-York / San Francisco / Kingston, Pauline Oliveros <http://www.ecafe.com/1991.html>

- **1991 \_\_ The Museum inside the Telephone Network**, NTT ICC Tokyo ("The Museum inside the Telephone Network", InterCommunication's annual event of 1991 (March 15-29), was a challenging exhibition on the telephone line, via which messages and artworks of the most innovative creators of the world today were made accessible from any telephone apparatus. This experimental event converted the telephone network into a museum. "visitors" could access the event by telephone, facsimile, or computer and appreciate works and messages submitted by the artists. This event gave "visitors" a taste of the coming world of cyber-space. "The Museum Inside The Telephone Network" was an event that expanded the museum's function as "information space" by enabling exchanges between different cultures through the use of phone lines. "on the Web" constituted multiple events

including the construction of a "visible museum" on the rapidly growing Internet, and the presentation of performances and installations over ISDN. In the "Net Gallery" the viewer enjoyed real-time interaction with artworks by using the latest browser software, such as Netscape Navigator, HotJava, and the VRML Viewer. To hold an exhibit on the network does not mean merely transferring the works and activities of artists who use currently existing media onto the Net. Furthermore, it is still unclear whether such works can be included in the pre-existing framework of what has come to be defined as "Art." It is all about process, and we have only just begun. Because Euclidean time and space do not apply to the Net, in order to understand the works and activities of artists on the Net we need to formulate a completely new form of "recognition." "on the Web" forced the viewers to question their own "comprehension of the network." Participating artists in the "Net Gallery" (22 groups from Japan and abroad): Art-Com, Bulbous Plants, Carl Stone, David Blair And Florence Ormezzano, Dumb Type, Etoh Koichiro, Fujihata Lab, George Coates Performance Works, Hachiya Kazuhiko, Harada Daizaburo-Sakamoto Ryuichi, Heath Bunting, Iwai Toshio, Ingo Günther, Kurebayashi Takao+Param, Masuyama Hiroshi, Matsumoto Gento And Samata Masato, Mikami Seiko, Muntadas, Nsk, Netshopboys, Sunahara Yoshinori Yasaka Kenji, Tachibana Hajime "InterSpace GLOBAL INTERIOR PROJECT #1" (FUJIHATA Masaki and NTT) Developed by NTT Human Interface Laboratories, "Interspace" acts as a communication environment system that allows for the participation of multiple users. Using "Interspace" as a platform, FUJIHATA Masaki designed a "spatial model" that connected real space and virtual space. By wiring up on a digital network a relational system that could never exist in reality, he created a model of the world that cannot be grasped objectively as navigatable space. This was an attempt to construct a new system of recognition from which to view the world. Spiral Hall, P3 art and environment, and ICC Gallery were linked through the network and displayed FUJIHATA's work. "Telematic Dreaming jTelematic Vision" (Paul SERMON) ICC Gallery and Spiral Hall were connected by ISDN and images of these two separate exhibition halls were exchanged using a teleconferencing system. The visitor could see their own image juxtaposed with that of someone from the other hall on a monitor. By communicating with the other person through gestures, the visitor experienced the complicated psychological condition of existing outside of real time and space. In other words, the visitor became aware not of the movements or existence of his own body, but rather, of a body that was interacting in a remote telematic space. The work's use of a "bed" and "sofa"-objects replete with meaning-- effectively enhanced this reversal in the visitor's perceptions, thereby eliciting a real sensation. A performance by Paul SERMON and Andrea ZAPP was held from November 3rd to 5th.) [http://www.ntticc.or.jp/Archive/1995/The Museum Inside The Network/ic91/index-e.html](http://www.ntticc.or.jp/Archive/1995/The_Museum_Inside_The_Network/ic91/index-e.html)

- **1991 \_\_ NC92 NETWORKER DATABANK CONGRESS**, University of Iowa Libraries (Coordinated by the Crackerjack Kid (aka Chuck Welch, editor, *Eternal Network: A Mail Art Anthology*, University of Calgary Press , 1995), the NC 92 Networker Databank consists of 443 indexed items generated by participants in the Decentralized World-Wide Networker Congress (August 1, 1991 -- March 15, 1992). This approximately year long event was composed of dozens of small congresses during which self-identified "Networkers" convened to discuss issues relevant to the present and future of networking culture as well as concerns relevant to copy art, mail art, computer art, cassette recordings, underground publications, etc. The Networker Databank Congress consists of 2.5 linear feet of 443 items submitted by various artists between August 1991 and February 1993 as well as additional material documenting the congress. These items include correspondence related to the Congress, statements about networking written by Congress participants, little magazines, electronic publications, catalogues, a network bibliography, video and audio documentation, and are arranged chronologically by their accession numbers. The date provided for each item is the date the item was received unless indicated otherwise. The NC92 Networker Databank Congress is a part of the Alternative Traditions in the Contemporary Arts Collection.) <http://www.lib.uiowa.edu/spec-coll/MSC/ToMsC800/MsC783/Networker%20Databank%20Congress.htm>

- **1991 \_\_ Poets at the Café Byron**, Andrew Garton (I produced a "Live to Pegasus" reading, Poets at the Café Byron, publishing texts to the Internet as they were being read by their authors. These texts were sent to the newsgroup café.byron. I recall that six to eight people were on-line at the time. It was real-time, live-to-text broadcasting. It seems quite primitive, but at the time it was empowering to simply expand the notion of place : we were in Byron Bay, but our audience was quietly reading our material in locations around the country we would have no hope of reaching otherwise".) [http://www.toysatellite.org/agarton/MA/project/report/proj\\_report.pdf](http://www.toysatellite.org/agarton/MA/project/report/proj_report.pdf)

- **1991 \_\_ Pressures of the unspeakable : a nervous system for the City of Sydney**, Gregory Whitehead (Writes Whitehead, "I arrived in Sydney on October 3,1991, carrying an "impossible object" a concept of the Screamscape - inside its fictive institutional vesicle or envelope, a bogus institution named The Institute for Screamscape Studies. Through the establishment of a series of cross-media circuits, I would then attempt to transform this object, both as an idea and as an acoustic phenomenon, into an "Invisible City": the invisible city of Sydney nervous system. Everything that happened in, across or through the circuits of the screamscape would become part of the nervous flow, culminating in a broadcast radiophonic "theatre of operations". The circuit was wired across three synapses: / 1. The elaboration of the nerve impulse path itself: founding of the Institute, establishing a 24 hour answering machine, called the "screamline" in reference to the acoustic "line" representing the journey that screamers take into their own interior space; the designation and "opening" of the scream room within the Australian Broadcasting Corporation (ABC); and the circulation of "scream discourse" within various news media: column eight, ABC television, and various talk/cultural affairs

programs within ABC radio. In addition to framing the nervous system, the telephone-microphone-tape recorder-radio circuitry also provided the key for the acoustic demarcation of pressure in the system: distortion, the disruption of digital codes, pure unmanageable noise. The scream as an eruption in excess of prescribed circuitries, as capable of "blowing" communications technologies not designed for such extreme and unspeakable meanings. / 2. Monitoring of the scream flow, and the development of various techniques for scream hermeneutics that would allow individual screamers to find their own rightful place in the city screamscape. At this stage, periodic memoranda and reports were circulated through the ABC and the University of Technology, Sydney on genesis of the screamland and on the indivisible "Rights of Nerves" (courtesy of Marie Curnick). Secondary publicity accomplished through release of select screams to television and radio programs. Lubricated by the greasy jelly of discourse and publicity, the scream trickle soon became a flood, in both the scream room and on the screamline, and the producer "nodes" at the Institute began to feel the first effects of *The Pressure* on our own increasingly jangled nervous systems. / 3. The completion of the circuitry, the breakdown of the last nodes of resistance within our own nervous systems, the passage of all screams fluidly through a now massive network of private and public ganglia. Strange things began to happen as we listened again and again to hundreds of "blown" and distorted screams. As needles pinned in the studio, bones rattled in the body, and the brain began to play curious tricks on the rest of us, our dreamlands turned into screamlands. At last, the narrative authority of Dr. Scream himself simply dissembled into pieces and he left the Institute to start a rhythm and blues band in Louisiana. Without him, though, there still followed the national BROADCAST of the assembled "report", transmitted by The Listening Room, followed by the accumulation of hundreds of additional post-broadcast screamline calls: objections, responses, post-screams, reflections, wrong numbers, confessions, and bold polemics. Two days after the repeat broadcast, after a moment of silence, the screamline is unplugged, and the nervous system is put, at least for the moment, to rest." Excerpted from *Continuum: The Australian Journal of Media & Culture* vol. 6 no 1 (1992). Edited by Toby Miller.)

- 1991 \_\_ **Series : Center for Experiments in Art, Information and Technology (CEAIT)** / California Institute of the Arts, Morton Subotnik, David Behrman, Colon Nancarrow (Mexico), Tod Machover, David Rosenboom, Mark Trayle, Dean Jacobs, STEIM (Amsterdam) (telelink concert with Amsterdam and Mexico) <http://www.ecafe.com/1991.html>

- 1991 \_ **SoundCulture'91** (History SoundCulture was initiated by artists and arts organizers in Australia working with the Performance Space, the Listening Room at the Australia Broadcast Corporation, and the Sound Studies Program at the University of Technology-Sydney. A festival composed of exhibitions, performances, radio broadcasts, and symposia was held in October, 1991 under the name of Invisible Cities/Impossible Objects. Representatives from Japan, New Zealand, and the United States were invited to attend. Events included installations by Paul DeMarinis (USA), Minoru Sato (Japan), performances by Anna Sabiel (Australia), Rodney Berry (Australia), a sonic taxi ride through Sydney, and a piece by Alvin Curran (USA) for ship horns in Sydney Harbor.)

- 1991 \_\_ **Sound Walks, Audio Walks**, Janet Cardiff ("The format of the audio walks is similar to that of an audioguide. You are given a CD player or Ipod and told to stand or sit in a particular spot and press play. On the CD you hear my voice giving directions, like "turn left here" or "go through this gateway", layered on a background of sounds: the sound of my footsteps, traffic, birds, and miscellaneous sound effects that have been pre-recorded on the same site as they are being heard. This is the important part of the recording. The virtual recorded soundscape has to mimic the real physical one in order to create a new world as a seamless combination of the two. My voice gives directions but also relates thoughts and narrative elements, which instills in the listener a desire to continue and finish the walk. All of my walks are recorded in binaural audio with multi-layers of sound effects, music, and voices (sometimes as many as 18 tracks) added to the main walking track to create a 3D sphere of sound.") <http://www.cardiffmiller.com/artworks/walks/index.html>

- 1991 \_\_ **Space Bodies**, Mia Zabelka (Tele-concert with a violin and electro-pneumatic violin between Palais Liechtenstein in Wien and Ferdinandeum in Innsbruck. Zabelka's teleperformance *Space Bodies* would have been the first live telematic radio performance using telerobotics in Kunstradio's history. "A fantastic idea: two violins, which are played by one and the same person - and what is more - simultaneously and at a spatial distance : with one of the instruments in her hand, the performer is located at Palais Liechtenstein in Vienna, while the other instrument she is playing, is situated at the Ferdinandeum in Innsbruck. It was the well known violin - and performance - artist Mia Zabelka who realised this uncanny mise-en-scene. By the artistic use of electronic media she has claimed a new reality. Mia Zabelka describes "Space Bodies" as an "interaction of human being, machine and electronic medium in two distant spaces" : At space 1 (Palais Liechtenstein) the artist herself is performing with her violin, in space 2 (Ferdinandeum) and electropneumatic violin is installed. This violin is handled in a way similar to the handling of modern robots. Space 1 and space 2 are connected to each other by a computer network. The "networked" performer and the "networked" music-machine are interacting at a distance by forming and integrated circuit through the respective control of their playing.) [Heidi Grundmann] [HEARON, James. *Lexicon Musikautomaten: Die Welt der selbstspielenden Musikinstrumente* (review) *Computer Music Journal* - Volume 29, Number 1, Spring 2005, pp. 100-101] <http://www.kunstradio.at/BIOS/zabelkabio.html>

- 1991 \_\_ **Teamworkstation/Clearboard NTT** (1991-1994) (Allowed for two remote people to share a drawing surface with a gaze awareness model.)

- **1991 \_\_ Telefonía**, Andres Bosshard, Ron Kuivila (*Intercontinental telematic installation. Musicians were performing together linked by satellite, playing at Winterthur in Switzerland, at the Hall of Science in New York City and (in the 2nd part) also on the Säntis Mountain in the Swiss Alps : w/ Andres Bosshard, Jin Hi Kim, Bernard Mixon, Phil Wachsmann, Ron Kuivila in Winterthur, Jacques Widmer, Paul Lovens on the Säntis mountain, Günter Müller, Christian Marclay, Butch Morris, David Gattiker, Jon Laxdal, Terry Adkins in New York*)

- **1991 \_\_ Telescanfax**, Gilbertto Prado (*From an initial image, a chain reaction transformation started, where the paths, contacts and images were memorized under a certain topography. Each interventor modified the received image and then marked the ramification done on the route over the map and registered the dates of the contact to sent it to two others participants on the net. The route of the map was built from the bifurcations of the image and its transformations. In other words, each participant received the successive transformation stages that the image had gone through. The intention was to send this series of transitory stages instead of sending the final product of the transformation work. The main idea was to connect and reconnect these series of stages and transformations with an interactive animation. This project was developed during the exhibition "Machines à Communiquer" in the "Atelier des Réseaux" at Cité de la Science et de l'Industrie La Villette - Paris from November 1991 until July 1992. The participants are artists, students and teachers from different universities and schools linked by the telecommunication network.) <http://www.cap.eca.usp.br/gilbertto/english/index.html>*

- **1991 \_\_ Texts, Bombs and Videotape**. Directed by Roy Ascott (*Slowscan TV, digital image and fax exchange between artists in Vancouver, Pittsburgh, Vienna, and Bristol. Bristol: Watershed Media Centre. "The electronic space in which telecommunications artists - along with transnational corporations, stock markets and the military - operate is a complicated concept made possible by another phenomenon of art in the 1970's ... conceptual art. Conceptual art demands a conceptual space in which to exist and a culture that has grasped that elusive notion will have no trouble at all de-materialising its power structures into something as relatively concrete as the electronic space of international electronic communications networks." "Shocked by the brutality of the high-tech weaponry deployed in the bombing of Baghdad, the DAX group at Carnegie Mellon University in Pittsburgh (whose robotics labs had heavy Pentagon funding) initiated a project called "TEXTS, BOMBS AND VIDEOTAPE. A Journey into the Zone", a title suggested by Roy Ascott. In January/February 1991 - during the preparation of TEXTS, BOMBS AND VIDEOTAPE - Ascott was communicating from Vienna as documented in the March/April 1991 issue of the Western Front magazine. The documentation also contains some of the images exchanged between nodes in Vienna, Pittsburgh, New York, Vancouver a.o. According to the Western Front Archives, TEXT, BOMBS & VIDEOTAPE was the last project to make use of the IP Sharp Timesharing System, before it was discontinued by its new owner, Reuters." [Heidi Grundmann]*

- **1991 \_\_ Texts Bombs and Videotape**, Paul Sermon (*A 24 hour fax, E-mail and SlowScan TV event presented as a telematic workstation between Newport School of Fine Art in the UK, The Hochschule fuer angewandte Kunst in Vienna and the Digital Art Exchange in Pittsburgh, USA. As a critique of the Gulf War media coverage for the Watershed Media Center in Bristol, England, March 1991.) <http://www.hgb-leipzig.de/~sermon/projects/tbv.html>*

- **1991 \_\_ The Thing**, Wolfgang Staehle (*In 1991, THE THING began as a Bulletin Board System focusing on contemporary art and cultural theory, and initiating an international community of net artists and projects. One of the pioneering net-community projects, THE THING is initiated in 1991 in New-York by the German-American artist Wolfgang Staehle, as a computernetwork of art- and art-related addicts formerly based on a BBS-Mailboxsystem with knots at New York, Amsterdam, Basel, Stockholm, Berlin, Kön, Hamburg, Düsseldorf, Frankfurt, London and Vienna. Since 1995 stations have moved to the WWW. The legendary THE THING has been a Internet Presence Provider for activist and arts organizations primarily in the New York area for ten years. It hosts arts and activist groups and publications including P.S.1 Contemporary Art Center; ARTFORUM; Mabou Mines; Willoughby Sharp Gallery; ZINGMAGAZINE; JOURNAL OF CONTEMPORARY ART; NETTIME; and Tenant.net. Among many others, artists and projects associated with thing.net have included Sawad Brooks, Heath Bunting, Cercle Ramo Nash, Vuk Cosic, etoy, GH Hovagimyan (who did his first computer piece with thing.net before the web in 1993: BKPC), Jérôme Joy, John Klima, Jenny Marketou, Mariko Mori, Prema Murty, Mark Napier, Joseph Nechvatal, Phil Niblock, Daniel Pflumm, Francesca da Rimini, Beat Streuli, and Beth Stryker. It also offers dial-up access; authoring and design services; arts-oriented newsletters, and online conversation spaces. THE THING has been generously supported by the Nathan Cummings Foundation, the Rockefeller Foundation, the National Endowment for the Arts, and thing.net communications. The Thing stopped its activity in July 2007.) <http://jeromejoy.org>*

- **1991 \_\_ Transcontinental Jam** (*live analog "vidphone" exchange between the Western Front in Vancouver, and Studio X in Toronto in 1991. Hank Bull is explaining the technique of cycling through slowscan stills to create an animated performance.) <http://www.jeffmann.com/Site/works%201987-1994.html>*

- **1991** \_\_ *Les Virtualistes* (Officiellement né en juin 1991 de Christine Treguier, journaliste, et de Pascal Schmitt, artiste, le groupe Les Virtualistes s'est donné pour objectif de détourner les technologies de communication à des fins artistiques et non destructives. Leurs outils de prédilection sont la visiophonie, le Net et la Réalité Virtuelle. Ils ont participé à des festivals et événements internationaux avec de nombreux réseaux : Electronique Café International (USA), Telenoia (Rotterdam/V2 Org.) , Van Gogh TV (Kassel/Documenta), Siggraph (USA), IAMAS (Japon), Nordic Interactive Conference (Danemark) etc... Avec Les Trois Suisses, ils organisent en 1993 et 1995 Voyages Virtuels I et II, les deux premières expositions présentant au grand public français une sélection des meilleures applications de VR et installations interactives internationales. Le groupe réunit au sein d'un atelier en banlieue parisienne des artistes, des informaticiens, des spécialistes réseau et Internet et des enseignants. Divers projets sont en cours de développement.) <http://www.virtualistes.org>

- **1991** \_\_ « *War in the Age of Intelligent Machines* », Manuel de Landa (*War in the Age of Intelligent Machines* (1991) is a book by Manuel de Landa that traces the history of warfare and of technology. It is influenced in part by Michel Foucault's *Discipline and Punish* (1978), and also reinterprets the concepts of war machines and the machinic phylum, introduced in Deleuze and Guattari's *A Thousand Plateaus* (1980). Deleuze & Guattari appreciated Foucault's definition of philosophy as a "tool box" that was to encourage thinking about new ideas. Thus, they themselves prepared the field for a reappropriation of their concepts, that is, a different use in another context of the "same" concept, which they also theorized under the name of "actualization". Manuel de Landa wisely takes advantage of the liberty these authors offered to draw on their concepts in order to investigate his field of studies: the history of warfare and technologies. Like Foucault's "archeology", Manuel de Landa's philosophy of technology leaves openings for various causal series which interferences together. But as in *A Thousand Years of Nonlinear History* (1997), de Landa doesn't allow this perspective to justify any anthropocentric conception of history, which would be centered on teleological progress. Thus, instead of opposing the man to the machine as in classic philosophy, he plays on the interactions between the war machines and the machinic phylum. For example, he writes: "The machinic phylum, seen as technology's own internal dynamics and cutting edge, could still be seen shining through the brilliant civilian discoveries of the transistor and the integrated chip, which had liberated electronic circuit designs from the constraints on their possible complexity. But the military had already begun to tighten its grip on the evolution of the phylum, on the events happening at its cutting edge, channeling its forces but limiting its potential mutations." The next threshold point, or singularity, to be reached, according to de Landa, is the point where man and machine cease to oppose themselves, becoming one single war machine, and when that war machine itself is crossed by the machinic phylum — this last condition might be compared to Deleuze's call for the desiring molecular machines to use the social machines, instead of being composed and manipulated in order to form a complex molar machines. The developments of artificial intelligence, which will sooner or later lead to the creation of "predatory machines", that is intelligent machines. The 1805 Jacquard loom, which used the holes punched in pasteboard punch cards to control the weaving of patterns in fabric, is the first example of a "migration" of human control to machines control, and marks the invention of software according to de Landa. "I defined the machinic phylum as the set of all the singularities at the onset of processes of self-organization — the critical points in the flow of matter and energy, points at which these flows spontaneously acquire a new form or pattern. All these processes, involving elements as different as molecules, cells or termites, may be represented by a few mathematical models. Thus, because one and the same singularity may be said to trigger two very different self-organizing effects, the singularity is said to be 'mechanism independent'". If "a same singularity may be said to trigger two very different self-organizing effects", neither technophobia, as presented by Virilio's work, or technophilia are justified in themselves. Manuel de Landa demonstrates that de-centering history from a human perspective is not necessarily denying human freedom, opposing himself to those who would argue, for example, that Louis Althusser's explicit "antihumanism" and insistence on Ideological State Apparatuses (I.S.A.) instead of on the universal and individual subject would be a form of Marxism opposed to the Enlightenment's ideals. "Hierarchies give rise to meshworks and meshworks to hierarchies. Thus, when several bureaucracies coexist (governmental, academic, ecclesiastic), and in the absence of a super-hierarchy to coordinate their interactions, the whole set of institutions will tend to form a meshwork of hierarchies, articulated mostly through local and temporary links. (...) A similar point may be made about the worlds inhabited by software agents. The Internet, to take the clearest example first, is a meshwork which grew mostly by drift. No one planned either the extent or the direction of its development, and indeed, no one is in charge of it even today. The Internet, or rather its predecessor, the Arpanet, acquired its decentralized structure because of the needs of U.S. military hierarchies for a command and communications infrastructure which would be capable of surviving a nuclear attack. As analysts from the Rand Corporation made it clear, only if the routing of the messages was performed without the need for a central computer could bottlenecks and delays be avoided, and more importantly, could the meshwork put itself back together once a portion of it had been nuclearly vaporized. But in the Internet only the decision-making behind routing is of the meshwork type. Decision-making regarding its two main resources, computer (or CPU) time and memory, is still hierarchical. (...) But in the meanwhile, the Internet will remain a hybrid of meshwork and hierarchy components, and the imminent entry of big corporations into the network business may in fact increase the amount of command components in its mix." [Manuel de Landa, *Meshworks, Hierarchies and Interfaces*]) (Prenons le raisonnement du philosophe Manuel De Landa, qui s'appuie sur la théorie du chaos. Selon lui, des "singularités" (des points de rupture qui font émerger un nouvel ordre) apparaissent dans la matière inanimée, donnant lieu à des comportements étrangement humains de coopération. Le développement de l'Internet n'étant pas linéaire, il pourrait déboucher sur l'émergence d'une intelligence artificielle globale : "Passé un certain seuil de connectivité, la membrane dont les réseaux informatiques recouvrent

la planète commence à prendre vie. Des logiciels indépendants vont bientôt constituer des mondes informatiques encore plus complexes où les logiciels traiteront l'un avec l'autre, se féconderont et enfanteront spontanément des programmes" (Manuel De Landa in *War in the Age of Intelligent Machines*, 1991). [Laurent Camite] <http://www.t0.or.at/delanda/meshwork.htm>

- **1991** \_\_ **WaxLips**, The Hub, Tim Perkis (MIDI-hub piece. It was an attempt to find the simplest Hub piece possible, to minimize the amount of musical structure planned in advance, in order to allow any emergent structure arising out of the group interaction to be revealed clearly. The rule is simple: each player sends and receives requests to play one note. Upon receiving the request, each should play the note requested, and then transform the note message in some fixed way to a different message, and send it out to someone else. The transformation can follow any rule the player wants, with the one limitation that within any one section of the piece, the same rule must be followed (so that any particular message in will always cause the same new message out). One lead player sends signals indicating new sections in the piece (where players change their transformation rules) and jump-starts the process by spraying the network with a burst of requests. The network action had an unexpected living and liquid behavior: the number of possible interactions is astronomical in scale, and the evolution of the network is always different, sometimes terminating in complex (chaotic) states including near repetitions, sometimes ending in simple loops, repeated notes, or just dying out altogether. In initially trying to get the piece going, the main problem was one of plugging leaks: if one player missed some note requests and didn't send anything when he should, the notes would all trickle out. Different rule sets seem to have different degrees of "leakiness", due to imperfect behavior of the network, and as lead player I would occasionally double up\_ sending out two requests for every one received\_ to revitalize a tired net.) <http://crossfade.walkerart.org/brownbischoff/>

- **1991** \_\_ **WaxWeb**, David Blair (Waxweb is an interactive narrative 3D environment which is based upon and distributed via the internet. It goes back to Blair's 1991 electronic movie »Wax or the Discovery of Television Among the Bees«. Scenes from this film are interwoven with image, sound and text elements to build an associative net of references where the linear story is no longer valid. Depending on the interaction with the viewer, the elements gather to build new narrative threads and generate new interaction possibilities. By shifting into virtual space, the movie turns into interactive cinema.) <http://www.waxweb.org>

- **1991** \_\_ **WWW** (The first website went on-line in 1991. The NeXTcube used by Berners-Lee (UK) at CERN became the first Web server [CERN]. Contents of the WWW are manually catalogued in form of the centralised WWW Virtual library system residing on CERN's WWW server [Secret 1996].) [http://en.wikipedia.org/wiki/List\\_of\\_websites\\_founded\\_before\\_1995](http://en.wikipedia.org/wiki/List_of_websites_founded_before_1995)

- **1991** \_\_ **WWW server** (production version [Cailliau 1995]. The server solves the 'Big Technological 3': URL (addressing) syntax, HTML (markup) language for documents, and HTTP (communications protocol) in the context of the client/server model. It also offers integration of earlier Internet tools (Telnet, FTP, Archie, Gopher, Veronica and Jughead [alas, not WAIS]) into a seamless whole. To organize this navigation, users needed a browser or navigator enabling them to select information and display it on the screen. This software, that its author called the World Wide Web, was ready in 1991. It included a HyperText Markup Language (HTML) for describing documents and another language called the HyperText Transfer Protocol (HTTP) for managing and transferring them. The documents were placed in servers with a URL (Uniform Resource Locator) address. Soon the World Wide Web software was circulating on the Internet. The international community of nuclear physicists started to use it to share documentation. Hypertext specialists who obtained the information in the "alt-hypertext" newsgroup examined it and created other navigators, the most well-known of which is Mosaic, written by Marc Andreessen at the National Center for Supercomputing Application (NCSA), University of Illinois. [Patrice Flichy])

## 1992

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- **1992** \_\_ **Internet** (There are about 20 Web servers in existence [Ciolek 1998]. The number of networks exceeds 7,500 and the number of computers connected passes 1,000,000. The MBONE for the first time carries audio and video. The challenge to the telephone network's dominance as the basis for communicating between people is seen for the first time; the Internet is no longer just for machines to talk to each other. During the summer, students at NCSA in Champagne-Urbana modify Tim Berners-Lee's hypertext proposal. In a few weeks MOSAIC is born within the campus. Larry Smarr shows it to Jim Clark, who founds Netscape as a result. The WWW bursts into the world and the growth of the Internet explodes like a supernova. What had been doubling each year, now doubles in three months. Line mode browser release 1.1 is available by anonymous FTP. It is now possible to browse the WWW. What began as an ARPA experiment has, in the span of just 30 years, become a part of the world's popular culture.)

- **1992** \_\_ **Le Banquet Télématique**, Michel Suret-Canale & Marie Dominique Wicker dans le cadre de l'Exposition Machines à communiquer., Paris, Cité des Sciences et de l'Industrie de la Villette, Atelier Art Réseaux) (« Dans l'effondrement de toute volonté

de peindre, d'écrire, de communiquer, à ce moment d'échouage où il n'y a plus rien à dire, où le plus près est aussi le plus éloigné, s'opère un retournement paradoxal : le retournement au lieu commun. Peindre, écrire, communiquer, autant d'intentions qui ne peuvent prendre forme qu'à travers leur propre effondrement. Le Banquet Télématique est la répétition d'un désastre indéfiniment partagé. Ainsi réunis, nous désespérons avec bonheur, usant des technologies les plus performantes dans le seul but d'exaspérer au mieux cette séparation qui seule nous rassemble. Si près - Si loin est le menu d'un banquet auquel nous convions celui qui fait l'épreuve de la distance : que ce qui parvient vienne de loin, l'ensemble des contributions dessinant notre communauté comme espace du ressemblant. » Le Banquet télématique de Michel Suret-Canale et Marie-Dominique Wicker (1992) surcharge les lignes téléphoniques d'informations de toutes sortes (textes théoriques ou poétiques, photos, diagrammes, dessins), venues de toutes parts (Moscou, Madrid, les USA) pour converger sur un télécopieur seul, isolé derrière une vitre, inaccessible au public: les nombreux "convives" ne peuvent communiquer ni avec lui, ni entre eux. [Karen O'Rourke]

- **1992 \_\_ BioMuse**, Benjamin Knapp, Hugh Lusted (Then in 1990 two scientists, Benjamin Knapp and Hugh Lusted, began working on a computer interface called the BioMuse. ([www.biocontrol.com/biomuse.html](http://www.biocontrol.com/biomuse.html)) It permitted a human to control certain computer functions via bioelectric signals including EEG and EMG (electromyogram: a measure of muscle-related bioelectricity). In 1992, Atsu Tanaka was commissioned by Knapp and Lusted to compose and perform music using the BioMuse as a controller. Tanaka continued to use the BioMuse, primarily as an EMG controller, in live performances throughout the 1990s. In 1996, Knapp and Lusted wrote an article for Scientific American about the BioMuse called Controlling Computers with Neural Signals. ([www.absoluterealttime.com/resume/SciAmBioCtl.pdf](http://www.absoluterealttime.com/resume/SciAmBioCtl.pdf)) [Andrew Brouse, A Young Person's Guide to Brainwave Music] <http://www.mindmodulations.com/mindmods/general/a-young-persons-guide-to-brainwave-music.html>

- **1992 \_\_ Brunch in California - Dinner in Nice**, Teleconcert Santa Monica/Nice, Electronic Café, Morton Subotnik, David Rosenboom, Terry Riley, Michel Redolfi, Festival Manca Nice, Nov. 91 & 92 (MIDI and video connections in an interactive musical day - historic first trans-Atlantic jam session between a stellar line up of musicians at both ends) (Organisation du premier concert Transatlantique Midi, entre claviers et Disclavier. Improvisation de Terry Riley. La liaison s'effectuait via modem, entre deux MacIntosh et le programme Midiphone récemment testé avec Mark Coniglio au Cal'Arts (californie). L'instant le plus magique étant de voir un piano acoustique jouer seul, sous les doigts d'un pianiste à 8000 Kms de là... après un délai d'une bonne seconde. L'année suivante, dans le même contexte, diffusion à Santa Monica de parfums contrôlés depuis Nice en Réseau... grande première (liaison Midi et vidéophone N&B (image fixes, renouvelées en cours de concert)). [Luc Martinez]) <http://www.ecafe.com/1992.html>

- **1992 \_\_ Chip-Radio** - A simultaneous telematic concert by Andreas Bosshard, Seppo Gründler, Horst Hörtner, Gerfried Stocker, Mia Zabelka (Teleconcert with 3 performers at 3 places. Performed live at the regional studios of the ORF in Tyrol, Salzburg, Vorarlberg, and broadcast on the programme "Kunstradio - Radiokunst" on Oesterreich 1. Innsbruck / Foyer of the Broadcasting House : Gerfried Stocker (sampler), Waldemar Rogojsza (actor, cues by Andres Bosshard, Dornbirn), robot-violin (Martin Riches; played by Mia Zabelka, Salzburg), Three E-guitars (played by Seppo Gruendler, Salzburg), Studio 3 : Ewald Wabnig (live mix of the Kunstradio programme, following a concept by Andres Bosshard). Salzburg / Foyer of the Broadcasting House : Mia Zabelka (violin, sampler, percussion), Seppo Gruendler (E-guitar, MIDI saxophone), Percussion (played by Gerfried Stocker, Innsbruck). Dornbirn / Foyer of the Broadcasting House: Andres Bosshard (cassette machinery), Marimba (played by Gerfried Stocker, Innsbruck), Synthesizer (played by Seppo Gruendler and Mia Zabelka, Salzburg). "Working in electronic space, working with contemporary technology entails coming to grips with an environment we are faced with on a daily basis" (Gerfried Stocker). Chip-Radio was the opening event of TRANSIT (a unique support structure for the realization of artistic projects in the electronic space, especially in the space of the mass-media and television). The project has been initiated by Mia Zabelka, and she also brought with her the Swiss sound artist Andres Bosshard, who in turn invited the Polish actor Waldemar Rogojsza. Technical expertise in the use of telecommunications systems, computers, and robotics was supplied by Gerfried Stocker, Horst Hoertner, and Seppo Gruendler (all from Graz), who had been part of Puente Telefonico, the first live telematic radio project produced by Kunstradio. "The found infrastructure of the data and transmission networks between these locations is occupied by the artists and becomes their most important "instrument", and instrument that facilitates a networked interaction far beyond the parameter of mutual visibility. Each artist can immediately become present at the other locations and exert influence on them. The instantaneous feedback of the telematic activities permits a precise control of the interplay" (Gerfried Stocker). The artists used data gloves (Stocker), arm interfaces (Zabelka), a MIDI saxophone (Gruendler), or a graphical interface (Gruendler, Zabelka) to play instruments and robotic devices at other locations. They - and the respective audiences - could see glimpses of the remote participants on video monitors. But what is more, they saw the effects of their movements and actions on the situation at their own space : Marimbas, the violin robot, the drums, the guitars played as if touched by the hands of ghosts. The art historian Romana Froeis wrote in TRANSIT #1 : " The telematic simultaneous concert Chip-Radio rendered processes in the electronic space physically and psychologically perceptible, which per se remain incomprehensible ... Salzburg transmitted its spatial acoustic together with the sounds from Innsbruck, to Dornbirn. There they were enriched by the local spatial acoustic and sent on to Innsbruck and so on. The circulation of the loop of spatial sound could have easily turned into an acoustical feed-back situation, if Andres Bosshard had not programmed it

as a very differentiated spatial mix". A short text written by Hoertner, who had been responsible for the network design of Chip-Radio, concluded: "The main part of the work on this network was determined by software development and the coordination of the protocols of computers and robots. The main problem was the exchange of quite gigantic quantities of data for the requested behaviour in realtime ... a successful performance and the transmission of the musical events via radio - both of them of captivating quality - were the answers, which the artists were capable to formulate with the help of this (network-) installation. (...) Chip-Radio confronts the distributive mass-media radio with the reality of intercommunicative networks in order to - within this field of tension - arrive at a sounding of the potential of both media. [Heidi Grundmann]) (Dieser Aspekt der Fernsteuerung wird gerade bei der Performance "Chip-Radio" zu einem wesentlichen Bestandteil. Ein speziell für diese Performance aufgebautes Netzwerk Design konstruierte jenen elektronischen Raum, in dem sich die Akteure mit den von ihnen räumlich getrennten Instrumenten "treffen", bzw. interaktiv agieren konnten. Für den Rezipienten wird diese Interaktivität visuell und/oder akustisch zum Ausdruck gebracht. Der elektronische Raum impliziert einen Knotenpunkt, wo sich Mensch und Maschine zu einer Interaktion vereinigen können. Folglich erweist sich die räumliche Distanz zwischen Mensch und Maschine als irrelevant. Die immateriellen elektronischen Datenräume ersetzen die reale räumliche Ferne. Diese verschwindet und kehrt erst wieder in unser räumliches Bewußtsein zurück, wenn wir uns aus den immateriellen elektronischen Räumen zurückziehen. Genau in diesem Moment erfahren wir jenes ambivalente Verhältnis von Ferne und Nähe, das den elektronischen Medien innewohnt. Das blitzartige Näherbringen der Ferne passiert mit gleicher Geschwindigkeit, wie das Zurückbringen derselben. Beim telematischen Simultan-Konzert "Chip-Radio" wurden die - an sich nicht nachvollziehbaren - Vorgänge im elektronischen Raum physisch und psychisch wahrnehmbar gemacht. Die Aufführungen fanden an drei geographisch verschiedenen Orten, den architektonisch identischen Landesstudios Dornbirn, Innsbruck und Salzburg statt. Ein vierter Raum entstand durch die Live-Übertragung im Radio (Ö1 Kunstradio-Radiokunst). Das Massenmedium Radio eröffnet die Möglichkeit akustische und geographische Raumdistanzen zu überwinden. Normalerweise ist das Radio eine Einweg-Tonverbindung von einem Ausgangsort zu vielen anderen Orten. Bei der Performance "Chip-Radio" waren die ausgewählten, geographisch getrennten Orte alle zugleich Aufführungsorte, die mit interkommunikativen Datennetzen verbunden waren. Die von den Künstlern fabrizierte interaktive Raumakustik wurde live gemischt und (live) gesendet. Für den Radiohörer/Empfänger wurde ein akustischer Hör-Raum synchron von allen drei Aufführungsorten ins Wohnzimmer projiziert. Die elektronischen Medien heben die räumliche Distanz auf. Die Annullierung der Ferne, so fordert es Peter Weibel, muß für die Technokultur ein Axiom sein. "Nicht wir rücken der Ferne näher, sondern die Ferne uns, die Telemaschinen bringen uns die Ferne nahe heran. Das Entlegene rückt auf uns zu" [Decker Edith, Weibel Peter, Vom Verschwinden der Ferne, Telekommunikation und Kunst, Ausstellungskatalog, Köln, 1990, S. 47]; [http://www.kunstradio.at/1992B/1\\_10\\_92.html](http://www.kunstradio.at/1992B/1_10_92.html) <http://transit.tiroler-landesmuseum.at/chipradio/froeis.html>

- **1992 \_\_ Chip-Radio - Artists as Experts** ("With their attempt to bring something of the elastic "horizontal" of the networking experience to the rigid, producer-oriented "verticality" of the public-radio institutions, artists began to become interested in gaining access to the administrative and technological infrastructure of transmission itself. This shift also implied a profound change of the relationship between the artists and their counterparts inside the organizations. This relationship required a type of artist / technician / media expert who was capable of motivating engineers, producers, and administrators alike to become allies and/or innovative partners in the realization of art projects, something against considerable resistance by colleagues and superiors. In the first half of the 1990s, these artists often were much more aware of the impact of digitalization on older communication technologies - and on culture and art generally - than most of the professionals inside the big institutions of public broadcasting (or of commercial broadcasting for that matter) [Heidi Grundmann].)

- **1992 \_\_ CUSeeMe** (When development of CU-SeeMe began in July 1992, the only real-time videoconferencing software for the Internet required expensive hardware which severely limited the number of potential senders and receivers. Working with Richard Cogger in the summer of 1992, Tim Dorcey wrote the original version of CU-SeeMe. September 1992: CU-SeeMe v0.19 for Macintosh (without audio), from Cornell University. April 1993: CU-SeeMe v0.40 for Macintosh (with multipoint conferencing). February 1994: CU-SeeMe v0.70b1 for Macintosh (with audio). April 1994: CU-SeeMe v0.33b1 for Windows (without audio). August 1995: CU-SeeMe v0.66b1 for Windows (with audio). April 1998: CU-SeeMe v1.0 for Windows and Macintosh (with color video). May 1998: Cornell's CU-SeeMe development team has completed their work and has gone on to other projects. Next development of audio-videoconferencing techniques : iVisit, Skype.)

- **1992 \_\_ CYPRES**, Marseilles (Since it was created in 1992, CYPRES has been exploring the major evolutions that are currently developing between the arts, sciences and technologies, whilst deeply transforming the expression, knowledge and organisation modes of contemporary societies. While taking part in the international debate arising from these transformations, and in keeping with specific European, regional and local cultural politics, CYPRES initiates and participates in high-standard research and creation projects. These projects lie at the heart of a large and active network of European partners that include Research Institutes, Universities, Art Centers and Art Schools. CYPRES collaborates with researchers, creators and computer specialists who are strongly involved in scientific and technological innovations and in the emergence of the new artistic contents and expressions that are shaping tomorrow's European utopia, and that require concrete implementations. As part of other different programmes, artists from Africa, South America, Asia, ... come to Marseilles and widen the scope of their works, whilst contributing to the development

and realisation of CYPRES' current projects. Through the research units (art/ Cognition ; Art/ Communication ; Interculturality), actions and transdisciplinary events implemented by the association (arts/ sciences/ technologies/ cultures), CYPRES aims to actively take part in the current issues regarding today's political and geocultural mutations.) <http://www.cypres-artech.org/>

- **1992** \_ « **Digerati** » (As coined by New York Times editor Tim Race: people highly skilled in the processing and manipulation of digital information; wealthy or scholarly technonerd. Always plural. The first mention of the word Digerati on USENET occurred in 1992, and referred to an article by George Gilder in Upside magazine. Some sources say that the term was coined by New York Times editor Tim Race. In Race's words: "Actually the first use of "digerati" was in a Jan. 29, 1992 New York Times article, "Pools of Memory, Waves of Dispute", by John Markoff, into which I edited the term. The article was about a controversy engendered by a George Gilder article that had recently appeared in Upside magazine. In a March 1, 1992 "On Language" column in The New York Times Magazine, William Safire noted the coinage and gave me the honor of defining it, which we did like so: Digerati, n.pl. -- people highly skilled in the processing and manipulation of digital information; wealthy or scholarly techno-geeks." William Safire seized upon the neologism in his Sunday column: " Literati, Italian for the Latin litterati, means 'the intellectual set.' In the 1930's a portmanteau word was formed to blend the world of glittering celebrities with these intellectuals: glitterati. Now all that glitters in digital, from the latin for 'finger,' and later applied to a number that can be counted on the 10 fingers. Hence, digirati, 'computer intellectuals,' a word sure to flash through the world's electronic mailboxes." Today, Markoff says, digirati is a stand in for "digital elite" the powerful engineers, the Third Wave intellectuals, and power brokers of the wired world.) <http://www.writing.upenn.edu/~afilreis/digerati.html>

- **1992** \_\_ **Droit de Cité**, Radio-Canada, Mario Gauthier, Claire Bourque ("Droit de Cité" (aired in June 1992) was an ambitious radio art event that introduced real-time, natural and recomposed audio landscapes as part of a live broadcast. The project was intended as a form of public radio intervention and exploration of real time musicalization of live broadcast urban soundscapes. Since we were celebrating the 350th anniversary of the City of Montreal in 1992, we decided to listen to our immediate environment and ask both local and foreign artists to make music with it : Bruit TTV, Jean-Pierre Côté, Rober Racine, Diane Labrosse, Glass Orchestra, Claude Schryer, Bob Ostertag, René Lussier, Ned Bouhalassa, Yves Daoust. "For seven days, at different times, sound portraits of the city of Montréal were presented live on the FM network of Société Radio-Canada. Seven soundscapes were captured live from different locations in the city and trans-formed by artists situated in a production studio at SRC. These artists transformed the sounds into a musical product which was broadcast live, without warning to the audience, on the national network. As a result, radio became, for a brief moment, a giant ear listening to the personality of the city.") [http://www.kunstradio.at/ZEITGLEICH/CATALOG/ENGLISH/schryer\\_c-e.html](http://www.kunstradio.at/ZEITGLEICH/CATALOG/ENGLISH/schryer_c-e.html)

- **1992** \_\_ **Earth Tones I**, Bill Fontana, Oliver Ranch Northern California (Six large, low-frequency loudspeakers (Bose Acoustic Wave Canons) are buried around a lake in a natural landscape. Low frequency sounds from the Pacific Ocean are played at the site where the Wave Canons couple the low sea sound to the earth) [http://www.resoundings.org/Pages/Earth\\_Tones.html](http://www.resoundings.org/Pages/Earth_Tones.html)

- **1992** \_\_ « **The Economy of Ideas - Selling Wine Without Bottles on the Global Net** », John Perry Barlow ("The riddle is this: if our property can be infinitely reproduced and instantaneously distributed all over the planet without cost, without our knowledge, without its even leaving our possession, how can we protect it? How are we going to get paid for the work we do with our minds? And, if we can't get paid, what will assure the continued creation and distribution of such work? Since we don't have a solution to what is a profoundly new kind of challenge, and are apparently unable to delay the galloping digitization of everything not obstinately physical, we are sailing into the future on a sinking ship. This vessel, the accumulated canon of copyright and patent law, was developed to convey forms and methods of expression entirely different from the vaporous cargo it is now being asked to carry. It is leaking as much from within as without. Legal efforts to keep the old boat floating are taking three forms: a frenzy of deck chair rearrangement, stern warnings to the passengers that if she goes down, they will face harsh criminal penalties, and serene, glassy-eyed denial. Intellectual property law cannot be patched, retrofitted, or expanded to contain the gasses of digitized expression any more than real estate law might be revised to cover the allocation of broadcasting spectrum. (Which, in fact, rather resembles what is being attempted here.) We will need to develop an entirely new set of methods as befits this entirely new set of circumstances. (...) The source of this conundrum is as simple as its solution is complex. Digital technology is detaching information from the physical plane, where property law of all sorts has always found definition. Throughout the history of copyrights and patents, the proprietary assertions of thinkers have been focused not on their ideas but on the expression of those ideas. The ideas themselves, as well as facts about the phenomena of the world, were considered to be the collective property of humanity. One could claim franchise, in the case of copyright, on the precise turn of phrase used to convey a particular idea or the order in which facts were presented." "No law can be successfully imposed on a huge population that does not morally support it and possesses easy means for its invisible evasion. (...) The future will win; there will be no property in cyberspace. (...) Noncommercial distribution of information increases the sale of commercial information. Abundance breeds abundance. This is precisely contrary to what happens in a physical economy. When you're selling nouns, there is an undeniable relationship between scarcity and value. But in an economy of verbs, the inverse applies. There is a relationship between familiarity and value. For ideas, fame is fortune. And nothing makes you famous faster than

*an audience willing to distribute your work for free. (...) Art is a service, not a product. Created beauty is a relationship, and a relationship with the Holy at that. Reducing such work to "content" is like praying in swear words. (...) Relationship, along with service, is at the heart of what supports all sorts of other modern, though more anonymous, "knowledge workers." In general, if you substitute "relationship" for "property," you begin to understand why a digitized information economy can work fine in the absence of enforceable property law. Cyberspace is unreal estate. Relationships are its geology. Convenience is another important factor in the future compensation of creation. (...) Interactivity is also central to the future of creation. Performance is a form of interaction. (...) I believe that, in the practical absence of law, ethics are going to make a major comeback on the Net. In an environment of dense connection, where much of what we do and say is recorded, preserved, and easily discovered, ethical behavior becomes less a matter of self-imposed virtue and more a matter of horizontal social pressure. (...) Think of the Net as an ecosystem. It is a great rain forest of life-forms called ideas, which, like organisms - those patterns of self-reproducing, evolving, adaptive information that express themselves in skeins of carbon - require other organisms to exist. (...) As in biology, what has lived before becomes the compost for what will live next. (...) The more such spaces exist, the more fertile is the larger ecology of mind. (...) In the future, instead of bottles of dead "content," I imagine electronically defined venues, where minds residing in bodies scattered all over the planet are admitted, either by subscription or a ticket at a time, into the real-time presence of the creative act. (...) I imagine new forms of cinema growing in these places, where people throw new stuff into the video stew. The ones who are good enough will be paid by the rest of us to shoot, produce, organize, and edit. (...) We've won the revolution. It's all over but the litigation. While that drags on, it's time to start building the new economic models that will replace what came before. We don't know exactly what they'll look like, but we do know that we have a profound responsibility to be better ancestors: What we do now will likely determine the productivity and freedom of 20 generations of artists yet unborn. So it's time to stop speculating about when the new economy of ideas will arrive. It's here. (Will copyright survive the Napster bomb? Nope, but creativity will, 2000) <http://homes.eff.org/~barlow/EconomyOfIdeas.html>  
<http://www.freescap.eu.org/eclat/>*

- **1992** \_\_ *Electronic Café International - Deaf Poetry in the image space together* (ECI-HQ began using ISDN technology with deaf kids and adults in 1992. A girl was at ECI-HQ, Santa Monica, and everyone else was in Paris. This was a series of events with the same people in both cities so that skills would be developed. Here they are sharing deaf poetry, and stand-up comedy. Several ECI sites dedicated lots of time with signing including ECI-Japan, ECI-Paris, ECI-Copenhagen.)

- **1992** \_\_ *Electronic Café International - Denmark goes to Sea* (Before relocating to its new home in Copenhagen, ECI-Denmark will spend the summer onboard the ship MF Kronberg. The ship is the Cultural Ambassador that will be traversing the waterways of Eastern Europe and sail the Atlantic Ocean to Lisbon, Portugal, promoting the fact that Copenhagen is the "Official Cultural City of Europe" in 1996. ECI is a well supported centerpiece and is located in the most forward part of the main deck. Satellite dished and ISDN connections link ECI-Denmark to ECI-Affiliates around the world.)

- **1992** \_\_ *The Email Centre*, first nongovernmental organization bulletin board service in the Philippines, Roberto Verzola (Because the seductive powers of computers and the Internet are so compelling, they have been drawing precious talents and material resources away from the major intellectual challenges of our time. These challenges include : 1/ Persistent poverty in the midst not only plenty but a scandalous wealth, occurring not only in poor country but also in the richest, 2/ Gradual disintegration of societies battered by globalization (...), 3/ Unabated destruction of our ecological base (...), 4/ The flood of poisons into our life, 5/ These are life-and-death issues, are the world's best intellects working on them ? What intellectual challenges occupy our youth today ? Web design ? Internet programming languages ? Hacking ? MP3s ? Online transactions ? Network gaming ?, 6/ Much of the online world, virtual reality and cyberspace life is going to be a very expensive diversion from the real pressing problems that humanity should be confronting squarely today (post on Pegasus mailing list).

- **1992** \_\_ *Générateur Poïétique*, Olivier Auber (Olivier Auber develops since the early 80s installations and exhibitions based on various technologies in order to achieve a sort of mirrors of behaviours. Among them, the Générateur Poïétique (<http://poietic-generator.net>), a network device with aesthetic-epistemological intentions, is a system allowing real time collective interactions that he has experimented in different kinds of networks since 1986. In 1997, he founded together with the architect and urbanist Bernd Hoge the cultural laboratory A+H (<http://km2.net/aplush>) that proposes interdisciplinary projects between physical and digital territories. The Nibelungenmuseum, virtual museum dedicated to a myth opened in 2001. These experiences, which have gradually been developing within open collectives over the years, have in common the putting into action, in an almost babbling way, a "digital perspective"; a distant descendent of "spatial perspective", it is founded on what one could call an "escape code", a counterpart to the "point of view" of the person who establishes the process of representation. The "escape code", whether it be arbitrary, genetic or digital, designs the unknowable, and is now the basis of the escape lines of our perspective. "Can cybernetics, the science of control, produce artistic and socially autonomous forms that elude instrumental rationality and mechanistic determinism? Unheard-of forms, apparently fragile but free of all influence. Sublime forms which challenge all measure and excess itself. Self-transcendent forms that accept no centre. Forms which would belong to everyone, becoming gradually the foundation of a new unequalled identity, representations without representeds, words in action pronounced by a power without principle. Forms still in direct contact with the

world, since they would resemble it until becoming indistinguishable from it. Collective experiences, such as the Générateur Poïétique, the Communauté des Mémoires (@rbre), the Invisible Monument, the Agrégateur Poïétique or the Démocratie liquide, tending to put into action processes and tools suitable to explore the territory of these autonomous forms.”) (Inspiré du jeu de la vie (algorithme de Conway), le générateur poïétique est un jeu en réseau multi-joueurs créé par Olivier Auber. ‘idée du Générateur Poïétique m’est venue en 1986, alors que je concevais des expositions et des installations interactives pour divers musées, la cité des sciences en particulier. Le dé clic s’est produit précisément à la lecture de “SIVA”, un livre de Philip K. Dick qui constituait la trame d’un opéra de musique contemporaine composé par Tod Machover (MIT-Medialab) que j’assistais à l’époque pour sa création à l’IRCAM et au centre Georges Pompidou. En s’appuyant sur les premières expériences réalisées dans le cadre d’expositions artistiques, le Générateur Poïétique s’est transformé peu à peu en un projet à long terme selon trois axes : développer un outil libre et non-commercial dédié à l’interaction graphique collective en réseau, à la recherche sur les phénomènes collectifs temps réel, et à la réflexion philosophique. L’indépendance est un chemin difficile. Les progrès furent lents. Mais grâce à l’appui et aux contributions de nombreuses personnes et dans une moindre mesure de quelques institutions et sociétés, le concept s’est matérialisé. Je profite de cette occasion pour remercier du fond du cœur tous ceux qui depuis tant d’années se sont montrés d’un si grand secours. Avant que l’Internet n’existe tel qu’on le connaît aujourd’hui, le Générateur Poïétique a été présenté en dans des configurations locales en s’appuyant le système français du Minitel. Il a été présenté ainsi au centre Georges Pompidou en 1990 (exposition “communication et monumentalité”) puis à la Cité des Sciences et de l’Industrie en 1992 (exposition “Machines à communiquer”). Quelques années plus tôt, en 1988, il fut aussi le concept majeur d’un projet de “monument de la communication” (l’Anneau Poïétique”), lauréat du concours France-Japon. En 1995, plusieurs chercheurs de l’Ecole Nationale Supérieure des Télécommunications” (ENST, Paris) et l’école elle-même contribuèrent au projet en même temps que d’autres chercheurs indépendants et que Sun Microsystems. La première mise en oeuvre sur l’Internet fut ainsi réalisée sur le “MultiCast Backbone (Mbone)”, ce qui permit de réaliser pour la première fois au monde une expérience planétaire d’interaction collective synchrone acentrée. La version pour le Mbone a été présentée en avant première aux “Etats Généraux de l’Ecriture Multimédia” organisés par l’association Art3000 à la vidéothèque de Paris en 1995. La même année, le Générateur Poïétique a reçu le premier prix “art et science” décerné par l’association ArsTechnica / ARSLAB et la ville de Turin. Malheureusement, malgré des débuts prometteurs qui ont révélé son immense potentiel, le Mbone ne s’est pas ouvert au grand public, ce qui interdit encore à ce jour (2008) de mener à bien des expériences de grande envergure. C’est en désespoir de cause, qu’une version pour le web a été développée en 1997 afin de rendre le Générateur Poïétique accessible à tous. Un grand nombre d’expériences ont été menées depuis lors. Malgré la limitation technique du nombre de participants inhérente à l’existence d’un serveur central, elles ont montré les capacités morphogénétiques du dispositif. Cela n’est que la première étape d’un long travail de mise au point et d’expérimentation d’un instrument opérationnel de recherche sur les phénomènes collectifs…) <http://poietic-generator.net> <http://perspective-numerique.net/wakka.php?wiki=HistoriqueGénérateurPoietique>

- 1992 \_\_ **Global Brain Music** (Freiburg / Santa Monica), Electronic Café, Mark Coniglio (*The brains of human beings in Freiburg and Santa Monica were connected together using the Interactive Brainwave Visual Analyzer (IDVA) and Interactor the midi computer interface program by Mark Coniglio. In an improvisation brain fugue participants in Freiburg and Santa Monica created music by locking into each other’s brains telephonically*) <http://www.ecafe.com/1992.html>

- 1992 \_\_ **InterActor**, Mark Coniglio, Morton Subotnik (*Interactor LPT is a graphic authoring tool created by composers Mark Coniglio and Morton Subotnick that enables artists to realize real-time interactive performances where MIDI messages are the primary means of communication with the outside world. In the performances of Troika Ranch, Interactor LPT functions as the master software “brain” behind any interaction that takes place between performer and computer. It looks for movement information from MidiDancer and/or events being generated by musicians performing on MIDI controllers (keyboards, piezo sensors, pitch-to-midi converters, etc.) and uses that data to control the media devices.*) <http://www.troikaranch.org/interactor.html>

- 1992 \_\_ **InterCommunication N°0**, NTT ICC Tokyo (*A Journal exploring the frontiers of art and technology - the potential of media and communication for rewriting physical sensibilities in an electronic information networked society. This quarterly publication was published until the n°32 in Spring 2000.*) [http://www.ntticc.or.jp/pub/ic\\_mag/ic\\_index\\_e.html](http://www.ntticc.or.jp/pub/ic_mag/ic_index_e.html)

- 1992 \_ **Is Anyone There?**, Stephen Wilson, IGCHI, Monterrey, 1992 and SIGGRAPH, Chicago, 1992 (*Computer automatically calls selected pay phones in the city 24 hours a day and uses intelligent programming and digitized speech to engage those who answer in conversations about their lives and their surroundings. Viewers using voice recognition can interactively devise multiple strategies to navigate record of conversations and related digital video. WINNER 1993 Ars Electronica Golden Nica Prize of Distinction in International Competition for Interactive Art.*) <http://www.o-art.org/history/SoundArt/SoundArtists/S.Wilson.html>

- 1992 \_\_ **Moone**, Gilberto Prado (*Using the principle of shared screen via ISDN, you are invited to take place beside your partner and construct with him/her a hybrid image in real time, without ever touching or (even) seeing him/her. This ambiguity is at the heart of the project. An ephemeral relationship is created in which growth and composition depend on the other and on the dynamics*

of the exchange. Breath-poetry, a constant alternation of poles of representation, transformation of shadow into pixel-light. This project was developed during the exhibition "Machines à Communiquer" in the "Atelier des Réseaux" at Cité de la Science et de l'Industrie La Villette - Paris, with the collaboration of "Café Electronique" also at La Villette. The first images built together were made the 4th of July 1992 between Gilberto Prado at "Café Electronique" (Paris) and Hermann Keldenich at Electronic Cafe (Kassel - Germany), during the IX Documenta. Other exchanges followed on the 5, 17, 18, 19, 24, 25 July 1992. Other exchanges were made, for instance on July the 29th and 30th of 1992 between the "Cafe Electronique" Paris and Electronic Cafe International at Chicago during the Siggraph.) <http://www.cap.eca.usp.br/gilberto/english/index.html>

- **1992 \_\_ A New Work**, Philip Perkins: Computer-controlled synths and sampler, pre-recorded materials, MIDI performance controls, signal processing, electronic noise-makers, radios, mix, script, Scott Fraser: Electronic noise-makers, signal processing, electronic guitar, edit, Bonnie Barnett: Voice (pre-recorded) (A NEW WORK was presented as a live improvised performance transmitted over telephone lines from Philip Perkins' studio in Albany, CA to The Electronic Cafe International in Santa Monica, CA on January 11th, 1992. The audio was designed to accompany a slow-scan video/computer graphic work performed live by Tim Perkis and transmitted to Santa Monica at the same time. A script was read and recorded by Bonnie Barnett, and this recording became the audio that drove a system of synths, samplers, and other electronic devices under computer control in a highly interactive and fairly unpredictable manner. This version of A NEW WORK is an edit of the original 45 minute live broadcast. The original performance was co-produced by Kit Galloway.) <http://www.o-art.org/history/Computer/Artifact/Bifurcators.html>

- **1992 \_\_ Ornitorrinco on the Moon**, Eduardo Kac, Siggraph'92 (Ornitorrinco (Platypus, in Portuguese) is the name of the telepresence project I have been working on with Ed Bennett since 1989. In that year the project was experienced for the first time in a link between myself in Rio de Janeiro, accompanied by Brazilian art critic Reynaldo Roels Jr., and Ed Bennett in Chicago (31). In 1992 the installation "Ornitorrinco in Copacabana" was unveiled publicly at the Siggraph Art Show, in Chicago (32). Three miles separated Siggraph Art Show visitors from the actual site of the installation. Now, the installation "Ornitorrinco on the Moon" between Chicago and Graz, especially created for "Blurred Boundaries", adds real-time sound and takes place across the Atlantic Ocean. The basic structure is similar to previous installations: when participants in Graz press the keys on a regular telephone they control in real time the vision and motion of the telerobot Ornitorrinco in Chicago. The numbers on the key pad of the phone are treated as spatial coordinates (press 1 and turn left, press 2 and move forward, press 3 and turn right, and so on). When the participant presses 5 he or she stops Ornitorrinco in Chicago and requests that an image be sent back to him or her in Graz. Ornitorrinco responds to the motion request in real time. Because of the limited bandwidth of regular phone lines, it takes approximately 6 seconds for the image to be formed on the remote screen. It is worth mentioning that telecommunication time delays between Earth and the Moon are approximately 3 seconds, and time delays between Earth and Mars are close to 30 minutes. (...) The moon in this installation is an image among other images, where the participant moves about at will, encountering here and there elements of surprise, discovering every now and then spaces not explored before. This exploration originates a "subjective cartography". The participant tries spontaneously to map the space based on samples gathered along the way. The samples are gathered not from a human scale, but from the perspective of the telerobot Ornitorrinco (approximately two feet above the ground). Each "map of the visible" that results from each experience is, therefore, unique in its difference to paths explored by other participants. Each mental map is particular to each experience, which is to say that each participant forms a different conception of the actual space. The actual space is therefore vicariously multiplied, corroborating the irrelevance of its factual data. In our telepresence installations the features of the actual space (geographic location, size, color, materials, etc.) are irrelevant; it all takes place as an image, the image being the place. The participant only gains access to the space through pictures he or she gathers while moving telerobotically in real time. The actual space is not to be experienced by humans locally, in person, as an installation in itself, but rather as ephemeral and fleeting images perceived through a single regular phone line.) <http://www.ekac.org/> <http://www.ekac.org/ornitorrincom.html>

- **1992 \_\_ Un Passage Parisien**, Jérôme Joy ("Un Passage Parisien" was a un-realized project of musical architecture in Paris. The architecture designed by Jean de Giacinto with the collaboration of Duncan Lewis was the rehabilitation of a block located between Place de la Concorde, Jardin des Tuileries and Place Vendôme (downtown Paris). The title referred to Walter Benjamin with far relations with psychogeography and so on. The work was very complex and used : multi-sound spatialization in the 4-level car park, sound treatments in the elevator, transmitted and streamed sounds from various locations to the block (by satellite), outer and inner sensors with controlled processes on the sound diffusion, and so on. The musical architecture created by the musical system included and modified the physical architecture. This sound system involved various continuously variations that moved at each time the perception of spaces and this was active on different ranges : permanently (variations of sensors, mobile sound spatialization configurations and remote sound receptions), daily and yearly (choices of locations from where sound was streamed). This opened a new architecture of listening and a temporal architecture. Another level was the participation process with the inhabitants : they can act on the remote sound locations by choosing it (because of souvenirs, or emotional and personal places). Thus the architecture and these remote locations were continuously inter-connected and interlaced. The project in the whole was not to elaborate a sonic

*“environment” but to develop listening situations combined with various ambiances not issued from the architecture itself. The architecture was a type of resonant “habitation”. The permanent variations of the sound spatialisation systems would create at each time new resonances and listening “angles” depending on daily moves of the inhabitants (they’ll use the same paths everyday). All the systems were controlled by computers (controlled sound treatments, filterings, spatialization moves, sound playings, streamed sound receptions, and so on). So instead of the use of radio (in the car park) or “signal” soundsigns (to mark paths), sound transforms the perception of physical spaces and of the architecture, such as a form full of various situations. Spatially speaking, the sound processes were all stacked and inter-connected, such as a “puppet” architecture with soft and transparent walls. It would be certainly not possible to catch and to listen to the entire musical results, in time and in space. These conditions involved site-specific and time-specific materials and variations in music composition : a live musical architecture full of “silences” and situations. As an inhabitant, we were a player-like, by improvising with walk paths across the block our own listening. No end, no beginning, no ideal point to listen to. As a “ghost” (music) building, also paradoxical in front of the physical architecture : a space full of various invisible spaces, full of long time and slowdowns. An e-architecture ?” [Jérôme Joy]. In 1994 the project was presented at la Maison de l’Architecture in Paris and was quoted as a unique music architecture project. The collaborations that were previewed, implied : Elektronische Studio der TU Berlin, IRCAM Paris (Sound Spatialization), University of Genova (DIST, HARP tracking system). This project has never been re-activated after the abandon of the realization in Paris, although it could be designed again in another architectural project.) <http://jeromejoy.org>*

**- 1992 \_\_ Puente Telefonico - Sound Poles**, ORF Kunstradio Vienna / Expo’92 Séville, Horst Hoertner, Gerfried Stocker, Seppo Gruendler, Josef Klammer (*Live telecommunications concert with the sound sculpture of X-Space (Gerfried Stocker / Horst Hoertner) online between Sevilla and the ORF/Artradio with Seppo Gruendler. Puente Telefonico took place on August 6, 1992, and connected the public interactive sculpture Sound Poles by Hoertner and Stocker at Expo’92 in Sevilla, Spain, with a live radio studio at ORF Broadcasting House in Vienna. Sound Poles consisted of an array of twenty-seven fiberglass poles (up to six meters high) fixed vertically in the floor of the plaza in front of the Austrian pavilion at the Expo. The public was encouraged to “play” the installation, and the resulting movement of the poles was registered by sensors and transmitted to a computer, where it was translated into control signals that triggered sampled sound events that were fed back to the plaza. The installations was connected to a modem so that it could be remotely serviced by the artists via telephone every day from their studio in Graz. The existence of this standing connection made it possible to use the modem for teleconcerts, among them Puente Telefonico. For this event, Hoertner, Gruendler, and Josef Klammer were in Sevilla and connected via modem with Stocker and his computers, sampler, and sequencers in the live-transmission studio in Vienna. Stocker was able to add new sounds to the sounds triggered from Sevilla in the Vienna Studio for the live broadcast and to send his control signals to the Sound Poles computer in Spain. [Heidi Grundmann] <http://www.welzl.at/research/publications/diplom.ps.gz>*

**- 1992 \_\_ Rave Parties** (*From the Acid House scene of the late 1980s, the scene transformed from predominantly a London-based phenomenon to a UK-wide mainstream underground youth movement. Organizations such as Fantazia, Universe, Raindance & Amnesia House were by 1991/92 holding massive legal raves in fields and warehouses around the country. One Fantazia party, called One Step Beyond, was an open-air all-nighter and attracted 30,000 people. Other notable events included Vision @ Pophams airfield in August 1992 (40,000 in attendance), and Universe’s Tribal Gathering in 1993. The illegal free party scene also reached its zenith for that time after a particularly large festival, when many individual sound systems such as Bedlam, Circus Warp, DIY, and Spiral Tribe set up near Castlemorton Common. In May 1992, the government acted. Under the Criminal Justice and Public Order Act 1994, the definition of music played at a rave was given as: “music” includes sounds wholly or predominantly characterised by the emission of a succession of repetitive beats. — Criminal Justice and Public Order Act 1994. Sections 63, 64 & 65 of the Act targeted electronic dance music played at raves. The Criminal Justice and Public Order Act empowered police to stop a rave in the open air when a hundred or more people are attending, or where two or more are making preparations for a rave. However, genuine illegal raves have continued throughout the UK to this day, and there have been a number of notorious groups in different areas putting on unlicensed parties using venues ranging from disused quarries, warehouses and condemned night clubs. The rise of the internet has both helped and hindered the cause, with much wider and more accessible communication resulting in bigger parties but consequently also greater risk of police involvement. A rave (or rave party), is a term, in use since the 1980s, to describe dance parties (often all-night events) where DJs and other performers play electronic dance music, sometimes referred to as “rave music”, with the accompaniment of laser light shows, projected images, and artificial fog. In late 1950s London, the term “rave” was used to describe the “wild bohemian parties” of the Soho beatnik underground. The word was later used in the burgeoning mod youth culture of the early 1960s as the way to describe any wild party in general. Presaging the word’s subsequent 1980s association with electronic music, the word “rave” was part of the title of an electronic music performance event held on 28 January 1967 at London’s Roundhouse titled the “Million Volt Light and Sound Rave”. Early rave-like dances were held in the early 1980s in the Ecstasy-fueled club scene in clubs like NRG, in Houston, Austin, Dallas, and in the drug-free, all-ages scene in Detroit at venues like The Music Institute. However, it was not until the mid to late 1980s that a wave of psychedelic and other electronic dance music, most notably acid house and techno, emerged and caught on in the clubs, warehouses and free-parties around London and later Manchester. These early raves were called the Acid House Summers. They were mainstream events that attracted thousands of people*

(up to 25,000 instead of the 4,000 that came to earlier warehouse parties). Acid House parties were first rebranded raves parties in the media during the summer of 1989 by Neil Andrew Megson during an television interview. In the UK, in 1988-89, raves were similar to football matches in that they provided a setting for working-class unification in a time with no unions and few jobs, and many of the attendees of raves were die-hard football fans. British politicians responded with hostility to the emerging rave party trend. Politicians spoke out against raves and began to fine anyone who held illegal parties. Police crackdowns on these often-illegal parties drove the scene into the countryside. The word "rave" somehow caught on in the UK to describe common semi-spontaneous weekend parties occurring at various locations linked by the brand new M25 London Orbital motorway that ringed London and the Home Counties. (It was this that gave the band Orbital their name.) These ranged from former warehouses and industrial sites in London to fields and country clubs in the countryside. In the early 2000s illegal parties still existed, albeit on smaller scales, and the number of sanctioned events seemed to be on the rise. The few constants in the scene include amplified electronic dance music, a vibrant social network built on the ethos of the acronym PLURR, "Peace, Love, Unity, Respect and Responsibility", percussive music and freeform dancing.)

- **1992 \_\_ Santa Monica – Paris Murmuring**, Electronic Café, Bonnie Barnett (participatory event! People in Santa Monica sing together with participants gathered simultaneously in Paris. The public at both sites begin singing together in long tones, changing vowels, and improvising melodic fragments) <http://www.ecafe.com/1992.html>

- **1992 \_\_ Scanner**, Robin Rimbaud (Scanner (Robin Rimbaud) has staged many controversial live performances which also use telephonic communications but in the form of eavesdropping on private cellular and mobile telephone conversations. "Scanner searches out sounds and allows them to make their democratic music. However personal or technical, emphatic or dull they may be." With his work as Scanner, Robin Rimbaud implicates himself in processes of surveillance, engendering access to both technology and language and the power games of voyeurism. Dubbed a "telephone terrorist," Rimbaud is a techno-data agitator whose scavenging of the electronic communications highways provides the raw materials for his aural collages of electronic music and "found" conversations. "His first CDs present material both recorded out in the world - fieldwork so-to-speak - and intercepted by means of a scanner, a broadband radio receiver that picks up virtually all forms of broadcast information. Much of the material is taken from mobile telephone conversations and it is these fragments of one-to-one communication that are often the most intriguing." "This debut CD featured the intercepted cellular phone conversations of unsuspecting talkers, picked up from a radio scanner, which I edited into minimalist musical settings as if they were instruments, bringing into focus issues of privacy and the dichotomy between the public and the private spectrum. I wove the recordings into a collage of found voices, transmissions and archive tapes of mine from 1978 onwards, recorded on an early portable tape recorder. Sometimes the high frequency of cellular noise pervades the atmosphere, at other junctures it erupts into words and melts down to radio hiss. Intercepted in the data stream, transmissions blend, blurring the voices and rupturing the light, creating audio transparencies of dreamy, cool ambience.") <http://www.scannerdot.com/>

- **1992 \_\_ Soundscape composition**, Barry Truax (The soundscape composition is a form of electroacoustic music, developed at Simon Fraser University and elsewhere, characterized by the presence of recognizable environmental sounds and contexts, the purpose being to invoke the listener's associations, memories, and imagination related to the soundscape. It grew naturally out of the pedagogical intent of the World Soundscape Project to foster soundscape awareness. At first, the simple exercise of 'framing' environmental sound by taking it out of context, where often it is ignored, and directing the listener's attention to it in a publication or public presentation, meant that the compositional technique involved was minimal, involving only selection, transparent editing, and unobtrusive cross-fading. This 'neutral' use of the material established one end of the continuum occupied by soundscape compositions, namely those that are the closest to the original environment, or what might be called 'found compositions.' Others works use transformations of environmental sounds and here the full range of analog and digital studio techniques comes into play, with an inevitable increase in the level of abstraction. However, the intent is always to reveal a deeper level of signification inherent within the sound and to invoke the listener's semantic associations without obliterating the sound's recognizability. (...) Soundscape composition principles : 1/ Listener recognizability of the source material is maintained 2/ Listener's knowledge of the environmental and psychological context is invoked 3/ Composer's knowledge of the environmental and psychological context influences the shape of the composition at every level 4/ The work enhances our understanding of the world and its influence carries over into everyday perceptual habits. [Barry Truax]) <http://www.sfu.ca/~truax/scomp.html>

- **1992 \_\_ Telematic Dreaming**, Paul Sermon (Two double beds are connected in different locations. One space is blue- screened while the other is dark. Both spaces have cameras. The bed in the dark space above shows the occupant and a projection of the remote participant in the other bed. Telematic Dreaming is an installation that exists within the ISDN digital telephone network. Two separate interfaces are located in separate locations, these interfaces in themselves are dynamic installations that function as customized video-conferencing systems. A double bed is located within both locations, one in a blacked out space and the other in an illuminated space. The bed in the light location has a camera situated directly above it, sending a live video image of the bed, and a person ("A") lying on it, to a video projector located above the other bed in the blacked out location. The live video image is projected

down on to the bed with another person ("B") on it. A second camera, next to the video projector, sends a live video image of the projection of person "A" with person "B" back to a series of monitors that surround the bed and person "A" in the illuminated location. The telepresent image functions like a mirror that reflects one person within another persons reflection.) <http://www.hgb-leipzig.de/~sermon/dream/>

- **1992** \_\_ **Telenoia: a global networking project for the eight day of the week.** Directed by Roy Ascott (Telematic project using vidphone, fax, BBS, EARN. 's-Hertogenbosch: V2 Organization. Ascott's position versus technology was different from Metzger's and Raaijmaker's. Ascott viewed art as one of the disciplines that shape our culture and are able to change society. An artist should be positioned in the middle of our society, which is undergoing enormous changes in the areas of science and technology. It's an artist's moral responsibility to analyze these changes and, thus, to co-influence society's direction. Nature will be redefined, similar to the way mankind is redefining itself. On Saturday noon, a 24-hour telecommunications project started, which, among others, involved a concert that took place through telephone lines. In V2\_'s space, several Apple, Amiga and MS-DOS computers were installed that would exchange image, sounds and texts with artists, scientific institutions and organizations all over the world. This project attracted participants from Argentina, Austria, the United States, Japan, France, United Kingdom, Canada, Australia and Brazil. At 21:30, a tele-concert was held by Zeronet (Graz, Austria). Zeronet was a telecommunications project by Robert Adrian and was part of the Steirische Kulturinitiative. Via midi signals, a computer and synthesizer at V2\_ were controlled from Austria. This project was open for the public during 24 hours; the public was also able to participate from home via modem and fax.) <http://framework.v2.nl/archive/archive/leaf/other/.xslt/nodenr-143122>

- **1992** \_ **The Telephonic Faucet**, Fred Forest (Through newspaper ads and fliers, the public is invited to dial a special telephone number that will trigger the electronic valve of a faucet on the site of the installation in Turin and thereby spew a small quantity of water in a bucket below until, 1,500 calls later, the bucket begins to overflow and water spills onto the marble floors of the historic Antonelliana!) <http://fredforest.org>

- **1992** \_\_ **Truth in Clouds**, Nicolas Collins ("I think it was in 1992 that we came up with the first version of an opera titled Truth in Clouds, written by my wife, Susan Tallman, based on spiritualism and seances. Susan discovered that she had an ancestress, a woman named Anna Mary Howitt, the daughter of a rather well-known literati in the mid-19th century here in England. She was a painter and founded an organisation called the Pre-Raphaelite Sisterhood, an organisation of women painters. She did some pretty wacky stuff, but got a bad review from John Ruskin, which sent her over the edge. She decided to stop painting and got seriously involved in spiritualism. She kept her connection with the art world, and ended up taking transcription from the deceased Elizabeth Siddal to Gabriel Dante Rossetti. It was a bit of a messy suicide, perhaps even murder. This thing has all the makings of a great gothic novel, or in our case an operatic project. We did an early version of it in New York, built around what I call the world's first ouija-to-MIDI converter, which was a table where when you moved the wineglasses it would call up different sounds out of props around the room. The deer head would speak, the harp would play, the sofa would rumble. We weren't terribly happy with the result, but then last spring I was asked to do an installation in a castle in Austria, so I resurrected the technology. It was very nice as an installation, because people would just come in, move things around on the table, and this stuff would happen. I was working with some pretty flaky technology, such that whenever there was a major electrical storm, it would start to behave by itself, which turned out to be pretty appropriate. Now, we're putting together the project to tour this to villas and castles in Holland." [Nicolas Collins]) <http://media.hyperreal.org/zines/est/intervs/collins.html>

- **1992** \_\_ **Undirected** (1992/2002), Christophe Charles (The undirected files - as they appear on mp33 "undirected 1986-1996", audio \*and\* data - are originally extracted from real soundscapes (Calcutta, Ginza, Taegu, Marseille, etc.), and merged / mixed with analog instrumental sound (percussion, piano, flute, etc.), eventually processed through a pitch shifter, but generally left as is, with no complex digital filtering operation. I confess that until recently I completely lacked interest for synthesis and electronic / digital treatment of sound. I enjoy much more sound as it is, as a ready-made or a found object. I am most satisfied with raw sound(scape)s and the mixing of apparently (un)related textures, thus investigating new combinations and new time structures (see the following texts about "(de)composition") keeps me busy enough. This lack of interest in synthesis is probably the reason why the "undirected" music was / is sometimes filed as "musique concrete" although it has very little or even nothing to do with Pierre Schaeffer and his emulators - in regard to this it has everything to do with John Cage's "Roaratorio". But thanks to Achim Szepanski and Markus Popp who showed interest in my music production from 1995, I could get in touch with "non academic" approaches of music which were very innovative, pursuing "non authoritarian", "de-territorializing" paths which I found complementary to the Cage / Tudor / Ashley / Behrman / Lucier approach. The idea of working with someone else's material, not at the occasion of one or several improvised concerts, but on a long period of time with material which is "raw" and not yet processed, emerged quite naturally when I heard the first discs sent by Achim Szepanski, among them I found "oval / systemisch". (...) ) [http://home.att.ne.jp/grape/charles/texts/systems\\_of\\_decomposition\\_E/001/index.html](http://home.att.ne.jp/grape/charles/texts/systems_of_decomposition_E/001/index.html)

- **1992** \_\_ **Unsilent Night**, Phil Kline ("Every year since 1992 I've presented UNSILENT NIGHT, an outdoor ambient music piece

for an infinite number of boomboxes. It's like a Christmas caroling party except that we don't sing, but rather carry the music, each of us playing a separate track that is a "voice" in the piece. In effect, we become a city-block-long sound system! Join us and bring a boombox, or anything that will blast a cassette, CD or Mp3. (Cassettes sound the coolest, but we realize cassette players are getting scarce now.) The more tracks we play, the bigger and more amazing the sound is. In recent years, UNSILENT NIGHTs in New York and San Francisco have attracted crowds of over a thousand people, with hundreds of boomboxes... it's spectacular. If you'd like to participate, please e-mail the contact listed for your city for instructions. If you'd like to participate but don't have a boombox or a music player with speakers, you can just show up and join the parade. Everyone is an important part of the procession. Help us make a BIG (and joyful) noise. This is always a free event and all ages are welcome. UNSILENT NIGHT has spread around the world. In addition to New York, UNSILENT NIGHT is presented in cities such as Los Angeles; San Francisco; San Diego; Santa Barbara; Philadelphia; Atlanta; Cleveland; Tallahassee; Tucson; Houston; New Haven; Boulder; Baltimore; Charleston; Asheville, NC; Manassas, VA; Milledgeville, GA; Bowling Green, OH; Banff, Alberta; Vancouver, BC; White Horse, Yukon Territory; Hamburg and Berlin, Germany; Middlesbrough, England; Melbourne and Sydney, Australia.") (C'est pendant l'hiver 1992 que Phil Kline a l'idée d'une sculpture sonore mouvante (outdoor ambient collective music). Il enregistre les différentes parties d'une oeuvre sur cassettes que quelques douzaines d'amis vont emporter chacun sur un gros radio-cassette. Tous les marcheurs démarrent leurs appareils en même temps et font le tour de Greenwich Village pendant une nuit de décembre. Unsilent Night est née, se rejoue chaque année avec une musique qui se transforme et une foule toujours plus nombreuse avec un nombre infini de boombox. En 2007, la manifestation prend plus d'ampleur encore, puisqu'elle se déroule entre le premier et le 23 décembre dans 27 villes qui voient débarquer les "boomboxes" sur leur sol.) <http://www.philkline.com> <http://www.unsilentnight.com>

- **1992 \_\_ Upper Atmospheric Research Collaboratory** (The Upper Atmospheric Research Collaboratory (UARC) was one of the first collaboratory projects to become operational. Funded in 1992 by the National Science Foundation, UARC aimed to provide remote access to geographically isolated instruments used in upper atmospheric research. In 1997, UARC was reborn as the Space Physics and Aeronomy Research Collaboratory (SPARC). It is time to adjust the space science equipment in Greenland. First, specialized radar is pointed at an auroral arc. Then an all-sky camera is turned on. The physicist controlling the equipment is part of a worldwide team of researchers working on NSF's Upper Atmospheric Research Collaboratory (UARC). When she's finished making the adjustments, the physicist pushes back from her computer in her Ann Arbor, Michigan, office, knowing the job is done. Initially, UARC enabled scientists using the system running on NeXTstep to monitor the incoherent scatter radar at the Sondrestrom Observatory in Sondrestrom, Greenland. The collaboratory later included many more instruments of various types, including incoherent scatter radars, all-sky cameras, interferometry instruments, magnetometer chains, riometry instruments, satellite imagery, shuttle imagery, sounding rockets, and results from numerical simulation. Operation of the collaboratory was transferred to NCAR in 2002. The initial UARC end-user system was built on the NeXT platform and migrated into the NeXTstep operating system. The NeXT platform provided a powerful environment for rapidly prototyping and deploying tools and interfaces, but its obscurity and the size of the UARC client software meant that using UARC required a significant investment in computing hardware. In order to reduce this barrier to use, the collaboratory took advantage of the developing world wide web and deployed a web-based system built using Java applets (MURAL) with the release of UARC v.6 in 1996. Throughout the lifecycle of the project, the collaboratory client provided access to real-time and stored data from the instruments that were integrated into the collaboratory framework, enabled remote control of some features of the instruments, facilitated communication between users of the systems and provided a variety of ways of visualizing data from the instruments and simulations. A major educational campaign took place in February, 1995 when students from a university in Florida participated in a campaign, working together with scientists at two locations in California, in Greenland, and in Michigan, engineers in California, and the site crew in Greenland. A small number of individuals dominated the use of the UARC systems. The NeXTstep-based UARC v.5 had a total of 27 scientific users, with a peak simultaneous usage of 8 users. Eighty percent of the system's use is accounted for by four users. Similarly, the Java-based UARC v.6 had 100 users, with peak usage of 40 simultaneous users, but 80% of the use of the system is accounted for by six users. This finding is consistent across both use and chat logs. Investigators at Michigan conducted a longitudinal survey over the 8 year period from 1993-2001. This survey focused on communication choice, use of web resources and outcomes connected with those factors among a sample of UARC users and a matched control sample. The survey showed a change in methods of communication over the period, with a difference between groups, changes in the level of web use with a difference between groups, and a relationships between both communication choice and web use to funding. Key findings from this survey include evidence of a substitution of email for other communication modalities, which was more dramatic in the control group, and increased use of other web sites. The survey also suggested some use of data intensive web sites, but did not find web use to have a universal impact on the field as no predominant web site emerged.) <http://www.scienceofcollaboratories.org/Workshops/WorkshopSept252002/index.php?Sept2002FinalSummary-UARC> <http://www.resoundings.org/Pages/VerticalWater.html> <http://www.resoundings.org/Pages/Interview1.htm>

- **1992 \_\_ Vertical Water**, Bill Fontana (Play the sound of Niagara Falls on the facade of the Whitney Museum) <http://www.resoundings.org/Pages/VerticalWater.html> <http://www.resoundings.org/Pages/Interview1.htm>

- **1992 \_\_ Wheelies**, The Hub, Chris Brown (computer network ensemble. This work uses MIDI system-real-time messages that

one player generates to play with the variability of rhythmic synchronizations of the group. It also sets up a system of interaction in which members of the group change the rhythmic performance of each other's systems during the piece. Each player has programmed their system to count Timing Clocks, and respond appropriately to Start, Stop, and Continue messages. They are prepared to play repeating cycles of samples, or percussive voices, as controlled by three parameters called Ictus, Meter, and Density. Ictus sets the number of timing clocks in a beat, Meter sets the number of beats in a cycle, and Density controls a percentage of the beats that will be silent. When a Start message is received (and all players receive them at the same time) every player sends out a package of values for these three parameters to any other player(s) in the network. That player MUST implement this parameter data in playing the new section. The result is that the group plays a synchronized pulse-oriented music that is often in many meters, and subdivisions of the group pulse, at once. And each player can strategically affect the music of any other player, while giving up control of the same part of their own music to the group. My intention here has been both musical \_ to accomplish rational rhythmic complexities otherwise unperformable by humans \_ and social: to invent a new form of group music that at once allows individuality and subordinates the individual to the primacy of the group.) <http://crossfade.walkerart.org/brownbischoff/>

- 1992 \_\_ **ZERO - The Art of Being Everywhere**, Robert Adrian X (a 2 year (92-93) curatorial project (with Gerfried Stocker) for the Steirische Kulturinitiative. ZERO was located at/in the Interfaces of the transport and communications systems. In addition to producing many projects by different artists/musicians/writers. The ZERO project also created 'ZEROnet', a BBS (electronic Bulletin Board System) for communication by artists with local servers in Vienna, Graz and Innsbruck. ZERO focused on metaphors of travel, transmission, transfer and transition. "This program seeks to address the problem of the end of the industrial millenium and the apparent collapse of the Utopian dreams of the 20th century". In the context of ZERO, a long list of projects by artists, composers and writers were undertaken. Taking up the idea of ARTEX (but using completely altered contextual requirements), the first goal of ZERO was the establishment of ZEROnet as a bulletin board system. ZEROnet worked with the FidoNet protocol (still widely used at this time) and controlled entry to other nets (like the Dutch Artnet) through gateways. "Because the most conspicuous aspect of the new culture which will be dominant by the year 2000 is the new communications technology and its peculiar characteristics of shrinking the way we experience time and space, this project is planned to take place at the intersections of - and points of access to - the networks of communication and transportation". ZERO followed a decidedly new media cultural sapces : " a Utopia of networks, electronic reception methods and a post-territorial society". Are we as cultural objects only just blips in the media bundle, as this new media geography (or better, topology) not only keeps information and the economy revolving but also creates new styles of interface between real geographic, social and cultural space and noreal media mechanistic space ?"The borders between subject, if not the body, and the rest of the world are being radically formed anew by the mediation of technology".) <http://alien.mur.at/rax/BIO/telecom.html>

## 1993

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- 1993 \_\_ **Internet** (There are 200+ Web servers in existence [Ciolek 1998]. Mosaic graphic WWW browser developed by Marc Andreessen (Cailliau 1995). Graphics user interface makes WWW finally a competitor to Gopher. Production of web pages becomes an easy task, even to an amateur. (oct 1993) Doctor Fun was the first webcomic, noted by the NCSA as "a major breakthrough for the Web". Mosaic is the web browser credited with popularizing the World Wide Web. It was also a client for earlier protocols such as FTP, Usenet, and Gopher. Its clean, easily understood user interface, reliability, Windows port and simple installation all contributed to making it the application that opened up the Web to the general public. Mosaic was also the first browser to display images inline with text instead of displaying images in a separate window. Mosaic was developed at the National Center for Supercomputing Applications (NCSA) beginning in late 1992. NCSA released the browser in 1993, and officially discontinued development and support on January 7, 1997. However, it can still be downloaded from NCSA. Mosaic was the final link in the chain of technologies (TCP, IP, ftp | mntp | gopher | http, URL, HTML, etc.) which Tim Berners-Lee had earlier brought together to invent the World Wide Web. After the appearance of Mosaic the concept of the World Wide Web took off globally at an explosive rate.) [http://en.wikipedia.org/wiki/Doctor\\_Fun](http://en.wikipedia.org/wiki/Doctor_Fun)

- 1993 \_\_ ? (distributed trio), USC Information Sciences Institute ISI

- 1993 \_\_ « **Auditory Display: Sonification, Audification, and Auditory Interfaces** », Gregory Kramer (The idea behind sonification is that synthetic nonverbal sounds can represent numerical data and provide support for information processing activities of many different kinds. This article describes some of the ways that sonification has been used in assistive technologies, remote collaboration, engineering analyses, scientific visualisations, emergency services and aircraft cockpits. Approaches for designing sonifications are surveyed, and issues raised by the existing approaches and applications are outlined. Relations are drawn to other areas of knowledge where similar issues have also arisen, such as human-computer interaction, scientific visualisation, and

computer music. Many sonification techniques use acoustic attributes such as frequency, intensity, and timbre to represent different characteristics of multidimensional data. Here we demonstrate a perceptual interaction between changes in pitch and loudness, as well as perceived asymmetries in directional change. Three experiments show that changes in loudness can influence judgments of pitch change, changes in pitch can influence loudness change, and that increases in loudness are judged to change more than equivalent decreases. Within a sonification of stock market data, these characteristics created perceptual distortions in the data set. The results imply that in situations where precision is critical, caution should be exercised when using lower level acoustic dimensions such as frequency and intensity to represent multidimensional data.)

- **1993 \_\_ Babble**, Disembodied Art Gallery (Disembodied Art Gallery, a British group that explores conceptual and telecommunication-based art, presented the telepresence-art installation Babble in 1993. The project received over 70 voice contributions from the United States, Australia, Japan and Europe. Callers telephoned a U.K. number and could record poetry, stories and thoughts on an answering machine. These messages were then collected and replayed automatically to visitors of the gallery whenever a member of the public entered the installation room.)

- **1993 \_\_ Deposition Yokohama**, Christophe Charles (The composition (52 minutes) was produced for an installation presented at the Yokohama Museum in 1995. It had to fit not only the real space, but also - and mainly - the political and administrative conditions which are specific to a Japanese museum institution. In the exhibition hall, six loudspeakers were switched with infrared sensors sensible to the movements of visitors in a 200 square meters space. The sound was electrically transmitted to the loudspeaker when the sensor was activated, that is, when someone or something moved around it. By walking in the space, the visitor could thus experiment different angles of hearing, different ways of superimposing the music, and different sound spaces. The global composition was thus closely linked to the presence and the movements of the listeners, and thus realized as plural and "undirected".) [http://home.att.ne.jp/grape/charles/texts/systems\\_of\\_decomposition\\_E/005/index.html](http://home.att.ne.jp/grape/charles/texts/systems_of_decomposition_E/005/index.html)

- **1993 \_\_ Disklavier Jazz Piano Duet**, Electronic Café (Jazz pianists Michal Cain in New York and James Carney in Santa Monica, play electronic keyboards locally which activates the Yamaha Disklavier acoustic midi controlled piano in the other city. The musicians appeared together on the same screen in both locations) <http://www.ecafe.com/1993.html>

- **1993 \_\_ "Distributed Music: A Foray into Networked Performance"**, International Network Music Festival, Electronic Cafe, Santa Monica, CA (We played the Haydn Piano Trio No.1 in G, the Finale movement. There were several reasons for this choice. The first was that we only had a couple musicians who were willing to perform and who also happened to be working on the project. As Steve Casner mentioned earlier, one of the trio parts was pre-recorded (the piano part), and the other two parts were played by live musicians, one in Boston (Martha Steenstrup who was at BBN at the time) and one in CA (me, when I was at ISI in LA or at the ACM MM'95 conference in SF). The second reason we chose this piece was that we needed a way for the different instruments to stay in synch with each other. The piano part of this piece plays throughout, and serves as a continuo. This meant it could behave as a conductor or metronome. The piano part was therefore transmitted and played out for the other instrumentalists, who in turn created their accompaniment. All three streams of music were resynchronized and played out at the listener sites, i.e., at DARPA or at the ACM MM'95 conference. A third reason for this particular piece was that the piano part actually begins before the other two parts, so it provides an aural cue for when to begin. Note that the performers/conductor never got to hear the trio in its entirety. Each performer only ever heard the piano/conductor part of the trio. A somewhat contrived musical experience for the performers. The reality is that the speed of light in combination with transmission delays place limits on how quickly music can be disseminated to participants; participants might include individuals who are conductors or performers or listeners or who want to be all of the above. Listeners may not care how long individual streams need to be buffered in order to be resynchronized, but the others do. If you think about a trio, there is a fairly tight feedback loop between musicians, in order to adjust tempo or volume or even to "tune" to the appropriate pitch. The challenge with networked musical performance is that there is perpetual lagtime. A performer only hears events that are in the past. This is further complicated with multiway performance, say with a distributed orchestra. If the delays can be kept within normal for a co-located orchestra, then some form of conventional performance is possible over the network. Otherwise, I suggest we consider composing music that can "survive" network delays. Meaning, write music that still sounds good despite variable delays, still engages performers/conductors, and is still pleasing to listen to even if each listener hears a different end result. [Eve Schooler]) <http://www.postel.org/pipermail/end2end-interest/2001-August/001314.html>

- **1993 \_\_ Duets**, Frank Sinatra (Duets is an album by American singer Frank Sinatra, released in 1993. Recorded near the end of Sinatra's career, it consists of duets between Sinatra and other guest star singers from various genres; Sinatra personally chose the performers. It was advertised as "The Recording Event of The Decade." It received mixed critical notices, with complaints stemming from Phil Ramone's style of production and a lack of personal collaboration, since the guest singers were not physically present with Sinatra but instead were singing along to his pre-recorded vocal parts over a telecommunications link - EDNet, Entertainment Digital Network.)

- 1993 \_\_ **ECI Jerusalem**, Electronic Café, Steve Hornstein (*back and forth audience interactions between people at both sites*) <http://www.ecafe.com/1993.html>

- 1993 \_\_ **ECI Rio de Janeiro/Nice/Santa Monica**, CCCB Cafe Magneto Centro de Midia, Electronic Café, Philip Glass, Michel Redolfi, Terry Riley (*Live from Nice, pianist/composer, Philip Glass plays the MIDI Disklavier piano in Santa Monica, live. Michel Redolfi's concert from Nice of music inspired by his recent trip to the Rain Forest, perfume vials were sent to Santa Monica and released via MIDI connections over phone lines at precise moments during the composition to create the sensual scented ambiance of the Rain Forest. Terry Riley performed in Santa Monica and played a Disklavier piano duet with Philip Glass in Nice*) <http://www.ecafe.com/1993.html>

- 1993 \_\_ **FIERCE/InterRave**, Andrew Garton (*I launched FIERCE/InterRave, a multifaceted party, performance and symposium what could be described in current terms as a precursor to today's Net-casts; a text-cast with about forty participants representing the Net-connected world in 1994. The event managed to raise enough money to purchase three 9600-baud modems that I believe are still in use by NGO workers in Sarawak (Malaysia) today. FIERCE/InterRave began with a small collective of artists and networking experts who gathered over several evenings in Brisbane, Australia. They collaborated to produce an evening showcasing Brisbane's cabaret, band, and performance art communities. It also included what may well have been the first globally Internet-connected dance party (rave). (...) The InterRave network enabled people at the FIERCE event to "jack into cyberspace" and speak to people across the globe. This was made possible with two dial-up connections to Pegasus through which we brought people into our IRC channel (#interrave). The nightlong conversations that followed were projected onto two large video screens. Two InterRave booths were constructed in which people were invited to "talk" to international participants. The InterRave cooked all night with people from Norway, Finland, Scotland, Canada, Sydney, Canberra, Melbourne, San Francisco, and of course, the huge number of people who got into it at FIERCE. It became a truly international event. In fact it felt more like the launch of a new type of event. (...) Altogether twenty-eight different acts performed on the night (...). FIERCE/InterRave was about aiding the indigenous peoples of Sarawak in becoming more informed about the issues that affect them and in sharing that knowledge with others internationally. All proceeds from FIERCE went toward the purchase of modems that were eventually used in resource exchange programs. These programs facilitated information gathering and dissemination to indigenous peoples in remote regions and to their supporters internationally.) <http://www.toysatellite.org/bh/>*

- 1993 \_\_ **Hamnet**, The Hamnet Players (*The concept of Internet Theatre was probably best introduced into the world by The Hamnet Players. In December 1993 they created a "participatory performance"13 with a production of Hamnet, an 80-line version of Hamlet. The first of several productions, Hamnet consisted of Actors from London, Tel Aviv, Durban, Slovenia and Oslo. Many other regions were represented including the United States of America. The Hamnet Players have developed their new theatre with the use of Internet Relay Chat, a text based facility generally used for communication between interest groups in real-time. Since Hamnet, the Hamnet Players have produced another 5 Internet based theatrical productions, the more recent being, An IRC channel named #desire, an adaptation of a play from playwright Tennessee Williams. [Andrew Garton]*)

- 1993 \_\_ **Helikopter - Streichquartett**, Karlheinz Stockhausen (- 4 helicopters with pilots and 4 sound technicians, 4 television transmitters, 4 x 3 sound transmitters, auditorium with 4 columns of televisions and 4 columns of loudspeakers, sound projectionist with mixing console / moderator (ad lib.) The duration is circa 32 minutes - For Karlheinz Stockhausen's Helikopter - Streichquartett (1993) each member of the string quartet, supplied with headphones, rides in one of 4 helicopters with pilots, which proceed to certain indicated altitudes while the strings perform complex rhythms based on varying motoric tempi. The audience on the ground views the work on 4 columns of televisions and listens to the interior of the helicopters mixed with the strings on 4 columns of loudspeakers. Stockhausen had dreams of flying throughout his life, and these dreams are reflected in the Helikopter-Streichquartett (the third scene of *Mittwoch aus Licht*), completed in 1993. In it, the four members of a string quartet perform in four helicopters flying independent flight-paths over the countryside near the concert hall. The sounds they play are mixed together with the sounds of the helicopters and played through speakers to the audience in the hall. Videos of the performers are also transmitted back to the concert hall. The performers are synchronized with the aid of a click-track, transmitted to them and heard over headphones (Stockhausen 1996c, 215). The first performance of the piece took place in Amsterdam on 26 June 1995, as part of the Holland Festival (Stockhausen 1996c, 216). Despite its extremely unusual nature, the piece has been given several performances, including one on 22 August 2003 as part of the Salzburg Festival to open the Hangar-7 venue (Stockhausen-Verlag 2008, 7), and the German première on 17 June 2007 in Braunschweig as part of the Stadt der Wissenschaft 2007 Festival (Stockhausen-Stiftung 2007). The work has also been recorded by the Arditti Quartet. "First, the four string players are introduced to the audience by a moderator - who may also be the sound projectionist. He briefly describes the technical aspects of the forthcoming performance. Then, the players walk to the helicopters - or are driven there - while being constantly followed by video cameras which transmit to the television monitors. The moderator (at the mixing console) explains over the loudspeakers what is happening. From their embarkation into the helicopters until they disembark, each string player and his helicopter is transmitted via camera, television transmitter, three microphones and sound transmitters to his own group of monitors for the audience. Each string player should be constantly audible

and always visible close-up – face, hands, bow, instrument – without any camera changes and without the fading in of other pictures. Behind each player, the earth can be seen through the glass cockpit of the helicopter. The ascent lasts about 5 minutes from the ignition of the turbines to bar e1™. Until the world première, the measured music of the score (starting at bar e1™) lasted 18! minutes. Due to a later addition, it now lasts circa 21! minutes. Descent and landing last about 5 minutes each. The microphone transmission from each helicopter should be such that the sounds of the rotor blades and that of the instrument blend well, and the instrument is heard slightly louder. To achieve this, at least 3 microphones per helicopter are necessary: 1 contact microphone on the bridge of the instrument, 1 microphone in front of the mouth of the player, and 1 microphone outside the helicopter which clearly picks up the sounds and rhythms of the rotor blades. The 4 x 3 microphone signals can be transmitted by 12 individual transmitters – possibly via satellite relay – and received at the concert hall as well as at further localities, then balanced and mixed to 4 mono signals at a mixing console using 4 x 3 faders. From the moment the synchronous playing begins (0'00") until it ends (21'37.8"), the four helicopters circle within a radius of circa 6 km above the performance venue, individually varying their flying altitudes. They should fly so high that the direct sound of the rotor blades is much softer than the sound coming from the loudspeakers, or even better, inaudible. After the landing, cameras follow the string players and the four pilots as they disembark from the helicopters and walk (ride) to the concert hall. Once in the auditorium, the pilots are also introduced by the moderator. The players and pilots are asked about their experiences, and finally the audience is invited to participate in the discussion. In performances independent of WEDNESDAY from LIGHT, at least three successive flights should take place in daylight with an appropriate period of time between flights, and with different audiences. As third scene of the opera, only one flight takes place, also in daylight. The composition is through-structured to the tenth of a second. The players are synchronised using a click-track which is transmitted up to them in the helicopters, and which they hear over earphones. Since the four string players usually tremolo in criss-crossing glissandi, I had to draw their pitch lines and curves on top of one another in four colours, so that the melody trajectories could be followed. During the rehearsals in four separate rooms, I was in a control studio and heard the string players – whose playing was picked up by 4 microphones – individually over 4 loudspeakers. The arrangement of the loudspeakers was as it should be in a performance: left half-left half-right right / violoncello viola 2nd violin 1st violin During these rehearsals I spoke with the musicians via microphone and loudspeakers, and recorded all sections using an 8-track tape recorder. At regular intervals, the players came into the studio and listened to the recordings. The tape of these partial recordings and a complete recording is in the archives of the Stockhausen Foundation for Music. On May 10th 1995 further microphone and transmission tests followed at the airfield in Deelen. During these tests, both a small battery-powered mixer in the helicopter (for the distribution of the signals to the transmitter and earphones) was used, as well as a mixer at the ground station where the signals were mixed and recorded. On June 8th, also in Deelen, Irvine Arditti and Rohan de Saram (in helicopters) tried out special stringed instruments with contact microphones, various microphones, transmitters, receivers and the mixing console. Finally, on June 24th 1995 at the grounds of the Westergasfabriek in Amsterdam, all technical equipment was set up in a specially fitted auditorium, and on June 25th the final rehearsals began, with four helicopters. After I had tested all of the technical transmission units in the helicopters, I prepared the mixing console, and tested all of the equipment. Two test performances were flown, recorded on 12 channels and each time listened to by all participants, commented and corrected. Also the presentation of the musicians and pilots was rehearsed, with myself as moderator. For the world première on June 26th, three flights took place at 4:30, 6:30 and 8:30 p.m., for different audiences, each time introduced by me and followed by a discussion.") <http://www.stockhausen.org> [http://www.stockhausen.org/helicopter\\_intro.html](http://www.stockhausen.org/helicopter_intro.html)

- 1993 \_\_ **Internet Radio**, Scot Gresham-Lancaster, CSU Hayward (Internet "radio" feedback experiments with Bill Thibault used 8-bit uLaw .au format TCPlay utility provided use of satellite Macs used between "distance learning" sites at remote Contra Costa campus and CSUH)

- 1993 \_\_ **Internet Underground Music Archive** (Created by students at the University of California, Santa Cruz to help promote unsigned musical artists. Music was shared using the MP2 format, presaging the later extreme popularity of MP3 sharing and Online music stores. The Internet Underground Music Archive (IUMA) was the pioneer of online music. IUMA was started by Rob Lord, Jeff Patterson and Jon Luini from the University of California, Santa Cruz in 1993) [http://web.archive.org/web/\\*/http://www.iuma.com](http://web.archive.org/web/*/http://www.iuma.com)

- 1993 \_\_ **La Lunga Notte** - Halaila Ha'aroch / Leilun Tauil, Roberto Paci Dalò, Giardini Pensili (Radio concert between Rimini, Cologne, Innsbruck, Jerusalem, by Roberto Paci Dalò, texts by Yehuda Amichai and Samih al-Qasim. With: [Rimini: Takumi Fukushima Violin, Arianna String Quartet, Gordon Monahan Prepared Piano, Gerfried Stocker Data Gloves, Interactive Computer System, Horst Hörtnier Interactive Computer System, Claudio Jacomucci Accordion, Roberto Paci Dalò Clarinets, Live Electronics], [Innsbruck: Sainkho Namtchylak Voice], [Cologne: Axel Otto Toys, Stones, Metals, Plastic, Tapes], [Jerusalem: Yehuda Amichai and Samih Al-Qasim Voices]. La Lunga Notte by Roberto Paci Dalò for Italy's RAI is a document of a live concert linking two poets from Israel and Palestine and other voices from Austria and Germany to an ensemble of acoustic instrumentalists and computers in Italy. Canadian composer, Gordon Monahan, performs prepared piano. The varied sound qualities of the voice transmission formats and the mix of languages and instruments produce an elaborate timbral and contextual richness. As the program notes state, "The audiences experienced the distance, they felt the sea in between, the desert around." [Frank Koustrup]) <http://giardini.sm>

- **1993** \_\_ **Les Miradors de la Paix** (The Watchtowers of Peace), Fred Forest (*Disappointed with the mainstream media coverage of the warfare and "ethnic cleansing" in the former Yugoslavia and the apathy of the international community that watches the tragedy unfold on television without doing anything to stop it, the artist decides to set up an alternative communication network – a combination of sophisticated technology and more primitive means – centering on three watchtowers, or "sound sculptures," erected in the mountains along the Austrian border with Slovenia, with a fourth located in a Parisian art gallery. By dialing special phone numbers publicized in several different countries, people could record their own personal peace messages for the former Yugoslavia. The messages were transferred to the watchtowers, from which they were broadcast into the war-torn region via loudspeaker. Several radio stations in different cities including Belgrade, Zagreb, and Sarajevo, played selections of messages over the air.*) <http://fredforest.org>

- **1993** \_\_ **One-man Band**, Thomas Dolby, Electronic Café (*synthesizer/sequencer, voice. Dolby moves freely throughout the cafe while transmitting CD quality audio and T1 quality video*) <http://www.ecafe.com/1993.html>

- **1993** \_\_ **MétaFort** (*Inauguration du Centre MétaFort, improvisation sur réseau Numéros (ISDN) audio/vidéo (mai 1993) [Luc Martinez]*)

- **1993** \_\_ **Neural.it**, Alessandro Ludivico (*We worked hard on it so the first Neural issue was printed in November 1993. Topics ranged from cyberpunk to electronic music, computer art and BBS networks (the popular Internet ancestors), and even if it was almost naïve compared to the current magazine it reflected the thrill of investigating a new world of personal communication and content sharing possibilities. In 1995 I continued to experiment with publishing with another hybrid printed/music product. It was called Internet Underground Guide, a guide to the most obscure parts of the rising global network, with a music compilation assembled only via the electronic mail medium (perhaps the first music compilation made on the net). In the same year I was invited to the Venice Biennale symposium called >net.time<, where, in the end, the homonymous mailing list [<http://www.nettime.org>] was founded. During the three days of symposium there was such an intensive exchange of ideas and perspectives that a real international network of active persons involved with art, technology and politics was established. The various related international events (Next Five Minutes, 1996, The Beauty and the East, 1997, Net.Congestion 2000, the Italian Hackmeetings 1998-today, just to name a few) that followed were really precious to expand my personal network of friends, artists, hacktivists and theoreticians, reporting some of the most interesting concepts on the printed pages of Neural. The magazine was developed on challenging ideas, trying to give them a proper visual frame. I cared a lot about design and how it could have expressed electronic culture in a sort of printed 'interface'. So, for example, the page numbering was strictly in binary numbers, just zero and ones, even if the printer started to complain loudly about that because this was driving him crazy. And from the beginning another 'sensorial experience' was placed on the centerfold, reprinting optical artworks and theories in various forms, giving readers an aesthetic mind trip while reading. In issue 18 this habit was definitively interrupted, publishing a disrupting hacktivist fake. It consisted of fake stickers, created by the Italian hacker laboratories' network, sarcastically simulating the mandatory real ones stuck on any book or compact disc sold in Italy, on behalf of the local 'copyright protection society' (called SIAE). On the one published it was printed 'suggested duplication on any media'. In 1998 we restyled the layout and restructured the contents, defining three sections. They still are: hacktivism, activism made through a conceptual/technically media hack, electronic music, investigating how technology is involved in music production and consumption, and media art, with a peculiar attention to the networked and conceptual use of technology in art. In 2000 I used a substantial part of music Neural content for the book Suoni Futuri Digitali (Future Digital Sounds), an in-depth research, chronicling the history of the innovations that have drastically changed how we produce and experience sounds. In 2003 (while maintaining the Italian edition) I started the Neural English edition, printed in 4000 copies. Actually it is distributed worldwide with subscribers from literally all over the world, and most of them are curators, artists, critics, students, professors and libraries. Neural.it website went online in may 1997, a decade ago, and it was updated every two weeks. Starting from November 2000, it is daily updated and from 2004 it's in English (and of course still in Italian too). <http://www.neural.it>*)

- **1993** \_\_ **Next Five Minutes**, Amsterdam (*The next 5 Minutes is a working conference and festival on art, politics, activism and media; a general role is played by Tactical Media, a term that was born at the first Next 5 Minutes conference in Amsterdam 1993; the second and third conference was in 1996 and in 1999, both in Amsterdam; organised by De Waag (Amsterdam), De Balie (Amsterdam), De Digitale Stad (Amsterdam), Paradiso (Amsterdam) and V2 (Rotterdam).*)

- **1993** \_\_ **Pan-Demoniam**, Electronic Café Santa Monica/NYC/PAN Network, Richard Zvonar, Bonnie Barnett, Ricard Bugg, Simon Higgs, Alex Noyes, Tom Hamillton, Phill Niblock (*MIDI music and electronic networked music collaborations/performances*) <http://www.ecafe.com/1993.html>

- **1993** \_\_ **Paris-Vancouver Slow-Scan**, Gwek Bure-Soh (*Gwek Bure-Soh is an artist of Asian heritage, living and working in Paris. She does performances which involve a player piano and live interactive video. Since the late 70's, the Western Front has been*

part of a growing artists-telecommunications-network. The various parts of this network (artists organizations, galleries, individuals) meet on-line at irregular intervals. The most notable ongoing exchange is Art's Birthday (an annual event started by Robert Filliou in 1963). In January 1993, the Front connected with the Jacques Donguy Gallerie in Paris for a slow-scan event that involved two Robot 1200's. This was a device originally designed to broadcast video images over short-wave radio, but was easily adapted to run on the telephone lines. After exchanging a few crowd shots and waving limbs, this piece started to evolve out of the ether.)

- **1993** — **Realtime**, Vienna (Innsbruck, Linz, Graz), Isabella Bordoni, Andres Bosshard, Kurt Hentschläger, Horst Hörtner, Michael Kreihsl, Roberto Paci Dalò, Waldemar Rogojsza, Martin Schitter, Hans Soukup, Gerfried Stocker, Tamas Ungvary, Mia Zabelka (*Shared telematic stage for actors and the public in three Austrian radio and television stations. As images, sounds and Internet data transmissions fed into the network, robots and sound generators enabled artists in multiple locations to modify and reciprocally control the development of events in real time. "Realtime" was a telematic concert-performance in real-time, which took place simultaneously at the regional studios of the National Radio and Television (ORF) in Graz, Innsbruck and Linz and was broadcast live on TV and radio. "Realtime" used all available video-, sound- and data-networks for the interaction of the protagonists present at the three provincial studios. From this interaction the live-broadcasts are produced in real-time ... For this purpose, the three studios are connected by a circular data-network. "Realtime" as broadcast on radio is not the stereo-version of the TV sound and "Realtime" on the television-screen is not just the image to the sound. The two per se autonomous broadcasting spaces form a joint location for the medial representation of what is happening. "With the help of a helmet-like apparatus worn by Hörst Hoertner in Innsbruck, the head movements of the artist were registered by a computer which translated them into digital control codes. Via data lines a robot camera in Linz was directed synchronously to the head movements. Gerfried Stocker in Graz used data gloves to reach through the electronic space to play robot-instruments and computer-controlled sound sculptures distributed in Innsbruck and Linz. On the ceiling of each of the three studios a rotor with tubes was installed. The speed of the turning of the motors and thus the pitch and structure of the sounds produced by the tubes could be controlled in real-time via the data network by Roberto Paci Dalò in Linz on his clarinet. Zabelka in Innsbruck used wrist interfaces to interact once again with Martin Riches' violin robot, which was equipped with a network interface. An additional "level of reality" extended the interaction of Zabelka's violin with the robotic violin as Ungvary, in Linz, not only controlled sequencers in all three studios with his fingertips, but also used his "Sentograf" to activate an animation program to produce virtual violonists who, via video line and "blue box" tricks, joined the "real" Zabelka and the electromechanical violin robot. The various "instruments" created for "Realtime" - and the wide scale of different body movements required to activate each instrument - were deliberately intended to enhance the dramatic power of the images visualizing the relationship between the actions of the performers in one location and their results in distant places. (...) "Realtime", the transparency of the Medial Space : The great challenge of the project "Realtime" lies in the creation of an interface between the different levels and spaces of action, which is equally accessible to the radio, TV and on site-audiences : acoustic and visual entry points for the communication among the protagonists as well as for the intermedia projection of what is happening, into the transmission spaces of radio and TV. The distributive one-way media radio and TV present special problems : 1/ the necessity, to represent synchronous parallel processes in real-time, 2/ to capture the simultaneous collaboration in the three regional studios, 3/ to condense the constant tele-presence of the performers into a comprehensible tele-representation. (...) For about half of the program time, the viewers had the impression that what they saw was taking place in only one location. It was only when the director (Michael Kreihsl) began to use split screens that the three different geographical locations of the protagonists revealed themselves. (...) To the layer of "real images" created by Kreihsl's orchestration of the TV cameras, Hentschlaeger added layers of live computer-generated and -controlled "artificial images" as well as graphical elements such as backgrounds, textures, fonts, and masks, thus emphasizing the flat surface character of the screen / window within a much deeper networked architecture of real and virtual spaces. Bosshard navigated the "complex sound-structure of the event from his own special matrix-mixing-console in Innsbruck via a circular architecture of audio-lines" especially designed by him to link the three locations, to which he added his own spatial loudspeakers to create immersive sound installations for the live audiences in the studios. He also challenged viewers / listeners to play the role of potential collaborators, in that they were requested to rearrange their TV and radio loudspeakers to realize the full spatial potential of the three audio channels (the mono channel of the TV and the two channels of the stereo radio), which Bosshard fed separately with live sounds. "The atmosphere, the resonance between the three channels creates a space. While on TV only an excerpt can be seen, this space is three-dimensional. Like a hologram. This space-sound evolves, if Oesterreich 1, the radio station is tuned into stereo-phonically - for best results in the back, while ORF 1, the TV station, with its one channel sounds in the foreground of the room." The event itself lasted only thirty minutes, and of course, it was the pressure of TV that dictated such a short (and late) broadcast time (the TV program slot in which "Realtime" unfolded was) - appropriately - called Around Midnite). The transgression of this dictate of broadcasting times for a series of networked radio projects came a few years later : on air, with the extension of broadcast nodes into different time zones around the globe, which made a twenty-four- or eighteen-hour project framework necessary, and on-line and on site with the streaming technologies of the World Wide Web and their potentially unlimited time frame, as well as the resulting pull from performances to installation-like events. [Heidi Grundmann] [http://www.kunstradio.at/2004B/03\\_10\\_04.html](http://www.kunstradio.at/2004B/03_10_04.html) [http://www.swr.de/swr2/audiospace/engl\\_version/interview/bordoni.html](http://www.swr.de/swr2/audiospace/engl_version/interview/bordoni.html)*

- **1993 \_\_ Realtime - Problems of Documentation**, R. Froeis, Heidi Grundmann (*"Such art-events are unrepeatable, they can only be further generated. That is also why they challenge traditional definitions of concepts such as author, copyright, originality and virtuosity : they lose their authority". It is physically impossible to experience networked projects that are simultaneously produced in separate locations other than as versions : the project as a whole eludes human perception. This aggravates the already serious problems of documentation and interpretation common to all fugitive, process- or time-based art projects, with the unfortunate result that many distributed telematic projects have been insufficiently documented and hardly interpreted at all.*)

- **1993 \_\_ The Room of Desires**, Pavel Smetana (*The First stage of this project calls on the participation of the sound and the rhythm of the human heart (of a spectator - listener) in an listening and visual composition . In this concept, man becomes the real heart of an "orchestra" in the sense of a metronome or of a biological musical instrument. In reality the sound and the heart rate captured by biosensors and ultra sensitive microphones is used as a rhythm in the real time by an computer which blends it with a visual and musical production. The individual heart beat becomes the essential element of the music and the film. The Second stage is a development of the first one. It consists in placing all the sounds and images in The Room of Desires under the control of the human heart, of the brain waves, of the conductivity and of the temperature of the skin. The aim of this research is to plunge the spectator into an audio-visual environment which is dependent on the changes within his organism, and in which he participates directly in the creation of completely new sounds and images in real time. In this installation the spectator can find no buttons or joystick and all the biosensors are hidden in the chair. That is why we can say that creates a special type of interactivity : a passive one. All the music by Alexander Mihalic is treated in complementarity with the images. A "musical sequence" corresponds to each sequence of images. The term "musical sequence" must be understood as a sound entity recognisable by the listener. The music is diffused in quadriphony.*) <http://pavel.arscenic.org/eng/chambre/>

- **1993 \_\_ SITO** (*After a start as an anonymous ftp-based art gallery and collaborative collective, the OTIS project (later SITO) moves to the web thanks to SunSITE's hosting. SITO is an online artist collective which began in January 1993, making it one of the oldest Internet-based art organizations. It was started by Ed Stastny and has been maintained by Stastny and a group of volunteers and supporters. From its beginning, SITO had a mission different from many established Internet art resources, in that rather than be an electronic journal of discussions or writings about art, it chose to be a repository for artwork in order to facilitate sharing and exposure. As this was the Internet pre-World Wide Web, SITO accomplished this by using anonymous FTP sites. Another important part of the SITO mission was to be open to all levels of artists, and at no cost. SITO was one of the earliest online galleries, and this showcase of artwork has become known as the Archive. Popular pronunciations of SITO are SEE-toe and SIT-oh. SITO was originally called OTIS, which was an acronym for "Operative Term is Stimulate". The title SITO is merely a reversal of OTIS and is not officially an acronym, though some playful expansions have been suggested by users of the site. One such expansion is "Still I Think OTIS", which has the distinction of containing a nested acronym. Another focus of SITO that soon developed was an active interest in art games and experimentation with collaborative art projects using the Internet as a means of communicating. The first few such projects dabbled in dividing digital canvases amongst several artists (e.g. Grid and Crosswire projects) or translating traditional art games such as exquisite corpse to the digital medium. These projects were in full swing by 1994 and were grouped together under the heading Synergy on SITO. In 1996, the SITO Synergy project HyGrid was honored with a Prix Ars Electronica award. HyGrid is a twisting, looping, multi-dimensional maze of small panels of art which is built up by hundreds of artists. It is still active today. Gridcosm started in 1997 and proved even more popular with over 22000 contributions to its recursing collaborative collage and continues to grow daily. SITO originally was announced as "The OTIS Project", with a subtitle of "The Operative Term is Stimulate", which is where the acronym OTIS came from. This mostly whimsical choice became the name of the project and, in mid-1995, became an unexpected problem. An art college in the United States named Otis was troubled by the fact that OTIS made use of the term "OTIS Gallery" and used the domain otis.org. They sent a cease-and-desist letter and various other threats. The collective discussed the situation and decided something so whimsical was hardly worth fussing over and elected to simply reverse the acronym, thus becoming SITO.*) <http://www.sito.org>

- **1993 \_\_ Soundbridge Köln - Kyoto**, Bill Fontana (*simultaneously installed in Cologne and Kyoto at the Museum Ludwig and National Museum of Modern Art Kyoto. 18 sound sources at each place, brought together and mixed from a mixing board at the WDR*) <http://www.medienkunstnetz.de/works/klangbruecke-koeln-sanfrancisco/> [http://www.resoundings.org/Pages/musical\\_resource.html](http://www.resoundings.org/Pages/musical_resource.html)

- **1993 \_\_ SoundCulture'93** (*In November, 1993 by the second festival, SoundCulture Japan '93, held in Tokyo. Events took place at several sites including Theatre X, Kiryu Yurin-kan, the Kawasaki City Museum, Art Forum Yanaka, and the Tokyo Bunka Kakikan. It included works by Mamoru Fujieda (Japan), Douglas Kahn and Frances Dyson (USA/Australia), Chris Mann (Australia), Phil Dadson (NZ), and Mineko Grimmer (Japan/USA).*)

- **1993 \_\_ Telay, TELEphone - DeLAY** - concert with two satellites between Sydney and New York, european month of culture in Graz, Teleskulptur III, Kulturdata, Josef Klammer (*A piece of percussion music played by Klammer will be relayed by*

telephone to New York and Sydney. From there it will be reflected by a « telephone mirror » and thus return to its point of departure with a time delay) [http://klammer.mur.at/texte/teley\\_de\\_en.html](http://klammer.mur.at/texte/teley_de_en.html)

- **1993 \_\_ Telematic Seance**, Paul Sermon, MUU Festival Finland (The technology involved in "The Telematic Séance" is much the same as "Telematic Dreaming", however the situation is somewhat different. During the production of "Telematic Dreaming" I discovered many aspects of user interaction that I have brought attention to in this new proposal for "The Telematic Séance". From the following technical description and diagrams these aspects will become evident. I will be situated at the Helsinki Telegalleria, sat at a round séance table, covered with a chroma key blue table cloth. A video camera will be situated directly above me, looking down at the table below. This video camera will have a remote zoom control installed on it, and will be controlled by a hand set that I will be holding. A similar system is used on the existing Rollabout units. The video image of me, sat at a chroma key blue séance table, will be sent to a chroma key video mixer, and combined with images from a prerecorded VHS videotape. The chroma key system will replace the blue area with the prerecorded video image. The combined image is then sent through an ISDN2 line to the OTSO Gallery in Espoo. The video image is received at OTSO, and is fed to a video projector positioned in the ceiling. The video projector projects the live video image down onto another séance table. This séance table is covered with a white table cloth and is surrounded by six chairs. A white cape and mask will be left on the table for a voluntary medium, from the OTSO Gallery audience. A video camera will be situated next to the video projector, receiving a birds-eye image of the table below. The video camera image is sent back through the the ISDN2 line to me at Telegalleria. The video camera image from OTSO is fed to four monitors that surround the séance table in the Telegalleria. This allows me to see myself combined with the medium and the other guests at the OTSO Gallery, from all angles. The OTSO Gallery visitors will be able to sit down at the table and take part in 'The Telematic Séance'. During the realisation of "Telematic Dreaming" I became aware of the disappearance of the technology, through and appearance of communication. Just as the technology of language became invisible, so does the technology of the telematic performance. The séance has always been an interface through language, it allows us to go beyond the realms of our present reality. I understand language as a technology used to understand the universe. ISDN lines, video cameras and video projectors are no different - they are one in the same - language. The OTSO Gallery and Telegalleria may not be considered the most ideal Séance settings, but all the same, they are séance interfaces, and the virtual space that is entered will be much the same.) <http://www.hgb-leipzig.de/~sermon/seance/>

- **1993 \_\_ Telematic Vision**, Paul Sermon (First there was the bed, then came the sofa. The beginnings of this work started with the installation "Telematic Dreaming" produced in June 1992 for the "koti" exhibition in Kajaani, Finland. forwarding the development into the installation "Telematic Vision". In many ways the sofa and the bed amount to much the same thing, they can also transform themselves into each other, becoming a "sofa/bed". The semiology of the bed, that proved to be so effective in "Telematic Dreaming", is also present within the sofa and is equally as effective in "Telematic Vision". Where "Telematic Vision" and its sofa differ from "Telematic Dreaming" and its bed is in the scenario and theater of its spectacle. The sofa finds itself between the bed and the television, whilst it retains the semiotic reference to the bed, it also refers directly to television. The television and sofa are caught up in an inseparable scenario. In "Telematic Vision" the sofa is the seat from which the spectacle of television is viewed and the spectacle that is viewed is the audience that sit on the sofa. Two identical blue sofas are located in dispersed remote locations. In front of each sofa stands a video monitor and camera. The video camera in each location sends a live video image, via ISDN telephone lines, to the other location. The two images are mixed together, via a video effects generator, and displayed on the monitors in front of each sofa in both remote locations simultaneously. Two more video monitors, displaying the same image, are added to both locations, and stand one meter from the arms on both sides of each sofa. The theater of the spectacle is complete. The viewers in both locations assume the function of the installation and sit down on the sofas to watch television. At this point they enter the telematic space, watching a live image of themselves sat on a sofa next to another person. They start to explore the space and understand they are now in complete physical control of a telepresent body that can interact with the other person. The more intimate and sophisticated the interaction becomes, the further the users enter into the telematic space. The division between the remote telepresent body and actual physical body disappears, leaving only one body that exists in and between both locations. Assisted by the object of the sofa and the scenario of the television consciousness is extended and resides solely within the interaction of the user. "Telematic Vision" is a vacant space of potentiality, it is nothing without the presence of a viewer and the interactions of a user who create their own television program by becoming the voyeurs of their own spectacle.) <http://www.hgb-leipzig.de/~sermon/vision/>

- **1993 \_\_ Telepresence Art**, Eduardo Kac (The basic structure of the telepresence installations I create with Ed Bennett involves at least one regular phone line through which the participant controls a telerobot in real time. Through the telerobot the participant gathers images and hears the sounds in the environment. The communication event created by telepresence art undoes the polarizing categories of "transmitter" and "receiver" and restores, in an unprecedented reversal, the primary sense of the word tele-vision, empowering the participant with the ability to decide what and when he or she wants to see. (...) A great deal of our social experience takes place through sound and images transmitted throughout the globe via telecommunications: regular or cellular phones, unidirectional television, cable's pseudo-interactive shopping channels, desktop teleconference systems, fax and data modems, the new wristwatch-beeper, and so on. In all cases the actual space that disconnects the interlocutors is not an impediment to interaction because what really separates them now is the different time zones. The shortest distance between two points is no longer a straight

line, as it was in the age of the locomotive and the telegraph. Today, in the age of satellites and fiberoptics, the shortest distance between two points is real time. The ability to commute information instantaneously, to send and receive sound and images immediately ("i-mmediately, or with no apparent medium or means?"), accounts for the decreasing social relevance of the extensity of space in regard to the intensity of time. As a consequence, speed is no longer expressed only in miles or kilometers per hour, but also in bauds or bytes per second. More than ever, when in need to actually dislocate our bodies through the environment we express the contiguity of space by means of a temporal deferral or delay. (...) Telecommunications systems are used for overt or disguised entertainment and surveillance, for democratic and anti-democratic propaganda and for new forms of imprisonment. Today, remote surveillance systems are also available for the domicile. During the Tian an Men Square bloodshed, in Beijing, Chinese military warned journalists that they would be shot if they photographed army units on the streets of the city. CBS news anchorman Dan Rather was forced by Chinese officials to shut down his satellite hookup, and so used videophones ("transceivers") to transmit still-video pictures over regular phone lines from Beijing to New York, and from there to rest of the world. Reporters like Richard Roth in Beijing used a cellular phone to speak live on TV from Tian an Men Square over pictures which galvanized world opinion. During the Gulf War, the American government released pre-recorded video sequences transmitted in real time by a missile, from its own perspective, until the moment of the explosion. The images were broadcast to show the missile's precision (which one obviously reads as military supremacy). Videophones are also being used to control multiple offenders incarcerated in their own homes. In some American states convicted drunk drivers are prisoners in their own houses under a strict regime of electronic surveillance. A computer at a local police headquarters phones the offender at random up to 15 times every 24 hours and orders him to transmit his picture after performing a simple task ("turn your head to the right," for example) to confirm real-time action. The computer also asks the offender to blow into an alcohol tester and to send a picture of the resulting numbers. (...) The very idea of telepresence in art plays on the notion of this "change of place miraculously executed in extended space." This miracle, of course, is not achieved by a mental command but by the use of specific instruments (telerobot, videomodem, telephone, video monitors, etc.). This equipment, which in science would be used for data-collecting, in art is used as a means to address the complexity of our perception in the age of media. If we once thought of images only in terms of mirror reflections, pictorial representations, or mental recollections, today electronic images command the map of the visual and of the motor projects of humankind. That is why Virilio spoke, as I mentioned before, of a logistics of perception replacing a phenomenology of perception. Electronic cameras invade all spaces (including the limits of the galaxy and the human body, during surgery) and electronic images on screens become indissociable from other elements in our landscape. (...) In an art context, the rationale of remote communication belongs to another order of experience than science. It is a matter of exploring on the level of the aesthetic that which is the material expression of a change in the cultural patterns of our society: the subordination of real space to real time.) <http://www.ekac.org/>

- 1993 \_\_ « **Time Out** », William Gibson ("What? What are you talking about? The Sony Walkman has done more to change human perception than any virtual reality gadget. I can't remember any technological experience since that was quite so wonderful as being able to take music and move it through landscapes and architecture.") <http://www.slideshare.net/dissemination/soft-machines-and-the-design-of-perception>

- 1993 \_\_ **Trojan room coffee pot**, The first webcam (The Trojan Room coffee pot was the inspiration for the world's first webcam. The coffee pot was located in the so-called Trojan Room within the old Computer Laboratory of the University of Cambridge in Cambridge, England. The webcam was created to help people working in other parts of the building avoid pointless trips to the coffee room by providing, on the user's desktop computer, a live 128x128 grayscale picture of the state of the coffee pot. The camera was installed on a local network in 1991 using a video capture card on an Acorn Archimedes computer. Employing the X Window System protocol, Quentin Stafford-Fraser wrote the client software and Paul Jardetzky wrote the server. When web browsers gained the ability to display images in March 1993, it was clear this would be an easier way to make the picture available. The camera was connected to the Internet in November 1993 by Daniel Gordon and Martyn Johnson. It therefore became visible to any Internet user and grew into a popular landmark of the early web. At 09:54 UTC on 22 August 2001 the camera was finally switched off and the pot (a German Krups model, actually the fourth or fifth seen on-line) was auctioned on eBay for £3,350 to Spiegel Online, the Internet version of Der Spiegel magazine.) [http://web.archive.org/web/\\*/http://www.cl.cam.ac.uk/cgi-bin/xvcoffee](http://web.archive.org/web/*/http://www.cl.cam.ac.uk/cgi-bin/xvcoffee)

## 1994

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- 1994 \_\_ **Internet** (Netscape WWW browser, developed by Marc Andreessen, Mountain View, California (Reid 1997:33). Partial integration of the WWW and email is now possible. By the end of 1993, there were 623 websites, according to a study by MIT Researcher Matthew Gray. By mid-1994 there were 2738 websites, according to Gray's statistics; by the end of the year, more than 10,000.)

- **1994** \_\_ **A.A.R.T - Radio**, Garrett Phelan (*It transmitted for eight evenings for 6 hour periods on 96.7 FM to the greater Dublin area in Ireland in 1994. It had a temporary broadcast licence issued by the IRTC (Independent Radio Television Commission) and was curated by Garrett Phelan and Mark McLoughlin. A.A.R.T. - Radio was created to intermittently facilitate the work of visual artists who use sound as a creative medium and to explore the creative potential of radio broadcasting. For the first time in Ireland the project transmitted soundworks of over 200 international artists to the citizens of Dublin in Ireland.*) <http://www.garrettphelan.com/>

- **1994** \_ **Art.Net** ("Art on the Net", created by Lile Elam in June 1994 to showcase the artwork of San Francisco Bay Area artists as well as other international artists. It offered free linkage and hosts extensive links to other artists' sites. Art.Net is a not for profit[citation needed] web-based artist collective of more than 450 artists, poets, musicians, painters, sculptors, animators, hacker artists, and other creative people from around the world, aimed at helping artists share their works on the World Wide Web. Also known as Art on the Net, the site was established in June, 1994 with a manifesto and statement of purpose as an Internet art project site and online art gallery. Artists create and maintain studio web spaces on the site and gallery pages where they show their works and share information about themselves. Artists are also encouraged to collaborate and to help each other promote and improve their art. They can learn how to curate and show their art work via the web. Several member artists also teach art in their studio spaces located on Art.Net. Art.Net is open to new artists and new areas. New artists are invited to join and submit their work for display. The site provides and supports a variety of online art resources. Art.Net is owned and operated by the member artists, and has been active in defending free speech on the Internet. With the help of the American Civil Liberties Union (ACLU), Art.Net has been involved in many court cases defending freedom of speech on the Internet. In each case, members were asked to testify in court about how laws censoring content on the Internet prevented the sharing of art due to fear of prosecution. There have been four such cases, in four different states. Each was successful in bringing injunctions against laws, preventing their enforcement. This happened during the time that each state was trying to create local Communications Decency Act (CDA) laws for their local states. The website does not censor the artists or their works posted on the site; artists are requested to share their art in a non-commercial way. Artists retain all rights to their works shown on Art.Net. The site typically receives more than 65,000 page views per day from more than 14,000 unique visitors. It has won several awards.) <http://en.wikipedia.org/wiki/Art.Net> <http://www.art.net>

- **1994** \_\_ « **The Aural Walk** », Iain Chambers ("The Sony Walkman. Launched on the world in the spring of 1980, this urban, hi-fi, gadget was based on an idea that came to Akio Morita, President of Sony, while, rather appropriately, walking in New York. Over the decade and now into the nineties the Walkman has offered access to a portable soundtrack that, unlike the transistor radio, car stereo and the explicitly opposed intention of the bassboosted 'ghetto blaster' or 'boogie box,' is, above all, an intensely private experience. However, such a refusal of public exchange and apparent regression to individual solitude also involves an unsuspected series of extensions. With the Walkman there is simultaneously a concentration of the auditory environment and an extension of our individual bodies. (...) In the manifest refusal of sociability the Walkman nevertheless reaffirms participation in a shared environment. It directly partakes in the changes in the horizon of perception that characterise the late twentieth century, and which offers a world fragmenting under the mounting media accumulation of intersecting signs, sounds and images. With the Walkman strapped to our bodies we confront what Murray Schafer in his book *The Tuning of the World* calls a 'soundscape,' a soundscape that increasingly represents a mutable collage: sounds are selected, sampled, folded in and cut up by both the producers (DJs, rap crews, dub masters, recording engineers) and the consumers (we put together our personal play lists, skip some tracks, repeat others, turn up the volume to block out the external soundtrack or flip between the two) [R. Murray Schafer, *The Tuning of the World*. New York, Alfred Knopf, 1977]. Each listener/player selects and rearranges the surrounding soundscape, and, in constructing a dialogue with it, leaves a trace in the network. The Walkman, like the transistor radio, the portable computer, the mobile phone and, above all, the credit card, is a privileged object of contemporary nomadism. Yet, as Chantal de Gournay has pointed out, while the computer and global credit status transmit you through a-topic space in a 'virtual,' rather than a corporeal, reality, where time is 'fatal' and space incidental, the Walkman, on the contrary, draws the world into you, reaffirms your body, and laconically signals a 'diasporic identity' put together in transit [Chantal de Gournay, 'Citadins et nomads. L'espace public à l'épreuve des technologies de communication mobile.' Paper given at the Centre de Sociologie de l'Innovation of the Ecole Nationale Supérieure des Mines, Paris, 9 January 1992.]. Like Walter Benjamin's description of the Parisian arcades that let light into their interiors, the Walkman brings the external world into the interior design of identities.-(...) So the Walkman is both a mask and a masque: a quiet putting into act of localised theatrics. It reveals itself as a significant symbolic gadget for the nomads of modernity, in which music on the move is continually being decontextualised and recontextualised in the inclusive acoustic and symbolic flux of everyday life. Still, if the Walkman so far represents the ultimate form of the art of transit. it also represents the ultimate musical means in mediating the ambient. For it permits the possibility, however fragile and however transitory, of imposing your soundscape on the surrounding aural environment and thereby domesticating the external world: for a moment it can all be brought under the STOP/START, FAST FORWARD, PAUSE and REWIND buttons. The fascination of the image of the Walkman, apart from the inner secret it brazenly displays in public (what is s/he listening to?), is the ambiguous position that it occupies between autism and autonomy: that ambiguous mixture of danger and saving power, to paraphrase Heidegger's quotation from Hölderlin, that characterises modern

technology. Therefore, to understand the Walkman involves multiplying on it diverse points of view, and appreciating that it does not subtract from sense but adds to and complicates it. Pursuing this we might say that our relationship to the Walkman 'will be free if it opens our human existence to the essence of technology.' [Martin Heidegger, 'The Question Concerning Technology,' in Martin Heidegger, *The Question Concerning Technology and Other Essays*, New York, Harper & Row, 1977, p. 3.]. By 'essence' (Wesen) Heidegger intends something that endures through time, that dwells in the present, that offers a 'sense' of technology that is not merely reducible to the 'technological.' Despite the nostalgia for authenticity that permeates Heidegger's discourse we can nevertheless bend his words in a suggestive direction. To the question what is technology and, in this particular case, the Walkman, we can answer that it is simultaneously a technical instrument and a cultural activity. To continue with the German philosopher's concerns, the Walkman is an instrument and activity that contributes to the casting into sense, to the re-presenting, or en-framing (Ge-stell), of the contemporary world. In retracing the etymology of 'technology' back to the Greek *techné* and its ancient connection to the arts, to *poiesis* and knowledge, Heidegger suggests a wider frame for thinking its sense, its particular truth. However, as both instrument and activity, the Walkman is not simply an instrument that reveals the enduring truth of technology and being; it is also an immediate historical reality and practice. As part of the equipment of modern nomadism it contributes to the prosthetic extension of mobile bodies caught up in a decentred diffusion of languages, experiences, identities, idiolects and histories that are distributed in a tendentially global syntax. The Walkman encourages us to think inside this new organisation of time and space. Here, for example, the older, geometrical model of the city as the organiser of space has increasingly been replaced by chronometry and the organisation of time. The technology of space has been supplemented and increasingly eroded by the technology of time: the 'real time,' the 'nanoseconds' of computer chips and monitor blips, of transitory information on a screen, of sounds snatched in the headphones. It leads to the emergence of a further dimension. 'Speed suddenly returns to become a primitive force beyond the measure of both time and space.' [Paul Virilio, *L'Espace critique*. Paris, Christian Bourgois, 1984]. To travel. and to perform our travail, in this environment we plug in. choosing a circuit. Here, as opposed to the discarded 'grand narratives' (Lyotard) of the City, the Walkman offers the possibility of a micro-narrative, a customised story and soundtrack, not merely a space but a place, a site of dwelling. The ingress of such a privatised habitat in public spaces is a disturbing act. Its uncanny quality lies in its deliberate confusion of earlier boundaries, in its provocative appearance 'out of place.' Now, the confusion of 'place,' of voices, histories and experiences speaking 'out of place' forms part of the altogether more extensive sense of contemporary semantic and political crisis. A previous spatial hierarchy has had increasingly to confront an excess of languages emerging out of the histories and languages of feminism, sexual rights, ethnicity, race and the environment that overflow and undercut its authority. The Walkman is therefore a political act? It is certainly an act that unconsciously entwines with many other micro-activities in conferring a different sense on the polis. In producing a different sense of space and time, it participates in rewriting the conditions of representation: where 'representation' clearly indicates both the semiotic dimensions of the everyday and potential participation in a political community. ( In Bruce Chatwin's marvelous book *The Songlines* we are presented with the idea that the world was initially sung into being. [Bruce Chatwin, *The Songlines*. London, Picador, 1988]) The Nietzschean vision of the world, that is, a world of our making, dependent on our activity and language for its existence, is here laid out as the human adventure in which the movements of peoples, and the rigours and rhythms of bodies, limbs and voice, set the patterns, the design, the nomination, of the land, the country, our home. The religious aura of this nomadism has clearly waned in the more secular networks of Western society. Perhaps it still continues to echo inside the miniaturised headphones of modern nomads as the barely remembered traces of a once sacred journey intent on celebrating its presence in a mark, voice, sign, symbol, signature, to be left along the track. [From *Migrancy, Culture, Identity* (London: Routledge, 1994), 49-53] <http://helios.hampshire.edu/~hacu123/papers/chambers.html>

- 1994 \_\_ **Before and After Ambient**, Santa Monica, The Kitchen NYC, London, telematic concert, Electronic Café (Meridian Dream and Balance, DJ Daniel (of Moontribe), David Behrman, Cypher 7, DJ Terre Thaemlitz, DJ Tetavo, Future Sound of London) <http://www.ecafe.com/1994.html>

- 1994 \_\_ **Black Harlequin**, Andrew Garton ("I commenced work on a web site that would be an online representation of my first non-traditional operatic work, *Black Harlequin*4. {PRIVATE}Black Harlequin was originally conceived as a one-person new media opera, performed in sequence with video projections and soundscapes. Extracts from the opera were performed between 1991 - 94. In 1994, much of the visual, sound, text and stage designs were archived on the web. This site is both a record of its creative life span as well as an exploration of the work contributed towards its fruition. In addition, it was the first of many interfaces I would design in collaboration with video artist and designer Kim Bounds. We were interested in an interface to unexpected pathways, perhaps taking the user to parts of the site they would not necessarily visit were the interface marked with signs pointing this way and that. We were of the opinion that content should be non-hierarchical and that an interface should reflect this. The *Black Harlequin* web site incorporated MIDI files of the score, which played in the background as pages were loaded. It also contained audio files in .wav format as well as RealAudio. The score and those parts of the libretto that I was able to record could be heard from a list of files, or from pages that contained individual components of the libretto. This index of sound material is the single most popular page on the site and is routinely among the top ten downloads on the Toy Satellite server." [Andrew Garton]) <http://www.toysatellite.org/bh/>

- **1994** \_\_ *Le Bleu du Ciel*, Stephan Barron (Two computers, one located in Tourcoing and the other in Toulon, were connected by telephone. They calculated in real time the average of the colours in the northern and southern skies. The same planetary interactive installation was shown between Paris and Munich in 1995 (Unesco Award)) (Le bleu du ciel est une installation interactive de 1994. Deux ordinateurs situés à Tourcoing et Toulon et reliés par minitel, calculent en temps réel la moyenne des couleurs des ciels du nord et du sud. Le même projet est réalisé en 1995 entre Paris et Munich (Prix Unesco). Les ciels de deux lieux distants dans l'espace interagissent entre eux et les spectateurs de l'œuvre. Il ne s'agit pas d'une interactivité entre l'homme et la machine, mais d'une interactivité plus vaste, entre l'homme et la nature qui est donnée à voir et transcendée par Le Bleu du Ciel. Derrière un petit monochrome, se joue un double processus interactif : intérieur avec notre psychologie, extérieur avec la planète.) [http://stephan.barron.free.fr/technoromantisme/barron\\_projets.html](http://stephan.barron.free.fr/technoromantisme/barron_projets.html)

- **1994** \_\_ *By-Pass* (In Geneva, the claustrophobic tunnels which interrupt the scenic Swiss landscape along N 1a Highway became the focal point of the Geneva By-Pass project, which set out to "physically improve and aestheticize the motorist's transit through three subterranean passages by using sound and light to emphasize the kinesthetic experience of traveling" . Drawing upon the emerging technology of active noise control, the project was to allow externally produced tones to interact with unaccompanied vocal music similar to that of the Franco-Belgian renaissance composer Josquin Desprez. A multiple CD player would be connected to numerous high-output audio amplifiers which powered a series of weather-proofed loudspeakers suspended at fifty-meter intervals from the tunnel ceilings. The volume of the recorded music would be automatically adjusted to the loudness of the traffic noise. Unfortunately, political developments resulted in premature termination of the project in 1994.)

- **1994** \_\_ *CAiiA-STAR* is a world-wide research community, founded and directed by Roy Ascott, whose innovative structure involves collaborative work and supervision both in cyberspace and at regular meetings in the UK and abroad. It combines, as an integrated research platform, CAiiA, the Centre for Advanced Inquiry in the Interactive Arts at University of Wales College Newport, and STAR, the Science Technology and Art Research Centre in the University of Plymouth. It has the aim of creating new knowledge through research in the theory and practice of interactive art , and is recognised as a leading centre in this field. CAiiA-STAR seeks the integration of art and technology within a post-biological culture, and is involved in advancing the parameters of this emergent field (e.g. telematics, immersive VR, Mixed Reality, Alife, architecture, hypermedia, telepresence and agent technology, transgenics, data imaging, intelligent environments, generative music, technoetics). It is a community of closely connected doctoral candidates, graduates, post-doctoral researchers, advisors, associates and supervisors. These high level professionals are committed, through collaboration and shared discourse, to pushing the boundaries of their art. For these reasons the level of research is extremely high and the methodologies employed are extensive and rigorous. As a structural development of CAiiA-STAR, while continuing to seek a synthesis of art, technology and science, we see three inter-related cores of research emerging: (a) arts practice and theory; (b) access, presentation, archiving (e.g. the intelligent museum); (c) creative education (new approaches to learning by, through and for new media arts). We shall respond to requests we have received from countries wishing to establish regional "hubs" providing research programmes based on the model we have developed. This is part of a strategy to build a Planetary Collegium, a global network of small intensive research hubs, which in turn has developed from the project Identity in Cyberspace: Pilot Project for a European Cyberspace Collegium, commissioned by the C.E.C. (DG XXII), Brussels.) <http://www.uoc.edu/caiia-star-2001/>

- **1994** \_\_ *CIRM* (Concert CIRM / Muse en circuit "Nice-Paris, concert sur réseau ISDN (audio/vidéo) [Luc Martinez])

- **1994** \_ « *Cyberdemocracy - digital democracy, e-democracy, teledemocracy* » (E-democracy, a portmanteau of the words "electronic" and "democracy," comprises the use of electronic communications technologies such as the Internet in enhancing democratic processes within a democratic republic or representative democracy. It is a political development still in its infancy, as well as the subject of much debate and activity within government, civic-oriented groups and societies around the world. The term is both descriptive and prescriptive. Typically, the kinds of enhancements sought by proponents of e-democracy are framed in terms of making processes more accessible; making citizen participation in public policy decision-making more expansive and direct so as to enable broader influence in policy outcomes as more individuals involved could yield smarter policies; increasing transparency and accountability; and keeping the government closer to the consent of the governed, thereby increasing its political legitimacy. E-democracy includes within its scope electronic voting, but has a much wider span than this single aspect of the democratic process. E-democracy is also sometimes referred to as cyberdemocracy or digital democracy. Prior to 1994, when the term e-democracy was coined in the midst of online civic efforts in Minnesota by Steven Clift, the term teledemocracy was prevalent. The Internet is viewed as a platform and delivery medium for tools that help to eliminate some of the distance constraints in direct democracy. Technical media for e-democracy can be expected to extend to mobile technologies such as cellphones. There are important differences between previous communication media and the Internet that are relevant to the Internet as a political medium. Most importantly the Internet is a many-to-many communication medium where radio and television, which broadcast few-to-many, and telephones broadcast few-to-few, are not. Also, the Internet has a much greater computational capacity allowing strong encryption and database management, which is important in community information access and sharing, deliberative democracy and electoral fraud prevention. Further, people use the Internet to collaborate or meet in an asynchronous manner — that is, they do not have to be

physically gathered at the same moment to get things accomplished. For example, environmental or social issue groups may find the Internet an easier mechanism to increase awareness of their issues compared to traditional media outlets, such as television or newspapers, which require heavy financial investment. Due to all these factors, the Internet has the potential to take over certain traditional media of political communication such as the telephone, the television, newspapers and the radio. Contemporary technologies such as electronic mailing lists, peer-to-peer networks, collaborative software, wikis, Internet forums and blogs are clues to and early potential solutions for some aspects of e-democracy. Equally, these technologies are bellwethers of some of the issues associated with the territory, such as the inability to sustain new initiatives or protect against identity theft, information overload and vandalism. Some traditional objections to direct democracy are argued to apply to e-democracy, such as the potential for governance to tend towards populism and demagoguery. More practical objections exist, not least in terms of the digital divide between those with access to the media of e-democracy (mobile phones and Internet connections) and those without, as well as the opportunity cost of expenditure on e-democracy innovations.)

- 1994 \_\_ **"Electronic Café" Santa Monica / Nice**, Festival Manca (with Philip Glass, Morton Subotnik, Terry Riley, Alex Grillo, etc. [Luc Martinez])

- 1994 \_\_ **The File Room**, Antoni Muntadas (Initiated as an artist's project by Muntadas, The File Room was originally produced by Randolph Street Gallery (a non-profit artist run center in Chicago, IL, 1979-1998) with the support of the School of Art and Design and the Electronic Visualization Laboratory at the University of Illinois at Chicago. Since 2001 The File Room (TFR) has been hosted and maintained by the National Coalition Against Censorship. "TFR remains an organic initiative; its shape ultimately determined by the input of participants." "Was there a time or place in history in which censorship did not exist? Was there ever a group of human beings that was able to survive without censure? These questions precede and introduce The File Room, and locate censorship as a complex concept ingrained in our conscious/subconscious reality. Despite the impossible nature of attempting to define censorship, The File Room is a project that proposes to address it, providing a tool for discussing and coming to terms with cultural censorship. The File Room began as an idea: an abstract construction that became a prototype, a model of an interactive and open system. It prompts our thinking and discussion, and serves as an evolving archive of how the suppression of information has been orchestrated throughout history in different contexts, countries and civilizations. The process of suppressing information -of people in power attempting to hide images, sounds and words- must itself be viewed in perspective. The organizing principles of The File Room archive recognize acts of censorship in relation to their social settings, political movements, religious beliefs, economic conditions, cultural expressions and/or personal identities. The means of censorship are understood in equally broad terms and techniques, from behind-the-scenes structural censorship that regulates and controls access to the means of production; to obvious physical restrictions of single instances; to subtle, pervasive, and often invisible psychological methods. Countering the closed circle of power systems, this project gains its meaning through a group effort of individuals, organizations, and institutions. Naturally, this project must be self-critical and self-reflective about the contradictions and possibilities of its own organizing system, the nature of subjective editing, and the limited amount of research that can be accomplished in a given period of time. The File Room, rather than being presented as a finished work, is being made publicly available at the point of its initiation. It is an open system that becomes activated, "filed" and developed through the public process of its own existence. Installed at the Chicago Cultural Center, The File Room references this building's past as a library, a public repository of what is thought to be important. The interactive process of Internet (which remains at this moment a free system for dialogue and information) allows The File Room to become a social sculpture, as it moves back and forth from its 3-dimensional installation to an unknown dimension in the Net. When people activate and contribute to this artifact, they will challenge these dimensions and the questions, contradictions, and limitations of attempting to define censorship. The interactive technology is being utilized to add new points of view, complete missing information, challenge notions of authorship, and to reflect direct voices and opinions wherever possible.") <http://www.fileroom.org>

- 1994 \_\_ « **Free Music Philosophy - The Future of Music** », Ram Samudrala (The Free Music Philosophy is an idea, inspired by the efforts and successes of the Free Software Foundation, that encourages free copying, use, and modification of music. Like in the case of free software, the word "free" refers to freedom, not price. The basic philosophy is that abridging the freedom of use (copying, distributing, modifying) of music is destructive to society as a whole. As written, the Free Music philosophy refers only to noncommercial uses of music. Music is different from software in many respects. There are no notions of "source code" or "executable code", but there exist the notions of "musical composition" and "sound recording". In the case of music, these are two different copyrights, and they are offered different protections. Further, there exists the notion of a "compulsory license" with respect to both these forms which allow for free commercial use (as long as the appropriate royalty is paid) in many situations. However, in certain contexts, there do not exist compulsory licenses, and permission from the author is required (with respect to creating derivative works from a musical composition, for example). Since it is not common for people to need to modify musical compositions, the abridgement of the freedom of creating derivative works is minimal. A couple of years ago, Eric S. Raymond wrote an article titled The Cathedral and the Bazaar. It was not about music, but about software; how the "Bazaar" model (i.e., thousands of developers spread over the Internet writing software because of inherent factors, such as love for solving problems and/or coolness) is superior to a "Cathedral" model (where a small group of developers control the development of a piece of software). (...) There exists a similar

analogy in spirit with regards to music, but different in practice because the "goal" of music is not utility. I have chosen to use Raymond's terms but have modified their definitions slightly to adjust for the differences in the two endeavours. The trackers, the home recorders, and the MP3ers are all part of the Bazaar. The major distributors and the distribution mechanisms comprise the Cathedral, siphoning the creative worth of musicians for monetary profit while remaining distant and unreachable from the creative and consumer bases. Today, like with software, thousands of musicians are creating and distributing music over the Internet, primarily because of inherent reasons, such as a love for music or creative ego, rather than any intention of making profit. As a result, a lot of this music is freely copied and distributed, and forms a key component of the Bazaar model. Creativity in the Bazaar occurs in a bottom-up environment (there are no restrictions; it doesn't even have to "work") as opposed to a top-down environment in the Cathedral (the major labels impose "rules" such as "has to sell well" on any creative output). (...) So why should this bottom-up creation and distribution model work? It works because the individual agents in the system (artists, listeners, distributors) are not constrained by top-down rules, i.e., they have freedom. The freedoms are diverse and not necessarily explicit, including the freedom from commercial interests and the freedoms to modify, stand on the shoulders of giants, and improve. This diverse set of freedoms enables a work under scrutiny to evolve, following a non-deterministic exponential trajectory, i.e., in a chaotic manner. This results in an immense amount of creativity: not only is a given work built upon which it is built upon which it is built ... but this development also occurs in parallel and each time the output is different (it deviates from another trajectory or path exponentially)! (...) Imagine a complex adaptive web, where a musician records a song and distributes it with all the tracks. A listener adds reverb and echo to parts of certain tracks which is further distributed to other musicians and they sample or use parts of the modified track. Perhaps the original musician is fed back these modifications and creates a new variation which is further distributed. And so on. Imagine the richness of music that will result. That is the future. It's already happening.) <http://www.ram.org/ramblings/ramblings.html>

- 1994 \_\_ **Gasflow**, directed by Roy ASCOTT (Telematic project, Internet and walkie-talkies in a text/sound interchange. Amsterdam: Mission Impossible, Gashouder.)

- 1994 \_\_ « **The Geometry of Silence** », Heidi Grundmann (...) "There is another form of radio art that is only incidentally related to the ear. This art deals with the public space of radio as one among many that, together constitute an electronic space. Rapidly becoming a digital space, this construction envelops the world and reaches out into orbit. Artists working in this realm, in which radio is just one point of reference, are not so much concerned with the recording and representation of sound or music as with the delineation, by using its lines and channels, of electronic/digital space itself. For these artists, radio art cannot be reduced to program slots devoted to Ars Acoustica nor to the many different forms assumed by the institutions of radio under the different national broadcasting laws and even pirate radio. Radio art, in the tradition of La Radia, is less concerned with sound than with transmission, the radiation of data - ham radio, CB radio, surveillance transmitters, electronic warfare, television, picturephone, taxi radios and many others." In: Radio Rethink. ed. by Daina Augaitis and Dan Lander. The Banff Centre for the Arts, 1994) [http://kunstradio.at/THEORIE/geo\\_e.html](http://kunstradio.at/THEORIE/geo_e.html)

- 1994 \_\_ « **The Hacker Crackdown: Law And Disorder on the Electronic Frontier** », Bruce Sterling ("This is a book about cops, and wild teenage whiz-kids, and lawyers, and hairy-eyed anarchists, and industrial technicians, and hippies, and high-tech millionaires, and game hobbyists, and computer security experts, and Secret Service agents, and grifters, and thieves. This book is about the electronic frontier of the 1990s. It concerns activities that take place inside computers and over telephone lines. A science fiction writer coined the useful term "cyberspace" in 1982. But the territory in question, the electronic frontier, is about a hundred and thirty years old. Cyberspace is the "place" where a telephone conversation appears to occur. Not inside your actual phone, the plastic device on your desk. Not inside the other person's phone, in some other city. \*The place between\* the phones. The indefinite place \*out there,\* where the two of you, two human beings, actually meet and communicate. Although it is not exactly "real," "cyberspace" is a genuine place. Things happen there that have very genuine consequences. This "place" is not "real," but it is serious, it is earnest. Tens of thousands of people have dedicated their lives to it, to the public service of public communication by wire and electronics. People have worked on this "frontier" for generations now. Some people became rich and famous from their efforts there. Some just played in it, as hobbyists. Others soberly pondered it, and wrote about it, and regulated it, and negotiated over it in international forums, and sued one another about it, in gigantic, epic court battles that lasted for years. And almost since the beginning, some people have committed crimes in this place. But in the past twenty years, this electrical "space," which was once thin and dark and one-dimensional -- little more than a narrow speaking-tube, stretching from phone to phone -- has flung itself open like a gigantic jack-in-the- box. Light has flooded upon it, the eerie light of the glowing computer screen. This dark electric netherworld has become a vast flowering electronic landscape. Since the 1960s, the world of the telephone has cross-bred itself with computers and television, and though there is still no substance to cyberspace, nothing you can handle, it has a strange kind of physicality now. It makes good sense today to talk of cyberspace as a place all its own. Because people live in it now. Not just a few people, not just a few technicians and eccentrics, but thousands of people, quite normal people. And not just for a little while, either, but for hours straight, over weeks, and months, and years. Cyberspace today is a "Net," a "Matrix," international in scope and growing swiftly and steadily. It's growing in size, and wealth, and political importance." [Bruce Sterling]) <http://>

[www.chriswaltrip.com/sterling/hackcrck.html](http://www.chriswaltrip.com/sterling/hackcrck.html)

- 1994 \_\_ « **In the Noise of the Signals** », Richard Kriesche (*"the sphere of the "public space" - and thus of "public art" - is that of the "publication of traffic"; of communication, information, telephone, radio, television, transmitting, broadcasting, of car, train and satellite networks, of global and cosmic traffic. in the dynamized state, within the lines of communication, the bodies begin to dissolve in accordance with their designation and make any visibility of the bodies appear reactionary. the body as a data carrier disappears in the intersection of accelerated data, as the car disappears in traffic. (...) the electric man no longer listens to the radio - he himself is radio: set at the same time on reception and transmission. as a sign of his existence he thus leaves his marks on the data background. the drawing of marks is the basis of his existence (on video, banking card, telephone, fax, personal computer and so on). as if in recognition of the electric circuits in his own body, the "radioman" charges himself up with mobile electronic calculators, watches, data and dictating machines, Walkmans, cellular telephones, electronic locators, laptops, notebooks. supported by batteries, he creates around himself the postmodern aura of an omnipresence. his exterior is radiant like the detergent "radion", his interior is embedded in the electronic community of the data background. (...) omniscience touches upon the background of all knowledge which has its place and time in the omnipresence, which has found its technical base in the communication network of information technology. knowledge no longer has anything to do with information in networks and systems, but with the noise of the signals and its systems. "whoever is omniscient breaks through the limitations of space and time and knows what there is to know about each time and about each place. it is exactly this grand gesture that is becoming manageable, in a very humanly secular fashion, due to the communication networks and computers with their almost inexhaustible data of knowledge" telecommunication networks overcome all natural obstacles like mountains, oceans, rivers, but also all historically determined social, cultural ones and all dividing lines between private and public (an art-in-public-space must find its legitimation here). in this telecommunicative space of time, "city, country, mountain, river, animal, plant, boy's name, girl's name - the object of our childhood in the old children's game - must congeal to become data in order to enter into the infinity horizon of omniscience, at which point the causal connection with outer space or the universe as the basis of knowledge or data background becomes effective. (...) while the telegraph, radio, television, telephone, for example, were still reporting us from far-away spaces, we are now preparing for the report from beyond these spaces. those are dead spaces, spaces of the dead, that we will be confronted with. (...) a presentiment of this is provided by the radio voice. the distance between transmitter and receiver, which was technically overcome but also technically cut out or eliminated, is, metaphorically speaking, a dead space, that as we should never forget, always resonates in the technical voice. the technical voice is the mood of the eliminated spaces and times, and it makes absolutely no difference whether the voice comes to us live or from storage. live is only a sentimental technological lie. it is only the elimination, the cancellation of space and time that makes it possible for storage technologies to make their appearance in order to realize their own characteristic competence: vitalizing what is dead. storage technologies are the harbingers of vitalization technologies, which require the killing of what is alive in space and time so that they can vitalize what is space- and timeless. if it could be imagined that Zeuxis, when he simulated grapes in an alleged mural, so perfectly outdid this world that even birds were fooled, then it is much easier to imagine that in radio - immanently present technically dead spaces - "the beyond" speaking to us is simulated. (in the "virtual reality" of computer spaces these dead spaces have already received their first name.) now we must learn to exclude the vitalization of what is dead in the information of the technically transmitted messages. in the noise of the signals. so begins the "resurrection from the dead" in a qualitatively new state. in the beginnings there were shapes, patterns, forms, rhythms that spoke to us from the three-dimensional space and found their input and shape in the apparatus. now it is entire data background. the data storage of otherworldly spaces and times, heaven and hell, speaking to us. but it does not put our bodies into motion anymore, rather it puts us into synchronous vibration with the noise of the data background. as "radioman" we are the mental resonating bodies of omniscience of the dead spaces, of the universe. this completes the circle: the accelerated radio provides us with a presentiment from the realm of the data-dead. nothing is more alarming in a radio transmission than an interruption in broadcasting because it makes the dead space between the transmitter and receiver come alive in the broadcasting interruption, the dead space, for a few moments potentially coincides with the death of the "radioman". (...) those who will be tied up in this data background will also be the ones who will determine the actions of all those who still make their decisions based on the traditional times and spaces, therefore, they will decide over dependence and independence, freedom and domination." - In: Radio Rethink. ed. by Daina Augaitis and Dan Lander. The Banff Centre for the Arts, 1994) [http://kunstradio.at/THEORIE/kriesche\\_e.html](http://kunstradio.at/THEORIE/kriesche_e.html)*

- 1994 \_\_ « **L'intelligence collective. Pour une anthropologie du cyberspace** » (Collective Intelligence: Mankind's Emerging World in Cyberspace), Pierre Lévy (Pierre Lévy sees us as moving past an information economy into an economy based on human interactions; a social economy. While the idea may seem startling, given our current emphasis on all things monetary, his reasoning makes you stop and give careful thought to ideas you may not have considered before. As technology advances, Lévy points out, it's capable of taking on more and more advanced tasks--first simple labor and now the processing of information. As these capabilities become easier and well within everyone's reach, their value declines. But the one thing that is beyond the reach of pure technology is the construction and maintenance of social interactions. What technology can do, however, is make it easier for humans to interact over greater distances and around obstacles. "Our humanity," Lévy writes, "is the most precious thing we have." Lévy, who is a professor in the department of hypermedia at the University of Paris, then predicts that we will take greater control of that value and

*everything related to it as we use technology to organize ourselves into what he calls Living Cities. Here, physical location is less important than the interactions of its members, and not surprisingly, the lack of territorialities will challenge present methods of governance. Levy insists we are in the early moments of an historical paradigm shift of the magnitude of the Renaissance. And yet he avoids wild utopianism, keeping a clear eye on the realities and challenges inherent in any great transformation, complete with ample opportunities for things to go wrong. What emerges, however, is a different way of viewing the possible future, and plenty of reasons for asking why this utopian vision isn't attainable.)*

- **1994 \_\_ Intercom Ontario (1994-98)** , Paul Hoffert (*Intercom Ontario was a field trial of a suburb connected by a community broadband network and serviced by a wide range of online content and applications. The Intercom consortium included more than seventy telephone companies, governments, broadcasters, computer companies, real estate developers, copyright collectives, retailers, educators, health companies, software developers and researchers. Research focused on content use and changes in work, play, and family activities. Beginning December 1996, approximately one hundred households in the Stonehaven West neighborhood of Newmarket Ontario were connected by a 10 megabit/second symmetrical network and content infrastructure. Each home was fitted with a LAN for computer, video, and appliance connectivity. A full range of applications, from CD-ROMs and music on-demand to health care and education was delivered to each home. Researchers from York University and University of Toronto monitored users and usage to determine how future communities might be optimally designed. In most cases, the deployment of applications and content resulted in the first information gathered about actual use by ordinary people in a residential community. The Intercom Ontario network was decommissioned at the end of 1998 but the data gathered continues to be analyzed.*) [http://www.paulhoffert.ca/Academic\\_Researcher/projects\\_post1992.htm](http://www.paulhoffert.ca/Academic_Researcher/projects_post1992.htm)

- **1994 \_\_ ISDN, Future Sound of London (FSOL)** (*The Future Sound of London (often abbreviated to FSOL) are a prolific British electronic music band composed of Garry Cobain and Brian Dougans. 1994 saw the release of the limited edition album "ISDN", which was as close to a live album as most electronic acts get - it featured live broadcasts FSOL had made over ISDN lines to various radio stations worldwide, The Kitchen, an avant-garde performance space in New York. The music on the album is edited together from various live broadcasts that the band had broadcasted to radio stations all over the world using ISDN, which at the time was a relatively new technology. ISDN (named after the digital phone line the music was broadcasted on) is the result of many different transmissions, and even though the tracks were culled from many different intervals, they were mixed back together and the result is quite a cohesive album and possibly one of the best by the group. "Radio quickly evolved as an area where people were inclined to use their ears. We could reach people at their strongest and most vulnerable - in the home. Radio had become jaded and misused rather like the other great citadel of entertainment - but people hadn't lost the power to conjure atmospheres. By combining the new technology (ISDN DIGITAL PHONE LINK) with it we entered a new phase where we were able to broadcast live from the studio in London to radio stations or nay suitable equipped space anywhere in the world. Ideally we would play only once to hundreds of radio stations simultaneously via one link but this wasn't plitically or technically possible at this time - however we quickly hooked into a radio network desperate for evocative broadcasting and thus over the next year were able to reach millions of people worldwide. The potential was immediately there for media games - we could turn it into a death of rock'n roll statement - it was more to do with getting away from the great bastion of the music industry - the performance - journalists who wanted to watch us perform were missing the point - we were evolving a new mechanism not based on the spectacle. Of course like most areas we find ourselves in a lot of questions arose and not all good. Art galleries quickly came on board for transmissions - without being in control of the environment into which we were transmitting we were worried - was piped muzak the answer to the lost dynamic ? We didn't think so - even if history was being made. Anyhow radio was merely the stop-gap for something far more interesting ...")*

- **1994 \_\_ King's Cross Phone In, Heath Bunting** (*Collaborative performance orchestrated via WWW. During the day of Friday 5th August 1994 the telephone booth area behind the destination board at Kings X British Railway Station will be borrowed and used for a temporary cybercafe. Heath Bunting's King's Cross Phone In (1994) is an early, but perfect example of the transformation of performative norms. For this project, Bunting's explicit goal was to "bring high tech to street level" and he successfully did this. On his website, Bunting listed the numbers of public telephone booths surrounding London's King's Cross Station. Designating a time and date for a collective, international phone-in, the artist orchestrated a telephonic musical in a public transportation and commuter hub. The phone calls "created a musical intervention that disrupted the daily routine of an urban transportation hub, as commuters circulating through the station chatted with strangers from around the world ... public space was reconfigured aurally and socially." In Bunting's project, the train station was transformed into an art platform and the unsuspecting commuters and workers in the area became the audience. Some questions that arise are: Who is the artist? Bunting is definitely the facilitator but can he be given credit for the entire project? What about the audience who is unknowing and unprepared for this performance? Usually the audience's job is to interpret, to watch, to listen - can they really interpret unknowingly? Or are they part of the art project as well? Who is the audience? "It would be good to concentrate activity around 18:00 GMT, but play as you will. Please do any combination of the following: (1) call no./nos. and let the phone ring a short while and then hang up, (2) call these nos. in some kind of pattern (the nos. are listed as a floor plan of the booth), (3) call and have a chat with an expectant or unexpectant person, (4) go to Kings X station watch public reaction/answer the phones and chat, (5) do something different. This event will be publicised worldwide. I will*

write a report stating that: (1) no body rang, (2) a massive techno crowd assembled and danced to the sound of ringing telephones, (3) something unexpected happened. No refreshments will be provided/please bring pack lunch". [Marina Scannell]. This project opens up into public spaces enabling play, subversion and artistic intervention. On a simple page with black text Bunting lists the numbers of public telephone booths around London's King's Cross subway station. Designating a time and date for a collective, international phone-in, the artist orchestrated a telephonic musical in a public transportation. These participatory and playful aesthetics, very significant of the early net artists, also stand as part of a XX century avant-garde interest in instigating activity, replacing passive consumption of a medium (the web site) with engaged response (making a call and chatting with a stranger). Disrupting the flow of pedestrian traffic and channeling web functionality into friendly phone calls from around the world, Bunting and his group conducted chance encounters in an unlikely venue. This is one of his earliest projects that has all the elements of his later net projects: minimal ornamentation and low file graphics, a basis in direct action and the capacity to unite fields of public art, hacking and street culture. This specific project came out of Bunting's explicit goal to 'bring high tech to street level'. Public phones, ring tones and a web page that he uses in this project retain their everyday qualities, but, in their means of deployment, change the tenor of a particular setting and time. With this work, Bunting sets up a collaborative performance that is unlike anything seen before, by virtue of its manifestation of the web's capacity for international organization and collective performance. For his experiments the internet was 'the next logical step, that is, cheaper and wider audience. [Vesna Dragojlov] <http://irational.org/cybercafe/xrel.html> <http://hotgates.stanford.edu:3455/DigitalHumanities/73> <http://www.vdragojlov.net/art4510-2006/bunting.htm>

- **1994 \_ Light on a Wall**, Scott Fraser: Electric guitar, Philip Perkins: Computer-controlled synths and signal processing, MIDI performance controls, Doug Carroll: Electronic cello, Tim Perkis: Computer-driven synthesizer (In *LIGHT ON A WALL* players try to incorporate ideas of slowness (just this side of motionlessness), inexorability, inevitability, and "sun-time" into their playing. Mental images include the angularity of light hitting the wall, various wall textures as the light plays and cascades over them; shadows and shapes created by the sun on the wall; interruptions in the sunlight (clouds, trees etc.); all of the above but with the ability to speed up and slow down the sun's movement, as in a time-lapse film shot; and the reverie that observing all these phenomena often produces. Each player has a "shadow instrument", an electronic instrument that listens to his or her note output and responds in a very specific way. The MIDI note stream is first examined by a piece of computer software which has been programmed with a sequence of scales that follow the time line of the work. These scales form "legal" note sets that the shadow instrument will play in that time period. When a player plays one of these notes, the shadow instrument will sound that note also. Notes outside of the current note-set are ignored by the shadow instrument, thus the player decides how much he or she wishes to "go along" with the direction of the work at any given moment. The note sets change approximately every minute or so, moving from a group of 3 to 9 available notes by the end of each of the two sections. The note groupings are the same for each player, and follow the same progression. In addition, a fourth player (Perkis) plays a software instrument on which the player can choose when to play a note (or chord) but the computer decides which notes of the current "legal" set will be sounded.) <http://www.o-art.org/history/Computer/Arifact/Bifurcators.html>

- **1994 \_\_ Mreza Netz**, live telephone concert (Belgrad, Ljubljana, Pula, Sarajevo, Skopje, Vienna) (Barbara Doser, Birgit Flos, Hofstetter Kurt, Barbara Holub, Snezana Kostic-Uveric, Rocko Marjanovic, Nicole Marjanovic-Zoubek, Norbert Math, Milos Uveric-Kostic) (In *Vienna's Remise*, a former depot for streetcars, 1000 telephones were laid out on the floor. People could listen to the telephone concert only through these telephones. From all over the world, the concert could be experienced by calling the Viennese four digit telephone number 1510. Radio B92 in Beograd, Radio Labin Express in Labin/Pula, Radio 99 Sarajevo and Radio Skopje in Skopje broadcast the event live) <http://www.sunpendulum.at/cooperation/projects/mreza/mreza-netz.html>

- **1994 \_ Openfield**, Tim Perkis (*Openfield* (1994) is an interactive work for the internet, produced during my residency at Xerox PARC. *Openfield* continuously broadcasts a live audio space world-wide to users of the internet. Using web browsers and VAT, an audio conferencing tool, users shaped the behavior of virtual "agents" who make sounds in this common space and interact with the agents defined by other users currently working with the system. Consider the analogy with a natural environment: it's amazing to me how the various birds and insects "multiplex" the channel of the outdoor acoustic space, each species differentiating its signal from the others in the space. I'm interested in seeing what kind of ecology may emerge as multiple simultaneous users try to create agents which can be heard. As in an open field, there is a harmony that arises out of each agent just trying to make itself heard among the multiple voices in this acoustic community.) [http://www.perkis.com/wpc/p\\_openfield.html](http://www.perkis.com/wpc/p_openfield.html)

- **1994 \_\_ « Radio Space »** (in "Radio Rethink : Art Sound and Transmission", ed. Daina Augatitits and Dan Lander, Banff Alberta, Walter Phillips Gallery), Douglas Kahn (Douglas Kahn compared early-twentieth-century representations of radio with the discourses of virtual reality developed in the early 1990s, noting that in both cases artistic responses were primarily rhetorical because the artist's access to the technology was very limited, even when the technology existed)

- **1994 \_\_ RNIS/ISDN concerts – Sensorband** (based on synchronous collaboration in a peer to peer model (using ISDN connections) between two performers – Sonar Festival Barcelona 1995, IAMAS 1996, Festival Aye Aye Nancy/Melbourne 1996, Sonar Festival 1997 Barcelona / Montréal) <http://www.fondation-langlois.org/html/f/page.php?NumPage=285> <http://www.sensorband.com/concerts.html>
  
- **1994 \_\_ Rocket Network / ResRocket** (The Res Rocket Surfer Project. The first "virtual online band" with 1,000 members that communicated through a mailing list and FTP server. Band founders were the band founders, Willy Henshall an award-winning songwriter, producer and member of the band Londonbeat, and Tim Bran, a successful engineer, producer, and member of the band Dread zone from London. They began posting messages and sound files on Usenet (the Internet's bulletin-board)-and later on an ftp and Web site-from their West London studio. People from all over the world started replying with song ideas and sound files.) [http://www.jamwith.us/about\\_us/rocket\\_history.shtml](http://www.jamwith.us/about_us/rocket_history.shtml)
  
- **1994 \_\_ Seven Gates**, Mark Trayle (Seven Gates is an interactive computer music composition, the live performance variant of the Gate series of installations. The performer uses the glove to manipulate invisible "sonic souvenirs", audio samples from the various musical cultures around the Pacific Rim (imagine driving around California with your car radio stuck on "scan" mode). The piece has seven sections ranging in length from two to five minutes ... either a set of "bagatelles" or a sort of "theme and variations"" depending on how rigorously you want to define the latter. As in the Gate series, the stage is divided into two areas: a 'sample space' with invisible 'shelves' and a 'play space'. Separating the two areas is an invisible 'fence'. This fence runs perpendicular to the z axis at it's midpoint, for the full extents of the x and y axes. The performer, wearing the glove, reaches through a 'gate' in the fence to grab a sample from a shelf, then brings it back through the gate to the play space where its sound can be modulated. The gate is wired for sound; anytime it's opened or closed an audio sample (one of several gates and doors) is played. (Each of the seven sections has a different sample of a gate or door associated with it.) While the performer holds the sample (by making a fist) the sample is audible; making the hand flat mutes the sample.)
  
- **1994 \_\_ Sound Island**, Bill Fontana (hydrophones (underwater microphones) to gather sounds at the beach in Normandy, France, which were reproduced from speakers hung on the Arc de Triomphe in Paris) <http://www.resoundings.org/>
  
- **1994 \_\_ « The Soundscape of Radio »**, Hildegard Westercamp (In her 1994 article 'The Soundscape of Radio', the Canadian soundscape artist Hildegard Westercamp posed a number of critical questions on the relationship of radio to place that still await response. Decrying the fact that, 'Most radio engages in relentless broadcasting, a unidirectional flow of information and energy', Westercamp pondered : "What would happen if we could turn that around and make radio listen before imposing its voice ? (...) What if radio was non-intrusive, a source for listeners and listening ? Can radio be such a place of acceptance, a listening presence, a place of listening ?")
  
- **1994 \_\_ State of Transition**, telematic hyper radio event, (Graz, V2 Rotterdam), Andrea Sodomka, Martin Breindl, X-Space, Gerfried Stocker, Martin Schitter, Horst Hörtnner, Norbert Math, Joel Ryan (STEIM) (« a traceroute routine will be started automatically, analyzing the route of Your connection. This information will be mapped into MIDI-commands controlling our soundsamplers. Thus each machine involved in your link to our server will get an <acoustical signation>. This traces of Your network activity will be <mapped> on a 12-channel audio system. Resulting in an acoustical map of the electronic space which constitutes out of Your interactivity ») [http://alien.mur.at/state\\_of/](http://alien.mur.at/state_of/)
  
- **1994 \_\_ « La Technique et le Temps »** (Technics and Time), Bernard Stiegler (La technique et le temps - Technics and Time (3 vols. - 1994/2001). This series outlines the heart of Stiegler's philosophical project, and in particular his theses that the role of technics has been repressed throughout the history of philosophy, and that technics, as organised inorganic matter, and as essentially a form of memory, is constitutive of human temporality. The series contains extensive readings of the works of André Leroi-Gourhan, Martin Heidegger, Edmund Husserl, and Emmanuel Kant. It also contains his explication of the "cinematic constitution of consciousness," as well as his thesis that human beings are essentially "adoptive" creatures. De la misère symbolique (2 vols. - 2004). This series is concerned in particular with the ways in which cultural, symbolic and informational technologies have become a means of industrialising the formation of desire in the service of production, with destructive consequences for psychic and collective individuation. Stiegler outlines his concepts of "general organology" (a way of thinking the co-individuation of human organs, technical organs, and social organisations) and "genealogy of the sensible" (a way of thinking the historicity of human desire and aesthetics). Mécréance et Discrédit (3 vols. - 2004/2006). This series is concerned with the way in which the industrial organisation of production and then consumption has had destructive consequences for the modes of life of human beings, in particular with the way in which the loss of savoir-faire and savoir-vivre (that is, the loss of the knowledge of how to do and how to live), has resulted in what Stiegler calls "generalised proletarianisation." In this series Stiegler makes clear his view that, in the light of the present state of the global technical system, it is not a matter of overcoming capitalism but rather of transforming its industrial basis to prevent the loss of spirit from which it increasingly suffers. In the second volume Stiegler introduces the concept of the "Antigone complex," to

describe the psychosocial effects of the destruction of authority—that is, the destruction of the superego—on politics and youth. “Our age is facing the worldwide threat that the “life of the mind” (to cite the title of Hannah Arendt’s last work, a title which in German and French can also be translated and understood as “the life of the spirit”), will be entirely subjected to the demands and requirements of the market, to the law of rapid profits for firms exploiting the technologies of what have come to be known as the culture industries, program industries, media, telecommunications, and lastly the technologies of knowledge, or cognitive technologies. All of these sectors, in the expansion made possible by digitisation, tend to integrate into what was referred to a decade ago already as the convergence of the audiovisual sector, telecommunications and information technologies. (...) The submission of technologies of spirit to sole market criteria forces them to remain in a control function, in the service of “societies of control” (to use an expression forged by William Burroughs and later picked up by Gilles Deleuze). This function would systematise the development of applications and uses of methods of calculation, communication and consumption to favor short-term financial investments and large profits in industrial enterprises. This function blocks access to these technologies for any other finality, and in particular, it systematically forbids and impedes the development of new and original social practices which these technologies not encourage but call for as an essential requirement -- that is our thesis: these technologies could become the base of a new epoch of civilisation and could conduct the neutralisation of the imminent threat of chaos everyone senses. (...) The fact is, however, that information and communication technologies are, precisely, spiritual technologies, and that also means that they are situated in the field of hypomnēmata, whose sense Foucault pinpointed as that of a “technique of the writing of self.” This was also the major question of Plato’s philosophy with its definition of writing as hypomnesis i.e., as technical memory. Inasmuch as they are mnemotechnologies, the industrial technologies of spirit are a new form of hypomnēmata. And as was the case for the hypomnēmata in Greece and Rome, and particularly in the Stoic and Epicurean schools, and also in ancient Roman Christianity, the industrial technologies of spirit conjure new practices, that is., in the final analysis, new social organisations.” [Ars Industrialis, Manifesto] <http://www.arsindustrialis.org>

- **1994** \_\_ **Teknofemme**, Cyberlab7 (We chose the word teknofemme to remind us of the natural connection of women and technology. Techno, the root of technology, is from the Greek word for art. Women have created and evolved technologies from our beginnings as toolmakers. Teknofemme is dedicated to empowering women with online technologies. We offer Journey in Cyberspace - flight training for the Internet to help women become active participants and creators of the global communications network.) <http://www.haven.net/live/teknofemme/teknofemme.htm>

- **1994** \_\_ **Terrain Reader**, Scot Gresham-Lancaster (Exploratorium installation of “Terrain Reader” for computer music instruments, slides, and whackers fully integrated X Windows version in development WWW Hypertext markup version in development. Audience participation with Home Infrared remote control multiple infrared transistors summed from locations in audience vocabulary established from controllers brought by participants flexible and user (i.e. artist) extensible development to be finished this June at STEIM “Whirlpool of Blood” for voice long tube and electronics) <http://www.cs.mcs.csuhayward.edu/~tebo/Web/terrain.html>

- **1994** \_\_ **Three Cities / Multimedia Tele-Concert**, CalArts, Electronic Café , Morton Subotnick, David Rosenboom, Steina Vasulka, Leo Smith, J.B. Floyd (The three part evening began with a performance by Morton Subotnick, in New York, who played the Yamaha Disklavier in Santa Monica using finger controlled midi triggers. In each city there were two Yamaha Disklavier pianos - one played by the local artist, the second one playing the notes activated by the pianist in the other city. The second part of the evening was a bi-coastal tele-collaborative concert between David Rosenboom, Dean of the CalArts School of Music in Santa Monica, and pianist B. Floyd and trumpet player Leo Smith in New York City. In each city there were two Disklavier pianos, the one played by the local artist, the second one playing the notes activated by the pianist in the other city. The third part of the evening featured Steina Vasulka in Santa Fe playing a MIDI violin which controller laser videodisk players in both New York and Santa Monica. As the capabilities of the internet began to move from online publishing and into more dynamic applications, Electronic Café International-HQ became the networks ‘Blend’O Center” capable of mixing together a multitude of technologies and transmission schemes and then re-distribute the convergent mix back out to participants depending on their technical capabilities. 3-site music event was consisting of ISDN-based videoconferencing and internet-based video CU-See-Me.) <http://www.ecafe.com/1994.html>  
<http://sfsound.org/tape/Subotnick.html>

## 1995

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- **1995** \_\_ **Internet** (WWW data traffic surpasses that of the Minitel for the first time [Gillies and Cailliau 2000:321]. The Internet comprises 5,846,000 hosts (Internet Software Consortium 1995).)

- 1995 \_\_ **3 City Teleconcert**, ECI Santa Monica / ECI The Kitchen NYC / Cyber X Cafe Minneapolis, Brian Haggerty (3 city music jam : Jenkins/Ewart/Smith) <http://www.ecafe.com/1995.html>

- 1995 \_ **Artel** (An online workshop dedicated to art students in Nice, National School of Arts Villa Arson. This workshop has been led by Paul Devautour and Jérôme Joy. It was the precursor of next projects initiated by the same artists : Habitation (1995), Homestudio (1995/96, which became homestudio.thing.net in 1999 on The Thing server), AudioLab (1996), Collective JukeBox (1996), 491.org (1997), Agglo (1997), Collecticiel (1997), CEDAR (1998), lascaux2.org (1999), EXIL (1999), AGGLO (2001), etc.) [http://joy.nujus.net/files/webs/1996\\_ARTEL/artel\\_r1.html](http://joy.nujus.net/files/webs/1996_ARTEL/artel_r1.html) <http://joy.nujus.net/w/?page=homestudio.thing.net>

- 1995 \_\_ **The Asphaltophone - Road Melodies**, Steen Krarup Jensen and Jakob Freud-Magnus (In 1995 the Danish artists Steen Krarup Jensen and Jakob Freud-Magnus created a version of the musical road called the 'The Asphaltophone' in Gylling, Østjylland, Denmark.) <http://www.youtube.com/watch?v=ou-Xy5OI1kc>

- 1995 \_\_ « **Chaosmos: An Ethico-Aesthetic Paradigm** », Félix Guattari ( For Guattari: "Technological machines of information and communication operate at the heart of human subjectivity, not only within its memory and intelligence, but within its sensibility, affects and unconscious fantasies." He goes on to distinguish three dimensions of machinic subjectification: "1. Signifying semiological components which appear in the family, education, the environment, religion, art, sport ... 2. Elements constructed by the media industry, the cinema, etc, 3. A-signifying semiological dimensions that trigger informational sign machines, and that function in parallel or independently of the fact that they produce and convey significations and denotations, and thus escape from strictly linguistic axiomatics." Of course, many besides Guattari have recognized from a variety of perspectives the role of socially constructed material systems, practices, and techno-apparatuses in altering/creating human subjectivity, but his emphasis on trans-signifying, non-intentional, impersonal effects, operating outside the arena of the directly communicative or beneath its intentional surface is particularly valuable. And within this, the Deleuze/Guattari concept of an assemblage, which permeates their writings, will prove crucial to the digital re-making of selves of interest here. But its very generality requires us to specify a field of operation and a local grounding for it if it is to do work for the idea of self. Thus, Foucault's elaboration of how self-scrutiny gets assembled via the internalization of the confessional and of panoptic surveillance; Marshall McLuhan's identification of media machines which act "directly toward shaping our most intimate self-consciousness."; Jean-Louis Comolli's work on "machines of the visible" (1980) linking filmic materiality to audience perception; Friedrich Kittler's tracking of the triple usurpation of the book as chief imagination machine of Western culture by the separate media of film, typewriting and gramophone ("Grammophone, Film, Typewriter", Stanford, Stanford University Press, 1998); Walter Ong ("Orality and Literacy: The Technologizing of the Word", London, Methuen, 1982), Jack Goody ("The Domestication of the Savage Mind", Cambridge, Cambridge U. Press, 1977), Roy Harris ("Signs of Writing", London, Routledge, 1996), David Olson ("The World on Paper", Cambridge, Cambridge U. Press, 1994), and Elizabeth Eisenstein ("The Printing Press as an Agent of Change", Cambridge, Cambridge University Press, 1983) on writing and printing's restructuring of speech and consciousness; Bruno Latour's tracing of non-human agency and sign production; Timothy Lenoir's articulation of bio-medical theorizing and medical subjectification; Jean-Francois Lyotard's self as "a person [who] is located at 'nodal points' of specific communication circuits ... through which various kinds of messages pass." (The Postmodern Condition: A Report on Knowledge", Manchester, Manchester University Press, 1984)

- 1995 \_\_ « **CyberDemocracy: Internet and the Public Sphere** », Mark Poster ("My plea for indulgence with the limitations of the postmodern position on politics quickly gains credibility when the old question of technological determinism is posed in relation to the Internet. For when the question of technology is posed we may see immediately how the Internet disrupts the basic assumptions of the older positions. The Internet is above all a decentralized communication system. Like the telephone network, anyone hooked up to the Internet may initiate a call, send a message that he or she has composed, and may do so in the manner of the broadcast system, that is to say, may send a message to many receivers, and do this either in "real time" or as stored data or both. The Internet is also decentralized at a basic level of organization since, as a network of networks, new networks may be added so long as they conform to certain communications protocols. As an historian I find it fascinating that this unique structure should emerge from a confluence of cultural communities which appear to have so little in common: the Cold War Defense Department which sought to insure survival against nuclear attack by promoting decentralization, the countercultural ethos of computer programming engineers which had a deep distaste for any form of censorship or active restraint of communications and the world university research which I am at a loss to characterize. Added to this is a technological substratum of digital electronics which unifies all symbolic forms in a single system of codes, rendering transmission instantaneous and duplication effortless. If the technological structure of the Internet institutes costless reproduction, instantaneous dissemination and radical decentralization, what might be its effects upon the society, the culture and the political institutions? There can be only one answer to this question and that is that it is the wrong question. Technologically determined effects derive from a broad set of assumptions in which what is technological is a configuration of materials that effect other materials and the relation between the technology and human beings is external, that is, where human beings are understood to manipulate the materials for ends that they impose upon the technology from a preconstituted position of subjectivity. But what the Internet technology imposes is a dematerialization of communication and in many of its aspects

a transformation of the subject position of the individual who engages within it. The Internet resists the basic conditions for asking the question of the effects of technology. It installs a new regime of relations between humans and matter and between matter and nonmatter, reconfiguring the relation of technology to culture and thereby undermining the standpoint from within which, in the past, a discourse developed -- one which appeared to be natural -- about the effects of technology. The only way to define the technological effects of the Internet is to build the Internet, to set in place a series of relations which constitute an electronic geography. Put differently the Internet is more like a social space than a thing so that its effects are more like those of Germany than those of hammers. The effects of Germany upon the people within it is to make them Germans (at least for the most part); the effects of hammers is not to make people hammers, though Heideggerians and some others might disagree, but to force metal spikes into wood. As long as we understand the Internet as a hammer we will fail to discern the way it is like Germany. The problem is that modern perspectives tend to reduce the Internet to a hammer. In the grand narrative of modernity, the Internet is an efficient tool of communication, advancing the goals of its users who are understood as preconstituted instrumental identities. (...) The issue of the public sphere is at the heart of any reconceptualization of democracy. Contemporary social relations seem to be devoid of a basic level of interactive practice which, in the past, was the matrix of democratizing politics: loci such as the agora, the New England town hall, the village Church, the coffee house, the tavern, the public square, a convenient barn, a union hall, a park, a factory lunchroom, and even a street corner. Many of these places remain but no longer serve as organizing centers for political discussion and action. (...) This difficulty is amplified considerably once newer electronically mediated communications are taken into account, in particular the Internet. Now the question of "talk," of meeting face-to-face, of "public" discourse is confused and complicated by the electronic form of exchange of symbols. If "public" discourse exists as pixels on screens generated at remote locations by individuals one has never and probably will never meet, as it is in the case of the Internet with its "virtual communities," "electronic cafés," bulletin boards, e-mail, computer conferencing and even video conferencing, then how is it to be distinguished from "private" letters, printface and so forth. The age of the public sphere as face-to-face talk is clearly over: the question of democracy must henceforth take into account new forms of electronically mediated discourse. What are the conditions of democratic speech in the mode of information? What kind of "subject" speaks or writes or communicates in these conditions? What is its relation to machines? What complexes of subjects, bodies and machines are required for democratic exchange and emancipatory action? For Habermas, the public sphere is a homogeneous space of embodied subjects in symmetrical relations, pursuing consensus through the critique of arguments and the presentation of validity claims. This model, I contend, is systematically denied in the arenas of electronic politics. We are advised then to abandon Habermas' concept of the public sphere in assessing the Internet as a political domain.) <http://www.humanities.uci.edu/mposter/writings/democ.html>

- 1995 \_\_ **Devil's Music Revisited**, Nicolas Collins ("One of the things I liked very much about it, is this old seventies idea of making process and method clear to the audience. And even though it got to the point once where the process was so clear that it didn't matter, I still always think that the more they can understand it the happier they'll be. I'm not a complexicist, I'm not interested in baffling people, I'm interested in appearing like an ordinary Joe. "I'm working with some technology now that would give me much more range of variation, on the same basic notion of doing live sampling from radio, but being able to get thicker textures, more radical transformations of the sound material, so larger bodies of the piece can be unrecognisable in terms of source material. A few years ago I did a commissioned piece for radio which was all based on short wave and ham radio material. There were those very beautiful electronic sounds that come out of short wave, but what I really got into were the stories that people were telling on ham radio. Out of maybe twenty different distinct recordings I'd made of people talking on the radio, I put together a story by just sequencing them. That made the narrative. Because I'm working a lot with narrative these days, I thought it would be nice to get back into whatever speech stuff exists on radio. Do a sort of backwards pop song where you start with the vocals and build everything else up around it. So I've been scanning lately on one of these illegal scanners that picks up cellular phone conversations, but my Dutch isn't really good. Eavesdropping is an excellent way to learn Dutch, but I need to spend more time in some English-speaking countries." [Nicolas Collins]) <http://media.hyperreal.org/zines/est/intervs/collins.html>

- 1995 \_\_ **Electronic Café International Network** (Using digital communications lines and digital codex the Electronic Café International Network was able to make a composite of musicians on different continents into the same image-space, with connection speeds fast enough to allow them to perform together in realtime. This became routine over the ECI Network, and in 1995 musicians in ten cities around the world participated in a three-day event. Both sites viewed the same image.) <http://www.ecafe.com/museum/history/ksoverview2.html>

- 1995 \_\_ **Fantastic Prayers**, Constance DeJong, Tony Oursler, Stephen Vitiello (*Fantastic Prayers*, a collaboration of writer Constance DeJong, artist Tony Oursler, and musician/composer Stephen Vitiello, is a work that has had three unique incarnations. The project was originally conceived as a live performance which took place in Dan Graham's Rooftop Urban Park Project in Spring of 1995. Simultaneous to developing the performance, the artists created *Fantastic Prayers*, a web project, for Dia's then brand new web site which launched March 31, 1995. This project was developed for Netscape 1.1.) <http://www.diacenter.org/rooftop/webproj/fprayer/>

- **1995 \_\_ George Coates Performance Works** (GCPW), The Nowhere Band (George Coates Performance Works (GCPW) creates large scale multi-media theatrical performances. Mr. Coates develops and utilizes technical and creative resources from emerging digital technologies in combination with traditional stage craft, light, and film techniques to support live performers, classically trained musicians, actors and dancers in the creation of a live theater of colliding media. Internationally recognized as an innovator in the development of new forms of live art, the Performance Works has won major awards for its work in Japan, Europe, and the United States. GCPW is a nonprofit theater company founded in 1977. The Nowhere Band is auditioning musicians for its new multimedia work broadcast live over the Internet. The performance by George Coates Performance Works combines rock, jazz, funk and opera. Auditions and performances utilize CU-SeeMe Internet video teleconferencing. Musicians perform on-line from remote performance sites interacting with stage actors on screen. Participating InterActors (remote performers) gather 5 times a week to rehearse and perform using CU-SeeMe to send live video/audio signals from their office, home or school to the Nowhere Band's 300 seat multimedia theater in San Francisco's Civic Center. For the evening and Sunday Matinee performances, the InterActors are projected onto a very large semi-transparent display screen. The projected remote performers interact alongside the live band members onstage in rehearsed scenes and routines. As part of each performance, during the first twenty minutes, a member of the band auditions new potential InterActors as the audience members take their seats. There are five or six scenes during the Nowhere Band Sho that require cathartic interventions, with InterActors entering on cue. As with the live band members, InterActors participating via the net agree to accept a fee in return for dependable and regular availability for rehearsals and performances. We encourage people to audition only if they can commit to being available on a regular basis. Check us out tonight via CU-SeeMe on the Cornell reflector at 132.236.91.204. To become a remote Nowhere Band member InterActors must \* have dependable, high-speed IP access to the Internet with the capabilities required to run CU-SeeMe \* be willing to rehearse with the Nowhere Band Monday through Friday with regularity \* learn a sequence of Entrances and Exits with a set of agreed-upon Props \* be available to perform with the Nowhere Band during the run of the Sho Thursdays through Sunday. Using the Internet and other media tools Nowhere Band members encounter a number of unexpected visitors and virtual realities. These guest 'interactors' arrive on-line during each evening's performance and along with the Nowhere Band members rehearse entrances, exits and routines according to set cues. Some 'interactors' arrive via Internet video, available to people with access to high-speed modems. Others participating through the 'Net' have sent artwork in the form of computer animations. Throughout the Nowhere Band's 90-minute performance the audience members wear polarized 3-D glasses to experience stereographic illusions of the production's stage environments and animations. There is no intermission. There are roughly 20 scenes. The Nowhere Band performs as both a music group with lead singers Susan Volkan & Raz Kennedy, guitarist Adlai Alexander, operatic soprano Lorene Spain and a live music theater ensemble with comic actor Kurt Reinhardt. Book and lyrics by George Coates and music by Marc Ream. All stage sets are created in stereographic 3D soft sets.) <http://www.o-art.org/history/80s&90s/Coates/Nowhere.html>

- **1995 \_\_ Habitation** (<http://web.azur.fr/habitation/>), Jérôme Joy (This project initiated by Jérôme Joy opened an online music project that had gathered a pool of musicians, composers and artists: Ned Bouhalassa, Steve Bradley, Warren Burt, Paul Demarinis, Kristie Drew, Karlheinz Essl, Ken Field, Mike Frengel, Gilles Grand, Christophe Havel, Jérôme Joy, Daniel Leduc, Philippe LeGoff, Richard Lerman, George E. Lewis, Alvin Lucier, Yuko Nexus6 Kitamura, John Oswald, Emanuel dm Pimenta, Don Ritter, Jocelyn Robert, Andreas Rodler, Claude Schryer, Paul ba Steenhuisen, Gregory Whitehead, Richard Windeyer. The Habitation project had opened the way of next communal and collective projects that were been led by Jérôme Joy along the next years : [homestudio.thing.net](http://homestudio.thing.net) and Collective JukeBox. The main idea behind Habitation and these projects were a essential shift in the musical context : the birth of networked and non-institutional workplaces ("on-line" and physical homestudios vs studios developed within the Musical Research Centers), that were followed time after time by new ways of the musical diffusion, with networked and streamed concerts and in another hand with home concerts and local performances (concerts @ home and "concerts d'appartement"). At the same time, this move favored exchanges between composers and artists (collective projects and mailing-lists, such as ForumHub and Collective JukeBox for instance), and between composers and developers. The crossings between sonic and audio practices (music, radio, and so on) became more and more developed, and deleted a lot of fences between sonic fields. Excerpt of the online presentation: "(...) Somewhat an open work platform for new initiative about contemporary music (composition, interpretation) and about contemporary art (sound installations, indexed projects on sound and music, multimedia. Each invited artist has a studio at him/her's disposal, in Habitation, for developing works in relation to electronic networks, or for making specific presentations of his work. One question would be the using of electronic networks as a questioning tool for musical composition and the using of sound in art. The aim of this site is not to become only a showcase for composers and artists but a real place of musical and artistic developments." A lecture/panel presented by Steve Bradley, concerning Habitation took place in The Contemporary Museum in Baltimore, Maryland (USA) in nov 96, within the framework of a project between Lee Boot (USA) et Frank Fietzek (Germany) concerning the state of the medium of the web as an art form. The project was continued in a larger framework of the Collective JukeBox project in 96.) <http://joy.nujus.net/w/?page=homestudio.thing.net> [http://joy.nujus.net/files/webs/1996\\_habitation/default.html](http://joy.nujus.net/files/webs/1996_habitation/default.html)

- **1995 \_\_ Horizontal Radio**, ORF Kunstradio Vienna, live multi-media telematic radio / network

Multiple international sites (*horizontal radio was a 24 hour live multi-media telematic radio / network project that took place on 22 - 23 June, 1995 and involved over 20 radio stations world-wide plus active participation from network nodes in : Athens, Belgrade, Berlin, Bologna, Bolzano, Budapest, Denver, Edmonton, Helsinki, Hobart, Innsbruck, Jerusalem, Linz, London, Madrid, Moscow, Naples, New York, Québec city, Rome, San Marino, Sarajevo, Sydney, Stockholm, Vancouver. living organism comprised of a vast network of local performances, radio broadcasts (and re-broadcasts) and internet projects. Every location in the network received and recorded a different version of the project - material was sampled and remixed and retransmitted. horizontal radio was a unique, live, interactive radio project linking a network of over 20 radio stations with the internet (www, realaudio etc.) to form a single world-wide performance environment for over 100 artists, musicians and writers. horizontal radio took place simultaneously in different parts of the world, in different media and on different wave-lengths. It combined broadcast radio with the Internet in a completely new way that expanded the project far beyond the range of the radio transmitters. Participants : Dimothenes Agrafiotis - Jackie Apple - Art Pool - Sam Auinger - Stefan Beck - Jose Manuel Berenguer - Bisca 99 Posse - Luther Blisset - Jouko Blomberg - Anders Blomqvist - Blues Mobile - Isabella Bordoni - Andras Borgo - Rex Brough - Sheila Concari - Contained - Stefano Contanibbi - Jorge Inigo Crespo - Stefan Daske - Janos Decsenyi - Barbara Doser - Patrizio Esposito - Spiros Faros - Makis Faros - Gabriele Frasca - Takumi Fukushima - Mario Gauthier - Paolo Grandi - Alberto Grifi - Gerhard Gruber - Angelika Hensler - Kurt Hofstetter - Rupert Huber - Jose Iges - Arsenije Jovanovic - Concha Jerez - Dimitri Kamarotis - Christine Köck - Mikko Laakso - Claudio Lanteri - Juan Antonio Lleó - Machine for making sense - Leila Maglietta - Marco Manchisi - Hannes Mariacher - Alberto Masala - Norbert Math - Sergio Messina - Metaphysis of sound group - Christof Migone - Amal Mocus - Elisabeth Nicolussi - Jaakko Nousiainen - Adolfo Nunez - Bruce Odland - Roberto Paci Dalò - Maria Pambouki - PAPA String Quartet - Vasilis Papavasiliou - Harald Pröckl - Proton Group - Jocelyn Robert - Banda Roncati - Wimme Saari - Mato Santek - Manthos Santorineos - Andi Schiffer - J.F. Sebastian - Massimo Simonini - Pekka Siren - Sodomka/Breindl - Fabrizio Spora - Ivana Stefanovic - Gerfried Stocker - Matt Thompson - Helen Thorington - Ilkka Toiviainen - Juha Valkeap - Agnieszka Waligorska - Gregory Whitehead - Hanno Winder - Gnter Zechberger - Elisabeth Zeller - Stefano Zorzanello - Ilana Zuckermann - and many, many more. Realization of the Radio Network : Gerhard Blöchl - Harry Domitner - Enrico Giardino - Edith Kiesling - Hans Soukup - Christiane Veigl - Gerhard Wieser - Elisabeth Zimmermann. Realization of the Internet Events : Oliver Frommel - Arno Heimgarten - Andi Kleen - Peter Riedelsperger - Martin Schitter - Hermann Schmidt - Mathew Smith - Gerfried Stocker - Contained) <http://www.kunstradio.at/HORRAD/horrad.html>*

- **1995 \_\_ Information Transcript / MIT <-> Lyon**, Piotr Kowalski (cooperative MIT <-> Lyon Third International Art Biennale project, involving large (220+k bytes) but fascinating online image map, "IBM bilingual speech recognition engine", simultaneous (?) machine translation, voice synthesis, and international interactive access. The project consists of two publicly accessible Web communication sites: one in France at the Lyon Third international Art Biennale, and the other at MIT in Cambridge, USA. Visitors at each site, (sic) will see each other speak freely in their native tongue, French in Lyon and English in Cambridge. Their words will be seized by the IBM bilingual speech recognition engine and the digitized text of it will be machine translated by an appropriate language translating software. This translated information will be diffused at the other side by a synthesized voice together with the original native speech.)

- **1995\_\_ I/O/D 2**, Matthew Fuller, Colin Green and Simon Pope (Hyperactive Electronic Zine In collaboration with Simon Pope, Matthew Fuller and Graham Harwood. So firstly then, we should explain what I/O/D might be. Technically it is a Macromedia Director Projector with associated files that is small enough to be compressed onto one High Density disk. That we choose the size to be restricted by the limitations of the most mundane and cheapest storage device is important, because it means that I/O/D is very easy for people to copy for their friends - or surreptitiously leave on the computers of their enemies. It also means that because of its relatively small size it is quite feasible for it to be made available over computer networks such as the internet and on Bulletin Board Services. Distribution over the networks is in fact the major way in which I/O/D gets moved around. It is also worth noting that within the internet, where degrees of access are stratified, we make I/O/D available via a variety of protocols: ftp; gopher; and world wide web, in order to ensure that as many people as possible have the option of downloading it. Alongside the sites that we maintain a direct connection to we are encouraged to find that I/O/D is also being independently distributed by people we have had no contact with. Additionally, we should state that I/O/D is not on the nets in order to advertise anything but itself. It is specifically an anti-elitist contribution to the development of the nets as a 'gift economy'. Consequently, it is also a way of producing some effects whilst avoiding getting too enmeshed with the humourless circus of reputation and career making that the techno-theory genre is fast becoming. [Simon Pope, Matthew Fuller, WARNING! This Computer Has Multiple Personality Disorder, 1995]. "Most current multimedia takes it as read that our eyes are desperate for stimulation: like rotten fruit, they'll collapse inwards gushing foul liquids if they don't get enough feed. Deprivileging the eye in multimedia offers us a chance of rediscovering synaesthesia after the bureaucratisation of the body into organs" -- from the editorial. I/O/D 2 is an investigation of the physicality of multimedia. Destroying notions of a 'transparent' interface, blacking out the screen, dragging the user into the machine - it is the first interactive work to use a sound-led interface. Against a background of a multimedia culture that is content to be just a minor branch of behaviourism, I/O/D is committed to experiment. Issue Two includes: "Addictionamania" by the Critical Art Ensemble is a history of narcotics, addiction and excess. "If It Weren't for You I Wouldn't be Here" by Peter Plate - instructions to be used when hit by a

rubber bullet during a budget cut protest. "Home Sweet Home" by Maxine Boobyer - embroidery as digital imaging. "Sound" by the 12th Sonderkommando - extreme speedcore assault, a sound based operating system. I/O/D is produced by: Simon Pope, Colin Green and Matthew Fuller. I/O/D is aided and abetted on the nets by Calum Selkirk. I/O/D 2, Issue Two, Key Developments: the first interactive publication navigated solely by sound / began critique of Apple's noun-verb interface grammar / developed use of mouse as analogue to digital instrument /Contributors: Maxine Boobyer, Critical Art Ensemble, Peter Plate, Jason Skeet and Dean Whittington) <http://bak.spc.org/iod/>

- 1995 \_\_ **Le Jour et La Nuit** (Day & Night), Stephan Barron (Barron's DAY & NIGHT links East and West across a 12 hour time difference that gives the work it's name. It's based on an earlier piece "Le Bleu du Ciel" (The Blue of the Sky) produced by Barron in 1994. Here two French sites, one 1000km north of the other were linked and the average of the colours of the sky above them was calculated and displayed. "The purpose of this project lies in the imaginary sky, an ubiquitous sky that exists somewhere between north and south, somewhere in our imagination. A never ending sky. The never ending phone network." DAY & NIGHT changes the axis of the work from north-south to east-west and connects the Museum of Contemporary Art in Sao Paulo, Brazil with the Sym Choon Gallery. This axis, of the revolution of the Earth, is also the axis of time. The geographical distance gives a 12 hour time difference and since the piece will be exhibited at the Equinox the division of day and night should be almost exact - as the sun sets in Sao Paulo it will rise in Adelaide. Cameras at each gallery continuously record and transmit the colour of the sky above them. The two images are averaged and displayed at each site. Apart from the conjunction of dusk and dawn the resulting images are a mixture of day and night.) [http://stephan.barron.free.fr/technoromantisme/barron\\_projets.html](http://stephan.barron.free.fr/technoromantisme/barron_projets.html)

- 1995 \_\_ **LiveCd or Live Distros** (A live CD or live distro is a computer operating system that is executed upon boot, without installation to a hard disk drive. Typically, the live distro is named after the bootable medium it is stored on, such as a CD-ROM or DVD (live CD/DVD) or a USB flash drive (live USB). The term "live" derives from the fact that these "distros", or software distributions, each contain a complete, functioning and operational operating system on the distribution medium. A live distro does not alter the operating system or files already installed on the computer hard drive unless instructed to do so. Live distros often include mechanisms and utilities for more permanent installation, including disk partitioning tools. The default option, however, is to allow the user to return the computer to its previous state when the live distro is ejected and the computer is rebooted. It is able to run without permanent installation by placing the files that typically would be stored on a hard drive into RAM, typically in a RAM disk. However, this does cut down on the RAM available to applications, reducing performance somewhat. As of 2007, certain live distros run a graphical user interface in as little as 32MB RAM. In some live distros, the user can optionally install the OS from the removable media to the hard disk drive (they are called installable live distros). On computers, optical discs were originally intended for storing video. Then the principles of storing information into the optical disc were changed to provide storing different types of information. In the case of operating systems those were mostly installation files, often packaged and archived in compressed formats. Later, it became convenient and useful to boot the computer from compact disc, often with a minimal working system in order to install a full system onto a hard drive, and troubleshoot hardware. Although early Linux developers and users were able to take advantage of cheap optical disks and rapidly declining prices of CD drives for personal computers, the Linux distribution CDs or "distros" were generally treated as a collection of installation packages that must first be permanently installed to hard disks on the target machine. The first Linux-based live CD was Yggdrasil Linux (went out of production in 1995), though in practice it did not function well due to the low throughput of then-current CD-ROM drives. The Debian-derived Linux distribution Knoppix was released in 2003, and found popularity as both a rescue disk system and as a primary distribution in its own right. Since 2003, the popularity of live CDs has increased substantially, partly due to Linux Live scripts and remastersys which made it very easy to build customized live systems. Most of the popular Linux distributions now include a live CD variant, which in some cases is also the preferred installation medium. Related LiveCD : Planet CCRMA, Apodio, Dyne:bolic, Pure:dyne, Agnula DeMuDi)

- 1995 \_\_ **Kippure**, Garrett Phelan (It comprised a panoramic photograph of the Kippure transmission mast located in the Dublin mountains. Accompanying this image was a 1 watt transmission which broadcast ambient sound of the location throughout the gallery and surrounding streets and buildings on a specified FM frequency assigned by the IRTC (Independent Radio and Television Commission). The summit of Kippure mountain is the site of a television and radio transmitter mast , and as such is the oldest television transmitter site in the Republic of Ireland. It was first identified as a transmitter site as part of a Radio Éireann survey into potential FM radio transmitter sites in the mid 1950s. The Irish government Board of Works built an access road to the site in 1959 and by the summer of 1961 the mast was erected and television trade test transmissions, consisting of slide views of Ireland, a testcard and the music of Count John McCormack were played out) <http://www.garrettphelan.com/>

- 1995 \_\_ **Laminated Object Manufacturing (LOM)** (Tele-manufacturing allows remote researchers to move quickly from computer drawing boards to a physical mock-up. At the San Diego Supercomputer Center (SDSC), the Laminated Object Manufacturing (LOM) machine turns files into models using either plastic or layers of laminated paper. The benefits are especially pronounced for molecular biologists who learn how their molecules actually fit together, or dock. Even in a typical computer graphics depiction of the molecules, the docking process and other significant details can get lost among the mounds of insignificant data.

SDSC's models can better depict this type of information. They are also relevant to the work of researchers studying plate tectonics, hurricanes, the San Diego Bay region, and mathematical surfaces. The Laminated Object Manufacturing (LOM) machine's camera, or LOMcam, puts a new picture on the Web every forty-five seconds, and the molecular biologist watches. From his office, he can already tell that the tele-manufacturing system is creating an accurate physical model of the virus he is studying. The San Diego Supercomputer Center's LOMcam continues to post pictures, but the biologist stops watching, knowing that he will soon handle and examine the physical rendering of the virus, and learn more about it than his computer screen image could ever reveal.)

- **1995** \_\_ **MP3**, Fraunhofer IIS, AT&T-Bell Labs, Thomson-Brandt and CCETT (In the first half of 1995, MP3 files begin flourishing on the Internet. MPEG-1 Audio Layer 3, more commonly referred to as MP3, is a digital audio encoding format using a form of lossy data compression. MP3 is an audio-specific format that was co-designed by several teams of engineers at Fraunhofer IIS in Erlangen, Germany, AT&T-Bell Labs in Murray Hill, NJ, USA, Thomson-Brandt, and CCETT. It was approved as an ISO/IEC standard in 1991. MP3's use of a lossy compression algorithm is designed to greatly reduce the amount of data required to represent the audio recording and still sound like a faithful reproduction of the original uncompressed audio for most listeners, but is not considered high fidelity audio by audiophiles. An MP3 file that is created using the mid-range bit rate setting of 128 kbit/s will result in a file that is typically about 1/10th the size of the CD file created from the original audio source. An MP3 file can also be constructed at higher or lower bit rates, with higher or lower resulting quality. The compression works by reducing accuracy of certain parts of sound that are deemed beyond the auditory resolution ability of most people. This method is commonly referred to as perceptual coding. It internally provides a representation of sound within a short term time/frequency analysis window, by using psychoacoustic models to discard or reduce precision of components less audible to human hearing, and recording the remaining information in an efficient manner. The MP3 audio data compression algorithm takes advantage of a perceptual limitation of human hearing called auditory masking. In 1894, Mayer reported that a tone could be rendered inaudible by another tone of lower frequency. In 1959, Richard Ehmer described a complete set of auditory curves regarding this phenomena. Ernst Terhardt et al. created an algorithm describing auditory masking with high accuracy. In 1983, at the University of Buenos Aires, Oscar Bonello started developing a PC audio card based on bit compression technology. In 1989 he introduced the first working device using auditory masking: Audicom. In 1992 and 1994, MPEG-1 and MPEG-2 audio standards were completed. Karlheinz Brandenburg used a CD recording of Suzanne Vega's song "Tom's Diner" to assess and refine the MP3 compression algorithm. This song was chosen because of its nearly monophonic nature and wide spectral content, making it easier to hear imperfections in the compression format during playbacks. Some jokingly refer to Suzanne Vega as "The mother of MP3". Later, on July 7, 1994 the Fraunhofer Society released the first software MP3 encoder called l3enc. The filename extension .mp3 was chosen by the Fraunhofer team on July 14, 1995 (previously, the files had been named .bit). With the first real-time software MP3 player Winplay3 (released September 9, 1995) many people were able to encode and play back MP3 files on their PCs.)

- **1995** \_\_ **The Museum Inside the Network**, NTT ICC Tokyo (An exhibition of 22 artists and artist groups accessible via the WWW and some installation spaces. In keeping with the ideal of a network-style museum which places particular emphasis on software that will serve as an interface between the arts and the scientific technology of the electronic information age, NTT has anticipated the ICC opening with a variety of events and publications that have been underway since 1991. In particular, the first year event InterCommunication '91: The Museum Inside The Telephone Network was an unprecedented experiment which likened the entirety of NTT's telephone network to a museum, allowing people to access the works and activities of vanguard artists around the world by simply using the telephones and fax machines in their own homes. NTT InterCommunication '95: on the Web -- The Museum Inside the Network can be described as the upgrading of that event to the world of computer communications based on the Internet. Within a multimedia environment whose profound expanse far exceeds that of telephones and faxes, this project is certain to open up new creative dialogues through the global network. Of course, audio-visual information involves certain problems -- for instance, limitations in the amount of circuitry result in imperfect resolution, and a significant amount of time is required to download. However, these kinds of problems will be technologically resolved soon enough. The important thing now is to anticipate that future by sharpening the kind of creativity and imaginative power that can fully exploit the multimedia network that is on its way, and to confront the technological side with the new demands to be generated from this kind of imaginative power. on the Web -- The Museum Inside the Network is none other than an experimental effort towards achieving this end. It is my hope that many people will keep tabs on this experiment, and, as much as possible, actively participate in it. For the museums of the future will exist precisely in the kind of open network it provides. [Akira Asada] [http://www.ntticc.or.jp/Archive/1995/The\\_Museum\\_Inside\\_The\\_Network/index-e.html](http://www.ntticc.or.jp/Archive/1995/The_Museum_Inside_The_Network/index-e.html)

- **1995** \_ « **Netizens - The Netizens and Community Networks** », Michael F. Hauben ("In conducting research four years ago online to determine people's uses for the global computer communications network, I became aware that there was a new social institution, an electronic commons, developing. It was exciting to explore this new social institution. (...) Netizens are the people who actively contribute online towards the development of the Net. These people understand the value of collective work and the communal aspects of public communications. These are the people who actively discuss and debate topics in a constructive manner, who e-mail answers to people and provide help to new-comers, who maintain FAQ files and other public information repositories,

who maintain mailing lists, and so on. These are people who discuss the nature and role of this new communications medium. However, these are not all people. Netizens are not just anyone who comes online, and they are especially not people who come online for isolated gain or profit. They are not people who come to the Net thinking it is a service. Rather they are people who understand it takes effort and action on each and everyone's part to make the Net a regenerative and vibrant community and resource. Netizens are people who decide to devote time and effort into making the Net, this new part of our world, a better place. Lurkers are not Netizens, and vanity home pages are not the work of Netizens. While lurking or trivial home pages do not harm the Net, they do not contribute either." <http://www.december.com/cmc/mag/1997/feb/hauben.html>

- **1995 \_\_ Netochka Nezvanova** (Netochka Nezvanova is the pseudonym used by the author(s) of nato.0+55+3d, a real-time, modular, video and multi-media processing environment. Alternate aliases include "=cw4t7abs", "punktprotokol", "0f0003", "maschinenkunst" (preferably spelled "m2zk!n3nkunzt"), "integer", and "antiorp". The earliest identity "=cw4t7abs" (antiorp@tezcat.com) surfaced in 1995 on mailing lists and newsgroups relating to electronic music production (for instance, the Kurzweil K2000 music synthesizer) and related Usenet groups (rec.music.makers.synth), rendering them speechless with spiralling messages saturated in a dense fogginess of code-poetry, abstract ASCII art as well as exceptionally focused personal engagement. The name itself is adopted from the main character of Fyodor Dostoevski's first novel Netochka Nezvanova (1849) and translates appropriately as "nameless nobody." / 0f0003 propaganda (1998) - this program algorithmically generates animated graphics and synthetic sounds. / b1257+12 (1998) - a software for sound deconstruction and composition. The intricate operator interface allows for radical manipulation of soundloops in realtime, offering a large amount of control parameters which, every now and then, take a life of their own. The name of the software refers to a rapidly rotating neutron star. / @¶31@≠ Ÿ (1998) - this software extracts random samples from a CD and creates a stochastic remix, accompanied by futuristic-looking graphics (according to the reference documents, it is intended for use with the krop3rom\ | a9ff release). / m9ndfukc.0+99 and k!berzeta.0+2 (1999) - two programs written in Java interpreting network data, very likely preliminary versions of nebula.m81. / kinematek.0+2 (1999) - another Java application that performs "animated image generation from internet www data", incorporating parts of nebula.m81. / nebula.m81 (1999) - an experimental web browser written in Java, rendering HTML code into abstract sounds and graphics. Awarded at the International Music Software Competition in Bourges 1999 and at Transmediale 2001 (first prize in the category "Artistic Software"). Described by jury member Florian Cramer as "an experimental web browser that turned browsing into something resembling measurement data evaluation". / !=z2c!ja.0+38 (1999) - an application that generates a dense visual texture based on the user's keyboard input. It (ab)uses Mac OS' QuickDraw capability and can therefore be seen as a preliminary step towards nato.0+55) <http://www.0f0003.com/> <http://www.subtletechnologies.com/2006/symposium/Dan.html>

- **1995 \_\_ Network concert Earth to the Unknown Power**, Le Thoronet (F) / The Kitchen (NYC), David Hykes, Michel Redolfi, John Maxwell Hobbs (Cinema Volta), Festival Manca (The live sound of the concert was digitally encoded and sent into Le Thoronet Abbey over ISDN telephone lines, played back live through a sound system in the extraordinary Abbey acoustics, then re-encoded and sent back to The Kitchen, placing us "here" within the « Virtual Abbey ». Thanks to a satellite hook-up, the public present in Manhattan could hear the Harmonic Chant enriched by the unique 11-second reverberation of the Abbey.) (Nov 95. Festival Manca. David Hykes chantait avec son ensemble au Kitchen à New York. La musique était transportée dans l'Abbaye Cistercienne du Thoronet dans le Var par réseau ISDN audio et vidéo. La réverbération naturelle de l'Abbaye (12 sec) était alors renvoyée en temps réel et diffusée dans la salle de concert au Kitchen. La boucle était bouclée.[Luc Martinez]) <http://www.harmonicworld.com/HTML/discofr.htm>

- **1995 \_\_ NOOD**, Ulf Knudsen and Per Platou (Eclectic sound exchange over the internet, with the additional and very necessary overdubs and mix of acoustic sounds in physical space) <http://www.notam02.no/nood/newindex.html>

- **1995 \_\_ Orthodoxy**, Bill Talsma (Writes Talsma, "Orthodoxy was produced in 1995 as a radio work. The piece builds a dynamic relationship between the voice of authority—a.k.a. the disembodied radio voice—and the interior voice of the submissive listener. A conflict of self-comprehension over self-confusion ensues, and exposes the realm of the human soul that is precarious and susceptible to outside influence. The composition revolves around a sentence in which each word has been sampled, isolated, and recombined to form new phrases through a compositional approach inspired by traditional techniques of brainwashing, subliminal listening, and hypnosis audiotapes. The manipulation of these words functions to generate a variety of meanings, including a sense of introspective self-doubt. Phrases such as "I was not myself" ask more questions than they answer. Was he himself? A part of him? A scared part? A gullible part? A defenseless part? An emotional part? An ignorant part? The same part that thinks it wasn't true because it's not true today? This (de)construction of the phrase consistently reinforces these signs of doubt in the submissive listener, and as the material works to break down the listener, it reminds us of the struggle to remain dubious of the authoritative voice. The voice transforms from exterior to interior, and the submissive listener must respond to the unceasing subliminal suggestion.") <http://www.free103point9.org/studycenter/historicaltransmissionworks>

- **1995 \_\_ Piano-as image media**, Toshiro Iwai (*Iwai visualized an image of a piano played by light in his Piano-as image media. Audience members operate a trackball to draw lighted dots on a grid. The flashing dots move, and as soon as they come close to the piano they accelerate and strike a key. With the sound of the piano, a three-dimensional figure pops out of the keyboard. The audience-drawn shapes play the actual piano. The sound then produces colors and figures. This is not a digital sound, but the sound of an acoustic piano controlled by computer. Combinations of computer graphics, liberated from the feel and weight of a grand piano, merge and integrate the elements of our real physical body and virtual body, which makes this work truly innovative.*)

- **1995 \_\_ « Public Access to the Internet »** - *Public Access Issues: An Introduction*, James Keller (“By public access we mean not only establishing physical connections to the network, but also ensuring that those connections are easy to use, affordable, and provide access to a minimum set of information resources. In particular, network use should not be limited to the passive receipt of information. Instead, the environment should be open, distributed and easily navigable. Even the most basic connection should enable users to act as information sources as well as destinations. In this way, development of the NII offers a potential paradigm shift in communications, publishing and human interaction comparable to that effected by the Gutenberg press. Information infrastructure is an enabler of both free speech and efficient market. It can help overcome barriers to information and create opportunities to convene regardless of geographic, physical or financial constraints. Disparate ethnic, economic, political, and other interest groups will find increased opportunity to organize and consolidate in the pursuit of their common interests. (...) Development of the NII will go far beyond mere extension of the current Internet; it will be a product of both new technologies and resources and a newly defined Internet. Not a physical network, the Internet is best defined as a set of commonly supported applications. Historically, it has been defined as the set of voluntarily interconnected and interoperating networks that jointly support electronic mail, remote log-in and file transfer capabilities. (...) This growth has challenged the culture of the Internet and drawn attention to the social aspects of participation in networked communities. (...) In many ways, the Internet as we know it is a fragile environment. Many discussion groups that serve as forums for social and intellectual exchange, technical development and policy debate are open and freely accessible. Within these fora the line between acceptable and unacceptable participation is often drawn very narrowly, causing newcomers to receive sharp responses for unwitting nonconformance. As the network grows, the culture of sharing is increasingly challenged. (...) One of the defining characteristics of networks is their ability to transcend geographic and physical boundaries, enabling the establishment of virtual communities, work groups and organizations. In addition to the direct gains achieved through reduced communications and travel costs and quick turn-around, the informal, nearly real-time nature of these bonds results in intangible shifts in the dynamics of work-based and social interactions that often promote increased collegiality, productivity, commitment and accountability. (...) The question of what has promoted the cooperative nature of the Internet is an important one for planners and policy-makers. Even beyond the issue of maintaining this cultural component of the Internet, there may be a potential model for community development or organizational design. (...) The question of how to connect to the network is addressed two ways. First is the question of organizational models for access (...) Second is examination of network architecture and technology. (...) The distinguishing feature of many of the new applications that are coming to redefine the Internet is the introduction of a more friendly and robust interface. This includes graphical and icon-based services and audio and video communications capabilities. MOSAIC is a simple but powerful search and retrieval tool, offering users a common front-end to tie together the variety of distributed search tools that have recently proliferated (Archie, Gopher, Veronica, WAIS and World Wide Web). (...) To run MOSAIC, the client workstation must be an Internet host. Similarly, real-time interactive applications, such as audio and video broadcast and conferencing, will typically require direct network access.” [James Keller]. In Brian Kahin and James Keller (Eds.), *Public Access to the Internet*. (pp. 34-45). Massachusetts: MIT Press.)

- **1995 \_\_ Public Organ**, Carla Scaletti (*Public Organ: An Interactive, Networked Sound Installation (1995) made its debut at the International Computer Music Conference in Canada. Created by computer programmer Carla Scaletti, Public Organ commented on the impact of the world wide web through the user’s choice of selected objects, such as a radio, telephone, or spray can. Scaletti co-invented KYMA, a sound design computer language, for the Public Organ project. The majority of Scaletti’s interactive works involved live performers and electronics, and she composed a number of tape pieces. In Public Organ Scaletti designed a web gallery that invited web participants to submit graphics of themselves, along with original “graffiti.” The installation instantly added the materials to the online gallery. Public Organ is a distributed digital playground created for ICMC95 and dedicated to author Lewis Thomas. Your actions determine the state of the installation, putting it into Loop, Lurk, or Link state. An image of the installation also exists on the World Wide Web, so while some of the texts, images and sounds have local origins, others originate with individuals using public or private web browsers on the web. Try sitting down in front of the TV, pushing buttons, picking up the phone, and generally exploring so you can start looping, lurking and linking! The title was inspired by the following passage from The Lives of a Cell by Lewis Thomas: “The human brain is the most public organ on the face of the earth, open to everything, sending out messages to everything..We pass thoughts around, from mind to mind, so compulsively and with such speed that the brains of mankind often appear, functionally, to be undergoing fusion”. “Public Organ” also suggests a musical instrument or a means of action or performance that is open to all persons.*) <http://www.carlascaletti.com/Main/PublicOrgan>

- **1995 \_\_ Real Audio** (*RealAudio is a proprietary audio format developed by RealNetworks. It uses a variety of audio codecs,*

ranging from low-bitrate formats that can be used over dialup modems, to high-fidelity formats for music. It can also be used as a streaming audio format, that is played at the same time as it is downloaded. In the past, many internet radio stations used RealAudio to stream their programming over the internet in real time. In recent years however the format has become less common and has given way to more popular audio formats. The first version of RealAudio was released in 1995. RealAudio was developed as a streaming media format, meaning that it can be played while it is downloaded. It is possible to stream RealAudio using HTTP. In this case, the RealAudio file is retrieved similarly to a normal web page, but playback begins as soon as the first part is received and continues while the rest of the file is downloaded. Using http streaming works best with pre-recorded files. Some alternative protocols have been developed which work better for live broadcasts. The first version of RealAudio used a proprietary protocol called PNA or PNM to send streaming audio data. RealNetworks later switched to the IETF standardized Real Time Streaming Protocol (RTSP) but they use RTSP only to manage the connection. The actual audio data is sent with their own proprietary RDT protocol, which they initially kept secret. Recently some specifications for the RDT protocol have been made public through the Helix Community project. The open-source MPlayer project eventually developed a means of playing the RDT streams.) <http://www.real.com> <http://en.wikipedia.org/wiki/RealAudio>

- **1995 \_\_ The Second Week of January**, composed by: David Tudor, Takehisa Kosugi, John D.S. Adams, and D'Arcy Philip Gray (This co-composition was commissioned by the White Oak Dance Project for its performances of Merce Cunningham's "Signals". The recordings were made at the Shunjuku Bunko Center in Tokyo during the second week of January in 1994, hence the title. John Cage initially developed the concept for the music to Cunningham's "Signals" as follows: 1. The music should be performed by four musicians. 2. Each musician composes his/her part of the piece before each performance. This is done independently of the other musicians. 3. Each musician prepares a performance score consisting of a series of timed musical activities. One way of preparing a score is to create a timing chart consisting of "start" and "stop" times and then assigning each time boundary an activity. 4. What these musical activities are and how many will be performed is up to the musician. Silence is considered an activity. 5. If repetitions of a given activity occur within a given performance, close attention should be given to maintaining the activity's principle features. An important feature the musician/composer must pay particular attention to is the activities dynamic content. 6. A stop watch should be used in performance - the first movement of the curtain in time 0.00. As White Oak was to be performing with "canned" music (something which, as yet, Cunningham's company has not done), the musicians preparing the tapes needed to consider the problem of maintaining the degree of indeterminacy necessary to any Cunningham piece. This was solved by preparing several tapes, each with a different "performance" of the piece, and playing them back simultaneously. An I Ching generated time-score was used to determine which tracks were to be brought in and out at what times and at what dynamic level. In this way, the White Oak audio engineer was creating a real-time "performance" using the source material provided by the Cunningham musicians.) <http://www.emf.org/tudor/Works/january.html>

- **1995 \_\_ Singing Bridges**, Jodi Rose (sonic sculpture, playing the cables of stay-cabled and suspension bridges as musical instruments. To create this work I will amplify and record the sound of bridge cables around the world. Listening in to the secret voice of bridges as the inaudible vibrations in the cables are translated into sound. The work is an experimental sonic sculpture, with many possible venues. It can be performed live at the bridge location, with live audio streaming web-cast of performance in real-time linking bridges across the world. Sound can also be amplified on the bridge at each location. Played on an interactive web-site. Narrow-cast on local radio frequencies to be listened to while driving or walking over the bridge, radio broadcasts exhibited in electronic & sound art exhibitions. Day to day account published on the Internet as the project evolves. Up to the minute reports on recording from each bridge location as it happens. CD compilation of artists using sound samples from the bridge to create music) <http://www.singingbridges.net/>

- **1995 \_\_ STIMBOD - Split Body - Voltage In/Voltage Out**, Stelarc (In 1995, Stelarc began working on a touch-screen interface for remote access and actuation of the body. STIMBOD enabled users in different locations to create a sequence of motions which could be replayed continuously or choreographed in real-time. It was also "possible to paste sequences together from a library of gesture icons." The performance, Split Body - Voltage In/Voltage Out, was performed in November 1995, linking Luxembourg (Telepolis) with Paris (the Pompidou Centre), Helsinki (The Media Lab) and Amsterdam (Doors of Perception Conference). Each site was linked via a Web site with which the Internet audience could "remotely access, view and actuate the body via a computer-interfaced muscle-stimulation system based at the main performance site in Luxembourg." [Andrew Garton]. Six remote sites will access and activate the body in Luxembourg using modem-linked MACs to a Multiple Muscle Stimulation system. PictureTel - ISDN connections provide visual feedback. People in Paris, Amsterdam, Hamburg, Helsinki, Vienna, Milwaukee and Toronto will choreograph the body's movements at TELEPOLIS, interactively participating and constructing the performance, which will be uploaded to the Internet.) <http://www.stelarc.va.com.au/stimbod/stimbod.html> <http://www.t0.or.at/stelarc/stelarc.htm>

- **1995 \_\_ Tele-concert Atau Tanaka & Les Virtualistes** (Tele-concert between Barcelona and Amsterdam - Festival SONAR 95)

- **1995 \_\_ Telegarden**, Ken Goldberg and Joseph Santarromana (A classic of these tele-robotic projects is Ken Goldberg's and Joseph

*Santarramana's Telegarden (Figure 10) installation, which was accessible online from 1995 until August 2004. The work, which was originally located at the University of Berkeley and then permanently installed at the Ars Electronica Center in Linz, Austria, consists of a small garden with living plants and an industrial robot arm that could be controlled through the project Web site. Remote visitors, through moving the arm, could view and monitor the garden as well as water it and plant seedlings. Telegarden explicitly emphasizes the aspect of community by inviting people around the world to collectively cultivate a small ecosystem. Survival of the ecology is dependent on a remote social network. Telegarden is particularly interesting to consider in the context of the commons as "a piece of land subject to common use" since it transcends the temporal and spatial continuity that is characteristic of agriculture. [Christiane Paul])*

- **1995** \_\_ **Telephones**, Christian Marclay (A 7-minute video narrative consisting of collected scenes from Hollywood movies that show a great variety of reactions on the telephone. Popular American actors and actresses played archetypes of human behaviour in the face of the technologically transferred Uncanny – anxiety, fear, boredom, joy, anger – all through telephone communication [Miya Yoshida]. In his 1995 film *Telephones*, artist Christian Marclay spliced together snippets of actors from Hollywood films answering phones. Cleverly conceived and artfully edited, Christian Marclay's 7 1/2-minute video, *Telephones*, comprises a succession of brief film clips that creates a humorous narrative of its own in which the characters, in progression, dial, hear the phone ring, pick it up, converse, react, say goodbye and hang up. In doing so, they express a multitude of emotions--surprise, desire, anger, disbelief, excitement, boredom--ultimately leaving the impression that they are all part of one big conversation. The piece moves easily back and forth in time, as well as between color and black and white, aided by Marclay's whimsical ideas of continuity. A shot of a woman decked out in '70s tiger-print regalia is followed by one of Whoopie Goldberg talking on a zebra-striped phone, or a man saying "I haven't been able to think or concentrate on anything but you" leads to another man's perplexed reaction: "I see," he says. It's interesting to observe that the individual orchestral soundtracks are successful in creating a mood even in such minute segments, and Marclay uses them, along with the other inherent effects--dialing, ringing, beeping, voices, the receiver being dropped or slammed down--to create a rhythmic tone poem. The piece also conveys the sense of alienation and frustration that can occur when talking to people who are not actually present. "If I could just see you, talk to you" a woman importunes her lover, forgetting that she is, in fact, talking to him. [Carol Diehl - Art in America])

- **1995** \_\_ **Transatlantic TeleKonzert**, Copenhagen / ECI Santa Monica, Trio Dørge - Irene Becker - Morten Carlsen (Copenhagen), Adam Rudolf - Hammet Drake - Bryan Pezone (Santa Monica) (high level teleconcert. 384k video and 256k audio) <http://www.ecafe.com/1995.html>

- **1995** \_\_ **Underground Overlays from the Cistern Chapel**, Stuart Dempster (Stuart Dempster's recent CD "Underground Overlays from the Cistern Chapel" explores sound movement and resonance within a 186-foot diameter cistern at Fort Worden, about 70 miles northwest of Seattle. Dempster plays on conch shell, didjeridu, and trombone, and in ensemble with nine other trombonists, two conch players and one on Tibetan cymbals. The reverberation length inside the cistern is so long (approximately 45 seconds) that the composer experienced the feeling that "this is where you have been forever and will always be forever." That description could equally apply to the interior space of the mind. ["Blue" Gene Tyranny])

- **1995** \_\_ **WAWRWT**, Gilberto Prado (Since 1995, this project has researched more specifically the production of artistic events that use the net in a direct relation with the telematic art. The wAwRwT project intends both to develop artistic work for the Internet as well as to reflect upon the technological poetics, focusing on the artistic-telematic dimension. Besides, this project intends to investigate whether and how these new technologies are influencing and being influenced by the construction of those new spaces of creation and intervention.) <http://www.cap.eca.usp.br/gilberto/english/index.html>

- **1995** \_\_ **Web Phases**, John Maxwell Hobbs (Cinema Volta) (interactive online instrument) <http://www.cinemavolta.com/>

- **1995** \_\_ **Wiki technology** (WikiWikiWeb installed on Internet domain c2.com by Ward Cunningham. Wiki technology permits construction of web sites that allow "the visitors themselves to easily add, remove, and otherwise edit and change available content, typically without the need for registration. This ease of interaction and operation makes a wiki an effective tool for mass collaborative authoring" (Wiki 2007). WikiWikiWeb was the first site to be called a wiki (Hawaiian word for "fast"). Ward Cunningham started developing WikiWikiWeb in 1994, and installed it on the Internet domain c2.com on March 25, 1995. It was named by Cunningham, who remembered a Honolulu International Airport counter employee telling him to take the "Wiki Wiki" shuttle bus that runs between the airport's terminals. A wiki is a page or collection of Web pages designed to enable anyone who accesses it to contribute or modify content, using a simplified markup language. Wikis are often used to create collaborative websites and to power community websites. The collaborative encyclopedia Wikipedia is one of the best-known wikis. Wikis are used in business to provide intranet and Knowledge Management systems. Ward Cunningham, the developer of the first wiki software, WikiWikiWeb, originally described it as "the simplest online database that could possibly work". According to Cunningham, "I chose wiki-wiki as an alliterative substitute for 'quick' and thereby avoided naming this stuff quick-web." Cunningham was in part inspired by Apple's HyperCard.

*Apple had designed a system allowing users to create virtual "card stacks" supporting links among the various cards. Cunningham developed Vannevar Bush's ideas by allowing users to "comment on and change one another's text". In the early 2000s, wikis were increasingly adopted in enterprise as collaborative software. Common uses included project communication, intranets, and documentation, initially for technical users. Today some companies use wikis as their only collaborative software and as a replacement for static intranets. There may be greater use of wikis behind firewalls than on the public Internet.)*

## 1996

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- **1996** \_\_ **Internet** (The Internet comprises 14,352,000 hosts (Internet Software Consortium 1996). There are 100,000 Web servers in existence [Ciolek 1998].)

- **1996** \_\_ **24-Hour Internet Project**, John Hopkins ("During the 24-hour time period starting at 13:00 (Eastern Standard Time/USA) on the 27th February and ending 13:00 on the 28th, there was a linking over the internet. This Web Site, located on a server at the College of the Holy Cross in Worcester, Massachusetts, USA, is a documentation of this projection of eye and mind. There were a number of participants involved from widely separated physical locations including Hawai'i, Iceland, Finland, Massachusetts, Colorado, and Florida among others. There were students and faculty from Holy Cross College, University of Hawaii, University of Colorado-Boulder, and Florida State University along with a number of unaffiliated rogues... The collaboration had no particular theme or aim, except to establish dialectic communication between individuals. We used IRC channel (#otis) to maintain some level of "live" interaction until we suffered a server crash between 3:54 and 8:30 in the morning. Images are stored on the SiTO/OTiS server PANIC/hOPKINS ftp site, thanks to Ed Stasny, the SiTO sysop. We hope you enjoy the image play! The project was initiated by roving teacher-artist John Hopkins? and sponsored by the Department of Visual Arts and the Iris and B. Gerald Cantor Art Gallery at the College of the Holy Cross. Special thanks here at Holy Cross go to Robert Henry, Jr., Albert Atkocius, and Ellen Keohane of ITS for their friendly and fast technical support and Ellen Lawrence, the Gallery Director for her generous moral and material support." [John Hopkins]) <http://neoscenes.net/archive/24hour/project.html>

- **1996** \_\_ **24 Hours in Cyberspace** (24 Hours in Cyberspace began by dispatching over 150 of the world's best photojournalists around the world on February 8, 1996 to document the human stories behind the digital revolution. They were also joined by thousands of students and amateurs who submitted their own stories. On the front-end of the technology process was Eastman Kodak, whose digital cameras and professional film captured the majority of the project's images. Professional photographers with digital cameras downloaded their images directly into an NEC Versa notebook computer, where they used Adobe Photoshop, the leading digital image editing software, to prepare their photos for transmission. They also used a unique Photoshop "plug-in" from The Software Construction Company to enter captioning information. Once they were ready, their NEC notebooks dialed directly into 24 Hours in Cyberspace, using the state-of-the-art TeleFinder BBS product from Spider Island Software, where their calls were answered automatically by US Robotics modems attached to a Power Computing BBS server. Complementing these images were audio clips based on extensive telephone de-briefings of the professional photographers, as well as interviews of celebrity visitors to Mission Control. This material was edited, mixed, and restored using Sonic Solution's leading-edge digital audio workstations networked with Sonic's MediaNet network and running on high-end MacOS workstations from Power Computing. The clips were encoded using Real Audio technology from Progressive Networks. These images, stories and audio clips were transmitted to Mission Control, a specially constructed 6,000-square-foot facility in San Francisco's South of Market area. There, a team of more than 80 editors, programmers, and designers built the Web site on the same day. They worked on the largest, most powerful one-day Internet network ever, integrated and managed by Sun Microsystems. Editors worked on more than 60 Sun SPARC and UltraSPARC Workstations, 25 NEC PowerMate Series systems with NEC MultiSync monitors and several Power Computing Systems. All of these systems were connected to a 100 Base-T network, which ran ten times faster than a normal office LAN. The network also included a huge database server which ran on two Sun SPARC 1000 servers with Sun RAID disk arrays, as well as separate Sun Netra servers for email, ftp and Web publishing. Collectively these machines had more than 11,000 MB of RAM storage and almost 300 Gigabytes of disk storage. Meanwhile Sun's Firewall-1 security software was running silently in the background, on patrol for hackers. Best Power's uninterrupted power supply products protected against brownouts and blackouts.) <http://undertow.arch.gatech.edu/homepages/virtualopera/cyber24/SITE/htm3/site.htm>

- **1996** \_\_ **The Archeology of Stones**, Phil Dadson, SoundCulture'96 (The Archeology of Stones focuses on the evocative and unique acoustic sound character of 'song-stones,' as well as the mythologies surrounding them. 'Song-stones' are collected from beach, river and lake locations for sonic properties. Dadson, a New Zealand composer, experimental instrument builder, and performer, has over the last 18 years collected song-stones and their accompanying stories from around the world. Phil Dadson is the founding member of the New Zealand percussion group From Scratch and has performed throughout the world.)

- **1996** \_\_ « *The Artist as Ethnographer* », Hal Foster (In *The Artist as Ethnographer*, Hal Foster (1996) has outlined one of the inherent dangers of “public art” practice: that an artist engaging communities or sites outside of an art context might simply appropriate a community in the creation of a personal or autobiographical narrative of the artist’s identity. The worst–case scenario being that a colonizing and romanticized appropriation of a community ultimately becomes a representation that the public identifies with the community itself. The title is meant to evoke “The Author as Producer,” the text of which Walter Benjamin first presented at the Institute for the Study of Fascism in Paris in 1934. The fact that digital art is inherently interactive, participatory, or even collaborative and — in its networked manifestation — potentially open to exchanges with trans–local communities, makes questions surrounding agency and the authority of authorship a central element of new media art practice. In media art, any form of agency is necessarily mediated. The degree of agency is therefore partly determined by the levels of mediation unfolding within an artwork. The agency of the creator/user/public/audience is also highly dependent on the extent of control over production and distribution of a work, which has been a central issue of the discourse on mass media. [Christiane Paul]. In his essay “The Artist as Ethnographer,” the critic Hal Foster argues that the anthropological framing of modernism by way of cultural studies as well the waning of art history and its historiography, partially resulted from the interdisciplinary methodologies that came under the rubric of visual culture. One argument resides in the latter’s supposed construal of the artwork as part of visual culture thus expanding its limitations to the field of art history. Through this ostensible lack of differentiation art has no greater value than any other form of visual production, whether this production takes the form of television programs or canonized works of “high” art. This collapsing of one into the other was also indicative of certain anthropological paradigms that situated all material production —including art— of traditional non-European cultures as existing on the same level. In other words, since in these traditional non-European cultures the artwork was non-existent due to its social function as a unit in a larger societal whole, then the work could not be categorized as art per se. For the traditional non-European artwork is first and foremost an object that has use value rather than symbolic value, and in doing so, negates the Western notion of the autonomy of the art object. The question of art’s symbolic value has been one of the armatures that Western aesthetics has historically rested. [Raul Zamudio] <http://pdflibrary.files.wordpress.com/2008/02/artistethnographer.pdf>

- **1996** \_\_ **Backspace** (*Backspace*, headed by James Stevens, is both a physical space on the south bank of the Thames in London and an on-line space for national and international art projects. The Backspace web site is an interface for current, constantly changing net projects. At the real-world location, the studio, the project promotes progressive artistic and technological developments. It was provided to the Backspace founders in 1996 by an advertising design firm also based there, with the aim of promoting aesthetic inventiveness and radicalism beyond the institutional framework.) <http://www.backspace.org>

- **1996** \_\_ **Brain Opera, The Palette**, Tod Machover, John Yu (*Java-based musical instrument which you can perform on from home*) <http://park.org/Events/BrainOpera/online/net-music/net-instrument/net-instrument.html> <http://park.org/Events/BrainOpera/> <http://www.media.mit.edu/hyperins/bovienna/indexnew.html>

- **1996** \_\_ **Cassandra Project - Navigating Global Cultures**, New York University, John Gilbert, Dinu Ghezso (*ongoing creative project in which the World Wide Web is used as a medium for collaboration and creation of artistic content for actors, dancers, and musicians. On December 15th, 1996, three sites connected via the WWW and CUSeeMe to collaborate and respond to creative activity developed at each site on the theme of Cassandra, uploaded on the Web, and then responded to by each site. This recording is a document of the music improvised through structured improvisations in direct response to materials on the web or received through CUSeeMe. The Cassandra Project can be viewed to establish a context for the upcoming events of May 8th and May 18th.*) <http://pages.nyu.edu/~jg12/cass.html> <http://www.nyu.edu/classes/gilbert/cassandra/cass2000.html> <http://www.nyu.edu/classes/gilbert/distance/toronto/> [http://people.brunel.ac.uk/bst/3no1/Papers/Julia\\_Glesner\\_Internet\\_Performances.htm](http://people.brunel.ac.uk/bst/3no1/Papers/Julia_Glesner_Internet_Performances.htm)

- **1996** \_\_ **Collective JukeBox**, The Thing, Jérôme Joy (*Networked and co-op database with more than 1500 audioworks by around 500 artists. Collective JukeBox is open to all contributors and is activated by their ‘engagement’ through sending unlimited audio contributions and evaluating proposed interfaces. It functions as a forum, and its participants can make proposals to improve the project. Just as the creator of Collective JukeBox, composer Jerome Joy expects his project to open a new resistant space for digital audio emergent practices. Collective JukeBox is a dynamic, collective endeavour, ‘a continuously evolutionary and updated resource’. Joy offers further considerations regarding the peculiar effect of net technologies on artistic practices and on listening spaces. Starting from a more theoretical frame, Joy analyses the shift between languages, reality and identity of artistic practices. According to Joy, the practices of artistic presentation and the conditions that rule the diffusion of artworks no longer seem adequate to ‘languages’ developed nowadays, especially those using elements that are more and more dematerialised and free from the ‘principles of reality.’ Joy states that the fields of artistic inquiry tend to be displaced, while presenting themselves more often in the shape of ‘device,’ than in the form of ‘laboratory’ or ‘platform.’ There is a process of adaptation that opens new spaces to artistic practices and requires them to be reformulated. In fact, without being too explicit, they infiltrate peripheral domains (computer science,*

communication, social relations) and thus modify their identity. Joy's strategy is that of planning a device characterized by different forms and functions: an audio compilation, an audio intervention group, a networked jukebox. The project is continuously evolutive with different public and 'work' interfaces, and its system of development is really close to a system of 'groupware.' [ . . . ] Thanks to The Thing server in NYC, the Collective JukeBox began on Internet for building the network of contacts between a lot of artists (and non-artists) to build a place of exchange and of conversation, and very quickly, the project requested the construction of interfaces for the exchanges and for the public broadcasting. These interfaces have first appeared in 'real world' with actions and a consultation board: a CD-player juke-box, which represents today the 'sound-system' of the project, before the finalization of the 'internet-system'. There is no selection for participating, and the project is now invested by many and many artists. Those ones take part in freely by sending to the project their audio and musical contributions, and the Collective JukeBox Project ensures their visibility and listening. The free mode of consultation and sine qua non activation by the listeners allow the installation of a user-friendly space for the public, as a cafe or a cafeteria or an 'audio-lounge,' with a jukebox machine. The project opens not only a 'forum-room' and a space of 'scan' (artistic scan), but also a permanent laboratory. The initiative of Jerome Joy (which follows the 'bazaar' or 'autonomous zone' models) tends to favour the achievement of a cultural autonomy and of an adaptive/cooperative organisation, since he is firmly convinced that they can be mutually supportive. According to Joy, the Collective JukeBox project could provide a model of a new economy (associated with these new methods of artistic work), which could cooperate or coexist with the existing and legitimated commercial systems (here those of the music industry, the art market and artistic institutionalisation) without seeming to be an element of pirating (copyright violation). [Dante Tanzi]. The project stopped its activity in 2004 after multiple public presentations in Europe. The database is now an archive. Next developments of the project are on the way : 1/ a collaboration with the NY collective PAM - Perpetual Art Machine - in order to reactivate the project as an on-line contributive audio database and an interactive listening system, 2/ the bequest of a copy of the 1996-2004 database to the Sound Art Museum in Roma, Italy, 3/ the donation of the archive/database to ubu.com / Ubuweb, the free repository for visual, concrete and, later, sound poetry, music and avant-garde, founded in 1996.) <http://joy.nujus.net/files/proj/jukebox/> [http://reseaux-creation.org/article.php3?id\\_article=133](http://reseaux-creation.org/article.php3?id_article=133) <http://crossings.tcd.ie/issues/3.1/Tanzi/>

- **1996** \_\_ **Contact**, Stephan Barron (Le projet Contact date de 1996, mais n'est pas encore réalisé. Contact est une installation planétaire dans laquelle deux plaques de cuivre, l'une située au Canada chez les Inuits et l'autre en France, échangent leurs températures via un réseau télématique. En posant leurs mains sur ces plaques de cuivre, les participants perçoivent la température du pays éloigné et la présence éventuelle d'une autre personne dans l'autre pays. Le but du projet est de créer une communication par le toucher à distance et de stimuler l'imaginaire aussi bien des Inuits que des Européens par la sensation tactile de la différence de température entre les deux pays. Métaphore de la caresse, de la solidarité, sensation de la peau du monde. Sensation de la présence à distance, du passage de l'autre, de son existence malgré l'absence visuelle. Sensations mêlées de l'espace, du temps et de l'humain.) [http://stephan.barron.free.fr/technoromantisme/barron\\_projets.html](http://stephan.barron.free.fr/technoromantisme/barron_projets.html)

- **1996** \_\_ **The Counting Game**, Kathy Kennedy, SoundCulture'96 (Kathy Kennedy (Canada) employs a pirate radio broadcast and a choir of boombox-armed singers to fill a public place with the sounds of harmonious vocalizations.)

- **1996** \_\_ « **Cybermonde, la politique du pire** » (Cyberworld: Politics of the Very Worst), Paul Virilio (Virilio sees the question of speed as a crucial and essential part of social development in general, including the global economy. Not only does the relative speed of transportation (horse, ship, train, airplane) create certain environmental and social conditions, war too is transformed through the speed of communications (from messengers to radio to satellite and internet). Power is close connected with wealth, and wealth with speed. Geography and history were once understood through the intervals of space and time, he says, but now there is a third one - the speed of light - which poses a limit also on the political, as understood in philosophical terms. And consequently, as it was once crucial for developing society to speed up sea transport, now it is crucial to speed up the transfer of information. For Virilio, with every new invention there is a loss. When the elevator was invented we lost the stairs, while the creation of planes able to traverse continents meant the loss of ships, Virilio states. Even with the invention of the trains we lost something of a different order- the landscape. "There is no knowledge without a loss". Connected with this is the idea of time. When speaking about time, Virilio distinguishes between the "world time" (i.e., 'real time'), the one that is used in new technologies, and the "historical time" or the local time in which the history of, say, nations is written. Multimedia represents the "real time" which provokes Virilio to ask the reader: is real democracy possible in live broadcasting ?. Another central concept of Politics of the Very Worst is the idea of the accident, something that is more profound than it might at first appear. New technologies are causing new kinds of accidents, but now they are global ones and their ramifications thus far more severe. A prime example is the Internet. This vital nexus of modern life has within it the chronic threat of global accidents of varying severity, accidents can be readily understood within any number of scenarios, and that are being demonstrated tangibly all the time by even the mistaken push of a button. This insight is perhaps more remarkable when we consider that Virilio was making it in this book at which time the internet was still developing and had a far less pervasive influence on the daily life of much of the world. Virilio claims that no technological knowledge can come without a concomitant loss of life and the vital. Through the usage of nanotechnologies, microchips and so on, the actual skills of human being are decreased. The more knowledge is concentrated and specialized, the fewer are those who understand it. We become as individuals,

mentally and physically, victims of our own society's technological achievements. More dangerously, technological development can cause one big accident that would happen everywhere at the same time. Virilio says that "interactivity for the society is the same as radioactivity for the substance". Virilio argues that the race for armament, satellites, and control of the Internet represent the threat of a new kind of new war. According to Virilio, information is in need of military guidance. When the atomic bomb was considered a mean of persuasion, Hiroshima and Nagasaki happened. If governments have the privilege of vast knowledge through satellites, they will have such powers of persuasion that people will hardly even be able to move. The question raised here is whether surveillance using cameras is a transformation of the army into the police. Again, Virilio's predictions of a surveillance society, which is on the verge of realization now, is all the more interesting considering the date of his comments. Virilio looks to the modern European context when explaining his views on the current behavior of states. For him, such states are in conflict between the need to fulfill two movements: an upward one, that is, to enter and exist within the European community and to overcome the nation-state, and a downwards one, towards regional emancipation and decentralization. However, he argues, this two-way movement towards dissolution and atomization is fatal for both democracy and politics. [Elena Angelovska]

- **1996 \_\_ Cyber Soirée**, Paul Hoffert (Cyber Soirée demonstrated a distributed low-latency live performance network using symmetrical audio and video feeds to four sites across the continent in two countries (US and Canada). Cyber Soirée 96 featured jazz musicians, dancers, and painters collaborating in real time at four locations in Quebec and Ontario. Cyber Soirée 97 expanded the horizons to Los Angeles at the official residence of Canada's Consul General where one hundred Hollywood denizens were partied (virtually) with suburban residents in Newmarket Ontario, conference attendees in downtown Toronto and one thousand party-goers at Cityto's ShmoozeFest - a party for Toronto's International Film Festival.) [http://www.paulhoffert.ca/Academic\\_Researcher/projects\\_post1992.htm](http://www.paulhoffert.ca/Academic_Researcher/projects_post1992.htm) <http://www.paulhoffert.ca/Shared/phDocs/T041%20Cyber%20Soiree.pdf>

- **1996 \_\_ Degree Confluence Project** (The Degree Confluence Project is a World Wide Web-based all-volunteer project which aims to have people visit each of the integer degree intersections of latitude and longitude on Earth, posting photographs and a narrative of each visit online. The project describes itself as "an organized sampling of the world". The precise location of each degree confluence uses the WGS 84 horizontal datum, and visitors to degree confluences almost always make use of GPS receivers. For a successful visit, the visitor must get within 100 metres of the confluence point, and post a narrative and several photographs to the project website. A visit, or attempted visit, which does not conform to these rules may still be recorded on the website as an incomplete visit. The project encourages visits to degree confluences which have been visited previously, and many confluence points in North America and Europe have been visited several times. The project was started by Alex Jarrett in February 1996 because he "liked the idea of visiting a location represented by a round number such as 43°00'00"N 72°00'00"W. What would be there? Would other people have recognized this as a unique spot?" Another reason was to give people with a GPS unit something to do with it.) [http://en.wikipedia.org/wiki/Degree\\_Confluence\\_Project](http://en.wikipedia.org/wiki/Degree_Confluence_Project)

- **1996 \_\_ Distributed Musical Rehearsal Environment**, Dimitri Konstantas (May 30, 1996. In order to obtain a first idea and decide about equipment and studio installation a Distributed Rehearsal pre-trial was organized between CUI-Geneva and GMD-Sankt Augustin. The rehearsal was a singing rehearsal of two singers and a pianist, where one singer was in GMD and the second singer and the pianist were at CUI. Our target was to evaluate the subjective problems and set-up organization of the studios. The first results are very encouraging, according to the opinion of the singers. The rehearsal pre-trial organized was a singing rehearsal of a duet with a piano. The pianist (Luc Baghdassarian) and one singer (Laurent Dami) were in CUI - Geneva and the second singer (Frederic Meylan) in GMD - Bonn. The songs played were extracts from Mendel's "Israel in Egypt" and Britten's "Abraham and Isaac". The total duration of the rehearsal was 2 hours. Because no spatial sound information was needed for this rehearsal, monophonic audio channels were used for the audio transmission. The audio sent to GMD from CUI was the mixed audio signals of the piano and the singer, while the audio from GMD to CUI was the audio signal from the singer. To be noted that the same audio channel was used for the tuning and set-up information exchange between the engineers. The video sent from CUI to GMD included both the pianist and the singer at CUI. However the video sent from GMD to CUI was a mixing of the CUI video signal and of the GMD singer video. That is, the singer at GMD was placed at the left side of the image and the singer at CUI was placed at the right side of the image. This way each singer saw on the screen himself and the remote singer. The goal of the distributed rehearsal pre-trial was, on the one hand, to give us a first idea of the technical problems and issues related to the organization and setup of the rehearsal and, on the other hand, to give a first subjective appreciation of the feasibility and limitations of a distributed rehearsal. The most important issue in the singing pre-trial was how to synchronize the singers. The problem was that we had a delay of about 85 ms (one way) in the transmission of sound and image and thus it was impossible to be synchronized at both sites. If at one site the local singer was synchronized with the remote singer, then the remote singer would perceive a 190 ms delay of his peer. The way to resolve this problem is to use the notion of a central point where singing is synchronized. This can be either of the two sites or even a third site. In fact singing under this type of situation, that is long delays and synchronization of the audio at a central point only, appeared and mastered during the Renaissance at the Cori Spezzati, where in a large church the conductor was in the middle of the church and the singers were distributed all around at the church's balconies. Due to the size of the church the sound delay between

the singers could reach 200 ms or more (60 m distance) and the only point where the sound was synchronized was at the center of the church where the conductor was standing. Of course the difference of the Cori Spezzati and the distributed rehearsal is that in the later we not only have a delay in the sound but also a delay in the image. Thus the singers must anticipate the conductor (or one the other). Nevertheless a similar case has been faced in operas when the singers sing behind the stage where they are invisible to the conductor. The singers behind the scene have to anticipate the conductor in order to synchronize with the singers on the scene. The degree up to which synchronization can be achieved in the presence of delays also depends in the musical piece played. In the pre-trial two different songs were rehearsed. One by Handel (from Israel in Egypt) and one by Britten (from Abraham and Isaac). The Handel piece having a regular rhythm was easier for anticipating the remote singer. The Britten piece on the other hand did not have a regular rhythm, being free time music, and thus it was more difficult to anticipate the remote singer and synchronize. However in both cases after some test and trial the singers managed to synchronize their singing. In the pre-trial setup at CUI the image received and displayed was a mix of the GMD singer and the of the CUI singer (half screen each). The two images were mixed at GMD from their local video and the signal transmitted from CUI, and then were send to CUI. As a result the image of the CUI singer that was project at CUI had a delay of about 190ms. This confused the CUI singer since he was seeing himself with a quite long delay. This kind of setup should obviously be avoided in the trials. The participants should only be seeing their remote peers. An important technical problem we faced in the pre-trial was the fine tuning of the audio signals in order to fit the acoustics of the studios. In the pre-trial setup the sound from the remote site was reproduced using loud-speakers. This way the microphone of the singer also captured the reproduced sound from the remote singer which was then transmitted back to the remote site. As a result each singer heard the remote singer and his own voice delayed by approximately 190 ms. These artifacts and echo were extremely confusing for the singers. Since echo cancelers could not be used in this case we adjusted the gain of the microphones and the volume of the loud-speakers in order to eliminate the effect. For the trials we will also use more appropriate microphones and study the placement of the loud speakers, in addition we will experiment in using head-sets in order to eliminate echoing. Summarizing we can say that the pre-trial was very successful and highly encouraging since on one hand we obtained a clear idea of the technical problems involved (acoustics, image quality etc.) and on the other hand the artists were able to test the system and confirm its ability to be used for distributed rehearsals. Specifically the opinion of the singers was that a system like this one is usable as a tool and can be very well used for chamber music. Its usability remains to be tested however for large orchestras. One of the suggestions of the singers was to investigate whether it will be possible to disassociate the transmitted sound from the image, and test whether smaller delays can be achieved for the sound only. This way it will be easier for the singers to synchronize with the sound only (In fact this situation will be the inverse from the one observed in the Cori Spezzati, since it will be the image that will arrive with a long delay). Theoretically if we can disassociate the sound from the image we should be able to achieve a round trip delay in the order of the 20ms, which corresponds to a distance of only 6 meters. One major difference of the pre-trial and the trials that we will perform is that in the trials the musicians will all be in one room and the conductor will be in the other. As a result both sites will have synchronized sound, since the conductor communicates only visually. Nevertheless we plan to experiment with different two-site setups in order to evaluate the limitations and usability of the tool.) <http://asg.unige.ch/projects/dvp/DRpreTrial.html>

- **1996 \_\_ EIS Expanded Instrument System**, ISDN multisite concert, Pauline Oliveros (collection of technology : multiple delay processors, microphones, mixer, and controllers. The Expanded Instrument System (EIS) is a performer controlled delay based network of digital sound processing devices designed to be an improvising environment for acoustic musicians. [OLIVEROS, Pauline and PANAIOTIS, « Expanded Instrument System (EIS) », Proceedings of the International Computer Music Conference, (Montreal: 1991) pp. 404-407] [OLIVEROS, Pauline and GAMPER, David, « A Performer-Controlled Live Sound-Processing System: New Developments and Implementations of the Expanded Instrument System », Leonardo Music Journal Vol. 8 - 1998, pp. 33-38]) <http://citeseer.ist.psu.edu/392663.html> <http://www.paulineoliveros.us/>

- **1996 \_\_ Electronic Café International-HQ** (Electronic Café International-HQ began webcasting (streaming) live audio and video over the internet in 1996 as a way to augment experiences in 3D multiuser worlds. We chose to use a Java-based technology developed by Graham Technologies because it did not require that the viewer download and install anything - just go to our website, click, and view. ECI-HQ, Graham Technologies, and the LA-VR SIG demonstrated the first live video streaming on a screen in a 3D multiuser world.)

- **1996 \_\_ FutureSonic Festival**, Manchester (The first full Futuresonic festival in September 1996 was a defining event for the field, and its format has influenced events internationally. It featured adventures in sound and vision, experimental sounds & eclectic beats in a networked environment, mutant music machines, and digital demos and jamming sessions. Futuresonic was founded in 1995 as an open forum exploring music and digital art, featuring live events, discussion, technical experimentation and sonic exchange. It brings together leading figures from a variety of artforms and disciplines to explore the convergence of media, the collision of sound art and the tradition of popular electronic dance music that began with Jamaican dub, and the interface between music, visual art and media arts.) <http://www.futuresonic.com/>

- **1996 \_\_ Hidden Music of the Golden Gate Bridge**, Wang Po Shu, SoundCulture'96 (An installation based on the resonant

frequencies of the Golden Gate Bridge, Wang Po Shu's (Hong Kong/USA) work is placed in sight and sound of the bridge itself. A small gong tuned to one of the overtones of the natural resonant period of the bridge is placed to the north and in sight of the bridge itself. Currently undergoing a substantial seismic retrofit, the bridge will, in a few years, have an entirely different natural resonant period and, presumably, remain in place when the earth shifts beneath it. As it stands now, an earthquake of sufficient strength and correct periodicity - the pitch of the gong transposed down a half-dozen octaves - will vibrate the bridge right into the bay. Quietly illustrating the relative scales of the structural, geologic, and social resonances of the Golden Gate, the piece evokes both an unsettling reminder of the natural forces under our feet and a sense of uncertain technical advance mixed with approaching loss (the gong's tuning will be meaningless once the retrofit is done and, retrofitted or not, one day that bridge will fail.)

- **1996 \_\_ Holophon, Holospat**, GMEM Marseille (Holophon is a set of tools for the programming and real-time manipulation of sound trajectories across different speakers. There are two different software packages: HoloEdit and HoloSpat. Holo-Edit: A graphical and algorithmic editor of sound trajectories. Holo-Edit makes it possible to draw and graphically edit trajectories across a complex sound system. It's also possible to program those trajectories with different automatic functions. Holo-Spat: A group of spatializers working in real-time on Max-MSP, allowing the user to spatialize several sound sources independently over an array of multiple speakers. The control of the source trajectories can be made automatically by either using .holo files (made with Holo-Edit), directly by Holo-Edit using OSC or directly by various means in Max-MSP.) (Holophon est un projet destiné à doter le Gmem d'outils pour la spatialisation du son. Actuellement, Holophon regroupe les logiciels Holo-Edit et Holo-Spat mis au point au Gmem. Holo-Edit permet d'une part de dessiner et d'éditer graphiquement des trajets de sources sonores dans l'espace et d'autre part de programmer automatiquement ces trajets ou de les modifier à l'aide de divers algorithmes. Holo-Spat est un spatialisateur temps réel fonctionnant sous l'environnement Max/MSP et PureData, et s'occupe du rendu audio et dispose également de quelques fonctions de génération automatique de mouvements.) [http://dvlpt.gmem.free.fr/web/static.php?page=Holophon\\_main](http://dvlpt.gmem.free.fr/web/static.php?page=Holophon_main) <http://www.gmem.org>

- **1996 \_\_ « Hypermedia Freedom »**, Richard Barbrook ("In the near future, no nation will be able to compete within the global marketplace without a fibre-optic grid. Just as the building of railway, road, electricity, gas, telephone and water networks in the past laid the basis for modern urban living, the infobahn will provide the basic infrastructure for the next stage of capitalism. The fibre-optic grid will not only distribute entertainment and information, but also enable people to work collaboratively in almost every sector of production. (...) Given the history of the development of the PC and the Net, it seems more likely that the infobahn will emerge from the miscegenation of the public, private and community sectors. Yet, ironically, debate in the USA over the Telecommunications Reform Act hasn't been centred on whether or not unrestrained market competition between private companies is the only way to develop cyberspace. Instead, a fierce controversy has raged around an attempt to impose broadcasting-style content controls on the Net. (...) Over recent years, the advocates of the Californian Ideology have been claiming that eighteenth century liberal individualism would be miraculously reborn through the process of digital convergence. Yet, now online services are becoming available to the mass of the population, the collective nature of the new information society is becoming increasingly obvious. Within politics, electronic democracy will be at the centre of the relationship between representatives and their voters. Within all sectors of the economy, the infobahn will soon become the basic infrastructure for collaborative work across time and space. Crucially, this socialisation of politics and economics will be the best protection for individual freedom within cyberspace. Far from having to escape into a neo-liberal hyper-reality, people can utilise the new digital technologies to enhance their lives both inside and outside cyberspace. The electronic agora is yet to be built.") <http://www.hrc.wmin.ac.uk/theory-hypermediafreedom.html> <http://www.freescape.eu.org/eclat/>

- **1996 \_\_ Internet2 - or UCAID** (University Corporation for Advanced Internet Development) (Internet2 is formed as 34 university researchers gather in a Chicago area hotel on October 1, 1996 and commit to establishing a project to foster the development of networking capabilities that would not only support research and education, but would also eventually make their way into the global commercial Internet. Internet2 is the foremost U.S. advanced networking consortium. Led by the research and education community since 1996, Internet2 promotes the missions of its over 300 members by providing both leading-edge network capabilities and unique partnership opportunities that together facilitate the development, deployment and use of revolutionary Internet technologies. By bringing research and academia together with technology leaders from industry, government and the international community, Internet2 promotes collaboration and innovation that has a fundamental impact on the future of the Internet. Beyond just providing network capacity, Internet2 actively engages our community in the development of important new technology including middleware, security, network research and performance measurement capabilities which are critical to the progress of the Internet. Internet2 is a not-for-profit advanced networking consortium comprising more than 200 U.S. universities in cooperation with 70 leading corporations, 45 government agencies, laboratories and other institutions of higher learning as well as over 50 international partner organizations. The Internet2 Network's physical implementation is made up of several robust, logically different, but related networks, each on its own overlaid infrastructure. These networks include: 1/ Advanced IP network (provided by Juniper routers) 2/ Dynamic Circuit network (provided by the the multiservice switching capabilities of the Ciena CoreDirectors) 3/ Core optical network (provided by the Infinera platform). "In just 2 minutes and 41 seconds, it pulls down more than 500

megabytes of Linux code from servers at Duke University, a task that would normally take hours. Next, Alan Crosswell, of Columbia University, shows me a violin master class held via videoconference. The DVD-like resolution creates an immediacy that you don't get with choppy streaming video, and the better-than-CD audio allows both the teacher in Canada and the student in New York to hear every nuance. While Internet1 is open to pretty much anyone with a computer, access to Internet2 is limited to a select few, and its backbone is made up entirely of large-capacity fiber-optic cables. Rather than Internet1, which is cobbled together out of old telephone lines, Internet2 was built for speed—the roads are all wide and smooth, like your own private autobahn. Internet2 moves data at 10 gigabits per second and more, compared with the 4 or so megabits you'll get using a cable modem. As a result, Internet2 moves data 100 to 1,000 times faster than the old-fashioned Internet." [Alexander Russo]. In 2007, Internet2 said currently ten 10Gbps links are provisioned on each segment of the network, but can be scaled to 20, 40 or 100 or more wavelengths as required. They're currently working with Level 3, Ciena and Juniper to develop 40 and 100Gbps technologies.) <http://www.internet2.edu> <http://www.internet2.org> <http://www.internet2.edu/lsr/> <http://detective.internet2.edu>

- **1996** \_\_ **Internet Archive** (The Internet Archive was founded by Brewster Kahle in 1996. The Internet Archive (IA) is a nonprofit organization dedicated to maintaining an on-line library and archive of Web and multimedia resources. Located at the Presidio in San Francisco, California, this archive includes "snapshots of the World Wide Web" (archived copies of pages, taken at various points in time), software, movies, books, and audio recordings. To ensure the stability and endurance of the archive, IA is mirrored at the Bibliotheca Alexandrina in Egypt, the only library in the world with a mirror. The IA makes the collections available at no cost to researchers, historians, and scholars. It is a member of the American Library Association and is officially recognized by the State of California as a library. The Wayback Machine is a digital time capsule created by the Internet Archive. It is maintained with content from Alexa Internet. This service allows users to see archived versions of web pages across time—what the Archive calls a "three dimensional index." Snapshots become available 6 to 12 months after they are archived. The frequency of snapshots is variable, so not all updates to tracked web sites are recorded, and intervals of several weeks sometimes occur. As of 2006 the Wayback Machine contained almost 2 petabytes of data and was growing at a rate of 20 terabytes per month, a two-thirds increase over the 12 terabytes/month growth rate reported in 2003. Its growth rate eclipses the amount of text contained in the world's largest libraries, including the Library of Congress. The data is stored on Petabox rack systems manufactured by Capricorn Technologies. The name Wayback Machine is a reference to a segment from The Rocky and Bullwinkle Show in which Mr. Peabody, a bow tie-wearing dog with a professorial air, and his human "pet boy" assistant Sherman use a time machine called the "WABAC machine" to witness, participate in, and more often than not alter famous events in history.) <http://www.archive.org>

- **1996** \_\_ **irational.org**, Heath Bunting (Irrational is a loose grouping of six international net and media artists who came together around the server irational.org, founded by the British net artist Heath Bunting in 1996, going on to make decisive contribution to early net art from the mid-1990s onward. They include Daniel Garcia Andújar / Technologies to the People (E), Rachel Baker (GB), Kayle Brandon (GB), Heath Bunting (GB), Minerva Cuevas / Mejor Vida Corporation (MEX) and Marcus Valentine (GB). Irrational.org's goal is to use the media of a large-scale showing, workshops, and a comprehensive documentation to make these artistic-activist pieces more accessible to a general public. Irrational's early work commented the Internet hype of the mid-to-late 1990s, competing with the commercialisation-euphoria of the new market by developing its own pseudo-ventures. Moving on from net art Irrational now experiment with interrogating and overcoming economic, political, and social boundaries in real space, producing a great deal of comic relief, among other things) (IRATIONAL.ORG is an international system for deploying "irational" information, services and products for the displaced and roaming. IRATIONAL.ORG supports independent artists and organisations that need to maintain mission critical information systems. These 'Irrationalists' create work that pushes the boundaries between the corporate realms of business, art and engineering. Some sound projects : Diy net.radio guide, how to be a net caster (1998) - Jingles for the millenium, an online contest to find a jingle for the millenium, funded by everything magazine, london, UK (1998) - How to be Community Radio Station, technical information & equipment reviews (1999) - The world service, net.radio groupware, funded by Lovebytes, Sheffield, UK (1999) - Tm selector, a connoisseurs guide to online audio (1999) - radio90.fm - The London pirate listening station streams london FM pirate transmissions to the global community via the internet) <http://www.irational.org/> <http://www.irational.org/cgi-bin/cv/cv.pl?member=irational> [http://www.irational.org/radio/radio\\_guide/](http://www.irational.org/radio/radio_guide/) <http://www.irational.org/tm/millenium/> <http://radio90.fm> <http://scanner.irational.org> <http://duo.irational.org>

- **1996** \_\_ **JenniCam**, Jennifer Kaye Ringley (JenniCam (or JenniCAM)—subtitled "life, online"—was a popular website from April 1996 until the end of 2003. Several webcams allowed users to observe the life of a young woman, Jennifer Kaye Ringley (born August 10, 1976 in Harrisburg, Pennsylvania). Previously, live webcams transmitted static shots from cameras aimed through windows or at coffee pots. Ringley's innovation was simply to allow others to view her daily activities. Her pioneering efforts paved the way for later lifecasters such as Justin Kan, Justine Ezarik, Sarah Marie Austin and Justin Shattuck. In June 2008, CNET hailed JenniCam as one of the greatest defunct websites in history. Regarded by some as a conceptual artist, Ringley viewed her site as a straightforward document of her life. She did not wish to filter the events that were shown on her camera, so sometimes she was shown nude or engaging in sexual behavior. Surveillance became conceptual art, as noted by Mark Tribe in "New Media Art": "In Web sites like

JenniCAM, in which a young woman installed Web cameras in her home to expose her everyday actions to online viewers...surveillance became a source of voyeuristic and exhibitionistic excitement... Institutional surveillance and the invasion of privacy have been widely explored by New Media artists." In April 1996, during her junior year at Dickinson College, the 19-year-old Ringley installed a webcam in her college dorm room, and provided images from that cam on a webpage. The webpage would automatically refresh every three minutes with the most recent picture from the camera. Anyone with Internet access could observe the often mundane events of Ringley's life. JenniCam was one of the first web sites that continuously and voluntarily surveyed a private life. Her first webcam contained only black-and-white images of her in the dorm room. At times during the first couple years of JenniCam, Ringley performed stripteases for the webcam. This continued until an incident occurred wherein she received an email demanding that she do a "show." After she refused, JenniCam was cracked, and Ringley received death threats. The crackers turned out to be teen pranksters, but Ringley did no more stripteases after that. Initially, the camera tended to be turned off during especially private moments, but eventually this custom was abandoned, and images were captured of Ringley engaging in sex. With all details of Ringley's life on display, this was one of the first opportunities ever, in any medium, to legally observe the ordinary human sexual behavior of a complete stranger.) <http://en.wikipedia.org/wiki/JenniCam> <http://jennycam.net/>

- 1996 \_\_ **Liquid City Parkbad**, Michel Redolfi, Ars Electronica Linz « Memesis », ORF Kunstradio Vienna, CIRM Nice (Liquid Cities is a series of sound installations in which swimming-pools are transformed into three-dimensional, fluid and interactive spaces. The www page transmitted live the underwater echoes generated by all participants in the acoustic landscape. The acoustically perceivable movements of the guests swimming in the Parkbad, and the polyphony of the citizens of cyberspace, have so to speak taken up residence in the pool) <http://alcor.concordia.ca/~kaustin/cecdiscuss/1996/1225.html> [http://www.aec.at/en/archives/festival\\_archive/festival\\_catalogs/festival\\_artikel.asp?iProjectID=8573](http://www.aec.at/en/archives/festival_archive/festival_catalogs/festival_artikel.asp?iProjectID=8573)

- 1996 \_\_ **The Museum of the Future**, Ian Pollack, Janet Silk, SoundCulture'96 (This installation explores issues relating to the future and is accessible only through voicemail at (415) 522-0605. San Francisco's foremost telephonic artists, Pollack & Silk present a new work specially made for SoundCulture. Antiquarian exploration, colonization of the "New World," and scientific and technological innovations have influenced our notion of the future. Listeners are asked to explore these concepts of the future by means of a voice-mail system entitled Museum of the Future. Narratives, interviews, theories, information and sound bites related to the meaning of the future help the listener survey the conceptual shifts in the perception of the future.) <http://www.o-art.org/history/SoundArt/Soundcult96/96cultjam.html>

- 1996 \_\_ **Netfield**, Tim Perkis, Philip Perkins, Bill Thibault, SoundCulture'96 (A collaboration between three Bay Area sound & computer artists, the piece will create a spatial sonic environment accessible to users of the World Wide Web. Twenty five continuous environmental recordings made by Perkins from a diverse range of environments around the globe are organized into a two dimensional world ranging from wet to dry along one dimension and urban to rural along the other. Listeners at internet-connected computers anywhere can move through this spatialized sound field, using software they download from the piece's server site. After downloading and starting up the client application, users could move through the Netfield world by using the arrow keys on their keyboard; as they passed from one zone to another, the sounds would smoothly mix and be spatialized using a custom 3d sound spatialization system. The site (<http://www.ins.com/sc96.html>) creates "a spatial sonic environment" composed of urban and rural environmental recordings from around the world.) <http://www.o-art.org/history/SoundArt/Soundcult96/96cultjam.html>

- 1996 \_\_ **Ozone**, Stephan Barron, Adelaide Festival (OZONE uses two pianos, one in the Sym Choon Gallery in Adelaide, the other in Donguy Gallery in Paris, France. They are "played" by an automatic procedure that has two sources. One measures the amount of ozone pollution produced by automobiles in the streets of Paris. The other measures the high UV levels due to ozone depletion over Adelaide. Barron describes the process: "Two acoustic computerised pianos located, one in Europe, and the other in Australia exchange sounds produced according to the ozone coming on one side from the Parisian automobile pollution, and on the other side according to the hole in the ozone stratospheric layer. This installation is a metaphor of an "Ozone Pump" between Europe and Australia, between man and nature. This music is elaborated not by one person, but by human activity on a planetary scale (pollution of the ozone) and by interaction with the sun." OZONE links North and South in a dynamic dialogue regarding the future of the planet. It's also a healing process that converts the symptoms of the problem as manifest into digital tokens that simultaneously express sorrow for the harm whilst also creating a symbolic exchange, a gift of ozone, that inverts the process of depletion and invokes reversal of the physical damage that is being done. "The project also expresses the immateriality and complexity of the phenomena with which contemporary man is confronted. The ozone and the UV rays are factors of complex phenomena where human physiology interacts with economic development") [http://stephan.barron.free.fr/technoromantisme/barron\\_projets.html](http://stephan.barron.free.fr/technoromantisme/barron_projets.html) <http://www.paul-brown.com/WORDS/NETART.HTM>

- 1996 \_\_ **Ping Body**, Stelarc (At the November 1995 Telepolis 'Fractal Flesh' event, Paris (the Pompidou Centre), Helsinki (The

*Media Lab*) and Amsterdam (for the Doors of Perception Conference) were electronically linked through a performance website allowing the audience to remotely access, view and actuate Stelarc's body via a computer-interfaced muscle-stimulation system based at the main performance site in Luxembourg. Although the body's movements were involuntary, it could respond by activating its robotic Third Hand and also trigger the upload of images to a website so that the performance could be monitored live on the Net. Web server statistics indicated the live event was watched worldwide. During the Ping Body performances, what is being considered is a body moving not to the promptings of another body in another place, but rather to Internet activity itself - the body's proprioception and musculature stimulated not by its internal nervous system but by the external ebb and flow of data. By random pinging (or measuring the echo times) to Internet domains it is possible to map spatial distance and transmission time to body motion. Ping values from 0-2000 milliseconds (indicative of both distance and density levels of Internet activity) are used to activate a multiple muscle stimulator directing 0-60 volts to the body. Thus ping values that indicate spatial and time parameters of the Internet choreograph and compose the performances. A graphical interface of limb motions simulates and initiates the physical body's movements. This, in turn, generates sounds mapped to proximity, positioning and bending of the arms and legs. The Ping Body performances produce a powerful inversion of the usual interface of the body to the Net. Instead of collective bodies determining the operation of the Internet, collective Internet activity moves the body. The Internet becomes not merely a mode of information transmission, but also a transducer, effecting physical action. The performance was carried out with the assistance of Gary Zebington (programming and graphics), Rainer Linz (sound design), Dmitri Aronov (Unix ping software), Mic Gruchy (video) and the Merlin crew in general. The artist has also consulted Adam Burns (Pegasus), Andrew Garton (Toy Satellite) and Andrew Pam (State Film Centre). [Stelarc]. In 1996 STIMBOD was integrated into the performance, Ping Body. Internet activity was represented by body movements throughout the performance - "the body's proprioception and musculature stimulated not by its internal nervous system but by the external ebb and flow of data." Stelarc describes Ping Body as producing "a powerful inversion of the usual interface of the body to the Net. Instead of collective bodies determining the operation of the Internet, the collective Internet activity moves the body. The Internet becomes not merely a mode of information transmission, but also a transducer, affecting physical action." [Andrew Garton]) <http://www.stelarc.va.com.au/pingbody/index.html>

- 1996 \_\_ **Rara Avis**, Eduardo Kac (a telepresence work by Eduardo Kac linking Nexus Contemporary Art, in Atlanta, to the Internet through three protocols: CU-SeeMe, the Web, and the Mbone (June 28-August 24, 1996). In this work local and remote participants experienced a large aviary from the point of view of a telerobotic macaw.) <http://www.ekac.org/raraavis.html>

- 1996 \_\_ **Rivers and Bridges** - Backward Translation as a Creative Strategy, Jocelyn Robert, Janos Sugar, Roberto Paci Dalò, world-wide project for radio and all communications media (Internet, BBS, Telephone, Fax, etc.), ORF Kunstradio Vienna / Linz, Ars Acustica International, Ars Electronica (Any new or ongoing project including RIVERS and/or BRIDGES is automatically a part of RIVERS&BRIDGES. Projects with a communications element can be linked via radio or Internet. Metaphorical Rivers and Bridges are also RIVERS&BRIDGES. Think a river -- imagine a bridge! There will be a day of live interactive events (Radio, Internet, Fax, Phone -- everything) on September 5'96. R&B RADIO & SOUND - 1) ACOUSTIC POSTCARDS ( max. 3-4min); Anything to do with rivers and bridges -- soundscapes, stories, legends, events, documentaries .... 2) Texts, poems, excerpts of novels, essays about Rivers and Bridges. Send a disc for internet text-files and a tape (in original language) for broadcast.) [http://kunstradio.at/RIV\\_BRI/](http://kunstradio.at/RIV_BRI/) <http://alcor.concordia.ca/~kaustin/cecdiscuss/1996/1115.html>

- 1996 \_\_ **Small Web or Belly Web**, Michel Waisvisz (The small web has been designed as an instrument for complex control signals. Simple intuitive finger movements in the wires of the web are translated in a large set of coordinated control variables that can be used to control various inputs of music or image systems in a coordinated manner. The Web is very well suited for controlling timbral sound structures and live control of computer generated images. The Small Web was designed by Waisvisz and built in collaboration with Jorgen Brinkman from STEIM. Jorgen Brinkman is using the Small Web in the performances of his Seven Seas.) [http://crackle.org/Waisvisz%20Small%20Web%20\(Belly%20Web\).htm](http://crackle.org/Waisvisz%20Small%20Web%20(Belly%20Web).htm)

- 1996 \_\_ **SoundCulture'96** (SoundCulture 96 April 3-13, 1996, the San Francisco Bay Area will host SoundCulture 96, the third transpacific festival of contemporary sound practices. It follows two highly successful SoundCulture events presented in Sydney in 1991 and Tokyo in 1993. Participants will include artists, researchers, cultural theorists, presenting organizations, academic institutions, and others working with sound. Events will include performances, exhibitions, symposia, radio transmissions, experimental and indigenous musics, and new media arts. As well, listening rooms will provide an opportunity to hear a wide variety of recorded sound works in an informal setting. SoundCulture 96 will bring together local and international sound practitioners of the Pacific to explore the varieties of culture that are perceived through our ears.) <http://www.o-art.org/history/SoundArt/Soundcult96/Soundcult96sched.html>

- 1996 \_\_ **Soundwalk**, Landa Townsend, SoundCulture'96 (Landa Townsend leads a silent night walk across the hills of the Marin Headlands.)

- **1996** \_\_ **SuperCollider** (*SuperCollider is an environment and programming language originally released in 1996 by James McCartney for real time audio synthesis and algorithmic composition. Since then it has been evolving into a system used and further developed by both scientists and artists working with sound. It is an efficient and expressive dynamic programming language which makes it an interesting framework for acoustic research, algorithmic music and interactive programming. Released under the terms of the GNU General Public License in 2002, SuperCollider is free software. Since version 3 the SuperCollider environment is split into a server, scsynth, and a client, slang, that communicate using OpenSound Control. SC Language combines the object oriented structure of Smalltalk and features from functional programming languages with a C family syntax. The SC Server application supports a simple C plugin API making it easy to write efficient sound algorithms (unit generators) which can then be combined into graphs of calculations. Due to the fact that all external control in the server happens via open sound control, it is possible to access its functionality from other languages or applications. As a versatile dynamic programming language, SuperCollider can be used for live coding, i.e. performances which involve the performer modifying and executing code on-the-fly. A specific kind of proxies serve as high level placeholders for synthesis objects which can be swapped in and out or modified at runtime. Environments allow sharing and modification of objects and process declarations over networks. Various extension libraries support different abstraction and access to sound objects, e.g. dewdrop\_lib allows for the live creation and modification of pseudo-classes and -objects. SuperCollider consists of two separate applications: the server (sound synthesis engine), and the client application to control it. Because the communication uses OpenSound Control, a variety of applications can be used to control the server including systems such as Pure data. "Third-party" clients for the SuperCollider server exist, including rsc3, a Scheme client, and hsc3, based on Haskell*) <http://supercollider.sourceforge.net>

- **1996** \_\_ **Syndicate** (*The Syndicate mailing list was set up in 1996 as a translocal communication network above all between artists, curators and critics based in eastern Europe who work with New Media. Precisely because the situation of the art scenes in these countries was comparable, it seemed to make sense to communicate and collaborate regularly with each other and to forge a strategic alliance. Meanwhile, Syndicate has become a means of acting as a platform for and »extended Europe« in the media-art landscape. A revised structure of the dialogue is given in the readers, of which the fourth issue is presented in theLounge.*) <http://mail.v2.nl/v2east/> <http://sympa.anart.no/sympa/info/syndicate>

- **1996** \_\_ **Technologies To The People®**, Daniel García Andújar (*Technologies To The People® is a work in progress. It's a metaphor about the use of technologies while acting as a public provocation, I am creating a virtual company that exists only as an artist project, it operates really for the rest of society. Technologies To The People' works with the media infrastructure of corporate companies Technologies To The People' usually sponsors art events in its representation policies. Technologies To The People® is aimed at people in the so-called Third World as well as the homeless, orphaned, expatriated or unemployed, at fringe groups, runaways, immigrants, alcoholics, drug addicts, people suffering from mental dysfunctions and any other categories of "undesirables", at all those without social ties and unable to find a safe place to live, at all those who have to beg in order to survive. Technologies To The People® is for people denied access to the new information society and new technologies, for all those living in the confines of new and alien borders. Technologies To The People® wants to facilitate your access to the information society. Technologies To The People® wants more people to be networked. Technologies To The People® has developed and manufactured the Street Access Machine® specifically for the fringe groups named above. The machine can be used 24 hours-a-day with all credit cards (cybercash). With the Street Access Machine®, credit cards are now welcome everywhere - including the street. All you need to do is install a Street Access Machine® and problems with begging will be a thing of the past. Those wishing to donate money to the needy simply present a credit card and stipulate the sum they are willing to part with. The destitute can withdraw the money from a cash dispenser using their Recovery Card® in conjunction with a personal password. Simple to use and interest-free. All-round credit card service for one and for all.*) <http://www.irational.org/ttp/primera.html>

- **1996** \_\_ **Tele-concert Sensor Band/Les Virtualistes** (*Concert multi-points Festival audiovisuel/Nancy, le IAMAS/Gifu et Sydney*)

- **1996** \_\_ **Telematic Encounter**, Paul Sermon (*Two dispersed installations are connected via an ISDN teleconferencing link, enabling audio and video communication between the two sites. The first installation (location 1), the main gallery installation consists of a table and chair on a carpet surrounded by three monitors. A camera, suspended from at a 45 degree angle to the table from the ceiling, sends a live image of a person sitting at the table to the second installation (location 2), via the ISDN teleconferencing link. The image is received in location 2 and fed directly to a digital chroma-keyer. The installation in location 2 is identical (chair and table) to location 1, the camera is suspended in exactly the same way, and this image is also sent to the digital chroma-keyer. The two identical installation images are chroma-keyed together into the same image. The two dispersed users sitting at the separate tables sit at the same telepresent table. The only difference between the two installations is that the table, carpet and back drop in location 2 are all painted chroma-key blue, only the chair and various draws - contained within the table, are wood in colour. This allows only these objects, and the user, to be keyed on top of the image from location 1. All the blue objects in location 2 appear as invisible in the final chroma keyed image. Both tables contain draws around the top and on the legs. It is only possible to*

open certain draws in Location 1, the draws that are fixed correspond to the draws that can only be opened in location 2. The two users discover that they are able to open the draws and find certain props that allow a narrative structure to unfold. Some draws will contain music on opening, a bottle of wine, a glass, a candle, a table cloth, a knife, a letter, a gift and more. The scenario and its props will resemble the narrative structure of a silent movie melodrama - the fixed camera position, the exaggerated gesture of expression and the experimental use of the teleconferencing media.) <http://www.hgb-leipzig.de/~sermon/encounter/>

- 1996 \_\_ **Three Sites / Multiple Views** : NYC / Santa Monica / Santa Fe, Electronic Café, Morton Subotnick. Mark Coniglio, Dawn Stoppello/Troika Ranch, Joan La Barbara, Carl Stone, Michael Fink (A special five-day long teleconcert presented by Cal Arts' Center for Experiments in Art, Information and Technology (CEAIT), sponsored by AT&T and featuring work by Morton Subotnick) <http://www.ecafe.com/1996.html> <http://www.vasulka.org/archive/Vasulkas3/Video/Elsewhere/ThreeSites.pdf>

- 1996 \_\_ **Türen der Wahrnehmung-Doors of Perception**, ORF Kunstradio, Ars Electronica, Hlidegard Westercamp

- 1996 \_\_ **Uirapuru**, Eduardo Kac (was shown from October 15 to November 28, 1999, at the InterCommunication Center (ICC), Tokyo. A flying fish hovers above a forest in the gallery, responding to local as well as Web-based commands. Audio and video from its point of view are streamed on the Web. Local and remote participants interact with the avatar of the flying fish in a virtual world. When this happens the flying fish sings in the gallery. "Pingbirds" (robotic birds) sing Amazonian bird songs in the gallery in response to the rhythm of Internet traffic. Pingbirds monitor the rhythm of the Internet by sending ping commands to a server in the Amazon. This work unites telepresence, multi-user virtual reality, and networking into a single realm of experience.) <http://www.ekac.org/uirapuru.html>

- 1996 \_\_ **Vocales**, Jérôme Joy ("Vocales" is a network music using the web as a "room". The first approach of Joy of the Internet was conceived as an extension of sound studio. In a studio devices and machines (computer, synthesizers, samplers, and so on) are connected together by wires as a 'local' network. The access to the Internet at this time has appeared for Joy to shift to local towards 'wide' network. Thus servers and connected users' computers could become remote controlled machines in order to play and compose music. In analogy of MIDI language between local devices, Joy developed Vocales with programming scripts by using sound processors (of listeners' PCs) as synthesizers, with the help of speech synthesis implemented at this time by Apple. The digital speech technology was a feature of sound synthesis on Macintoshes. So by programming non-standard commands and controls on speech synthesis (by slowing down a vowel it became a sound wave, and by accelerating consonants - plosive, labial, dental, fricative - they became elements of percussions), it was possible to 'compose combinations and surimpositions of sounds, and the programmed scripts became the scores. By connecting on the website, listeners automatically downloaded (by an embedded plug-in in their browser) the various files of sound commands that was played on their own computers (their own sound processors) and could be listened on loudspeakers at home. The various latencies of these data streamings were due to the narrow bandwidths at this time (even if it was only script files, not audio ones), and provoked variations and differences in playing. For example, one part of the work proposed to download the same script file simultaneously several times, but the polyphonic unison were troubled by the latencies and created shifted drones or rhythmic patterns. Thus this agogic feature (variations in time) was completely integrated in the work : the music seemed to be never the same, to have no beginning and no end (except the decision of the listener to connect to or to quit the website), and because the process used aleatoric engines in order to combine and surimpose the script files, the variations were continuous and unpredictable. This musical work invests a range of questions related to the status of production and diffusion : its continuous access opposite to the difficulty of circulation of a musical piece and the fact it could be play again, its potential of variations depending on characteristics of the media (networks, Internet) which announced the concept of "networks as an instrument", its use of metadata (lines of codes) instead of full audio, and consequently the necessity to be played on local places, generally at home with personal means. The title directly referred to the hijacking of vocal synthesis features : if the work uses vocal templates and choral references, but with unusual sounds - as whispers, fast rates, extreme pitches, etc.), very quickly it becomes an electronic musicwork mixing sound waves, clicks, drones, and so on.) <http://jeromejoy.org>

- 1996 \_\_ « **Waiting for the nomads. Mobile telephony and social change** », Chantal de Gournay (The rapid development of mobile communication points to an overall change in society towards a more nomadic lifestyle. Apart from the technological aspect, other criteria also indicate such change. This article analyses the quasi-anthropological dimensions of the phenomenon, and the mutations in ways of working and in the very notion of a tool used to communicate in mobile situations. Clearly, with the spread of mobile terminals, the concept of a network is set to change. Hitherto associated with the rationality of the State and its control over a territory, how can networks avoid this control without changing fundamentally? [In *Réseaux. Communication – Technologie – Société*, Année 1996, Volume 4, Numéro 2, pp. 333-350]) [http://www.persee.fr/showPage.do?urn=reso\\_0969-9864\\_1996\\_num\\_4\\_2\\_3317](http://www.persee.fr/showPage.do?urn=reso_0969-9864_1996_num_4_2_3317)

**1997**[BACK](#) - [TOP](#) - [NEXT](#)

- 1997 \_\_ ? (3h of a network electronic music concert between Paris and Tokyo. [Anne Roquigny])

- 1997 \_\_ **491.org** (194.98.174.16) (491.org was a anonymous server dedicated to art students in France from 1997 to 2000. A pool of art teachers / artists (Paul Devautour, Jérôme Joy, Éric Mailliet, Gilles Grand) decided to launch and propose this open hosting ftp and web space without walls outside of schools of arts. The accesses were free with no privileges and no selection, the participants managed themselves the moderation of this space. The frontpage was only the access to the server root with a list of folders. Later, because of the number of projects, the frontpage was designed with lists of projects per year. A lot of young artists who began to develop on the web were emerged from this workspace : Téléférique (art collective), Patrick Bernier, Jens Gebhart, Ludovic Burel (API), and so on. The name of the server was issued from 291, a gallery conceived as an art lab in 1905 and founded by Alfred Stieglitz in New York (291 was the street number of the block on 5th Avenue), a revue was released some years after under the same name, Revue 291, et 391 was another revue founded by Picabia with Marcel Duchamp and Man Ray in Barcelona in 1917 with the help of Stieglitz.) <http://jeromejoy.org>

- 1997 \_\_ « **Acoustic Cyberspace** », Erik Davis (A talk delivered at the Xchange conference, Riga, Latvia, November 1997. "In this essay I'd like to talk about some abstract ideas, some images, some open-ended notions about acoustic space. Based on a talk delivered at the Xchange conference, Riga, Latvia, November 1997. In particular, I am interested in the relationship between electronic sound and environments, on the Internet or in music. I won't talk about the various technologies involved; instead, I'll try to get at some of the deeper issues about sound and the ways it constructs subjectivities and can act as a kind of map. (...) Acoustic space is the space we hear rather than the space we see, and McLuhan argued that electronic media were submerging us in this acoustic environment, with its own language of affect and subjectivity. Acoustic space isn't limited to a world of music or sound; the environment of electronic media itself engenders this way of organizing and perceiving the other spaces we intersect. Acoustic space is capable of simultaneity, superimposition, and nonlinearity, but above all, it resonates. "Resonance" can be seen as a form of causality, of course, but its causality is very different than that associated with visual space, because resonance allows things to respond to each other in a nonlinear fashion. (...) Where visual space emphasizes linearity, acoustic space emphasizes simultaneity—the possibility that many events that occur in the same zone of space-time. In such a scheme, a subject—a person, maybe—organizes space by synthesizing a variety of different events, points, images, and sources of information into a kind of organic totality. This isn't true in the strictest sense, but, nonetheless, our thoughts and perceptions can tend towards this simultaneity: we sense many things at once, and combine them into a coherent if fragmentary whole. (...) How can we create a space where perception and subjectivity are sucked into an alternate dimension, an alternate kind of space? This is a central narrative about virtual reality; there are many, but this a very strong one. In many ways, it's a naive narrative. Yet the first time I experienced 3D audio, I was transported far more viscerally than in any of the far more sophisticated visually-based virtual reality installations. (...) "Atmosphere" might be a good way to describe this aspect: sound produces atmosphere, almost in the way that incense—which registers with yet another sense—can do. Sound and smell carry vectors of mood and affect which change the qualitative organization of space, unfolding a different logic with a space's range of potentials. Ambient music, or an ambient soundscape, can change the quality of a space in subtle or dramatic ways. (...) We've seen some interesting experiments and opportunities with the use of RealAudio on the Internet, for example. But, more than that, I'm interested in getting people to think about the larger implications of sound and acoustics. Not as simply a vehicle for communicating information or establishing dialog between far-flung actors; and not simply as electronic music, a genre of activity and expression that, however fascinating, is commodified and compartmentalized from our "other" activities and experiences. A broader understanding of acoustic space is what I'm after: I'm really talking about different dimensions of the kind of subjectivity that we produce in networked environments. This dimension is profound, and we should consider it, work with it, explore it. (...) Our situation now has a bit of *deja vu* about it: when the ability to communicate via wireless telegraphy occurred, it was absorbed into—and contributed to—the construction of a utopian imagination, in ways that strongly resemble some of the rhetoric surrounding information technology. (...) Imagine for a moment what the radio spectrum presented—a space that was not a space, wide-open, unknown, literally cosmic. As people began to interact with the world of vibrating waves, a sort of "hacker" culture develop around it: people began to build their own crystal sets and talk to with others in unknown places, exchanging information and building their own networks. In fact, broadcast radio emerged from the ground up—from these smaller radio hackers deciding to broadcast music and news. This is very much like what we associate with the Internet's cultural development. (...) Now, Internet "radio" isn't radio; it does not exploit the spectrum, and that is a big difference. (...) It's incredibly important to maintain electronic communications media as a space of openness, of indetermination, of the affects of the unknown. What made early radio so exciting, in terms of the technical, the social, and the imaginative, was its openness: it was a space that wasn't entirely defined, wasn't totally mapped. More than that, I think, it was an acoustic space, which opened up a different logic. And that's happening again: the acoustic dimension of electronic media, and particularly of the Internet, offers an opportunity that is very different than simply providing more information, or making more web sites, or more entrancing animations. (...) Acoustic

spaces can create different subjectivities; they open possibilities and potentials—particularly on an aesthetic and informational levels—that can help us feel our way through the spaces we are opening up and moving into. (...) By pushing the boundaries of electro-acoustic environments, of acoustic cyberspace, we can maintain a line into the open spaces of the unknown.” <http://www.techgnosis.com/acoustic.html> <http://www.electronicbookreview.com/thread/musicsoundnoise/electronic>

- **1997 \_\_ Algorithmic Music Stream**, Maurice Methot, Hector LaPlante, Brown University (The Algorithmic Stream began in 1997 at Brown University. Maurice Methot and Hector LaPlante developed one of the earliest streaming audio systems using free software from Progressive Networks / RealAudio to develop a web channel that was easily accessible on the Internet over dialup. The content was unique: music which was played live and in realtime by computer systems in continuous, uninterrupted, and non-repeating structures and in long and extended time scales. This was (and is) ambient music, or “furniture music” (as Eric Satie called it). Methot and LaPlante relocated the system to Southern Illinois University and found the Stream’s audience had expanded to global proportions - it was clear that the Algorithmic Stream had found its community. The Algorithmic Stream broadcasts non-repeating computer-generated sound and music live and in realtime as it is produced. The composers whose projects are presented on The Algorithmic Stream use the MAX/MSP development language to investigate the creative possibilities of computer controlled/generated sound. The Algorithmic Stream is currently made possible through a grant from Emerson College in Boston, Mass. The Stream is a collaborative project which seeks submissions from like-minded composers, sound artists, and musicians who are interested in exploring long-scale musical structures and ambient sound, the mapping of mathematical formulae to sound and musical structure, machine control, chaotic systems, and other manifestations of modern computer and machine music. The Stream is seeking submissions in the form of MAX-based projects that are designed to continue without interruption for timescales measured in weeks. All music broadcast on the Algorithmic Stream is 100% computer - generated. Currently, the Stream is available in Windows Media format only, which makes it easily receivable on any Windows-based client, but slightly less so on a Mac.) [http://pages.emerson.edu/faculty/m/maurice\\_methot/stream/newstream.html](http://pages.emerson.edu/faculty/m/maurice_methot/stream/newstream.html)

- **1997 \_\_ Art’s Birthday** (Following the death of Robert Filliou in December 1987, it seemed natural for a network to form around Art’s Birthday. In the 1990’s, in Canada, it was often used as a basis of protest against the severe cuts to Art’s funding that were happening at that time. In 1989, the Western Front started to hold annual events on January 17th. These events varied in scope from year to year, sometimes involving a few participating nodes, and other times developing larger international networks. 1997 | Fax Art Network. - 1996 | 24 Hours of Radio/ART on Private Radio FM 89.3 MHz. - 1994 | Imag(in)ing Network. - 1993 | Art’s Birthday Celebration and Protest | MIDI Jam with the ZERO Project in Innsbruck Austria. - 1992 | Art’s Birthday (with Robert Adrian in residence) - 1991 | International Festival of Telecommunications Art - 1990 | National Public Holiday - 1989 | Hyper Space Radio. “Art’s Birthday” is an annual event first proposed in 1963 by French artist Robert Filliou. He suggested that 1,000,000 years ago, there was no art. But one day, on the 17th of January to be precise, Art was born. According to Filliou, it happened when someone dropped a dry sponge into a bucket of water. Modest beginnings, but look at us now. Filliou proposed a public holiday to celebrate the presence of art in our lives. In recent years, the idea has been taken up by a loose network of artists and friends around the world. Each year the Eternal Network evolves to include new partners - working with the ideas of exchange and telecommunications-art. Artists have celebrated Art’s Birthday with lavish parties and gatherings, correspondence and mailart, and through Telematic networks using SloScan TV, Videophones, music composed for telephone lines, modem-to-modem MIDI connections, early bulletin board and chat systems, and (starting in the mid 1990’s) the Internet.) <http://www.artsbirthday.net>

- **1997 \_\_ Audible Distance**, Akitsugu Maebayashi (Three subjects can enter a dark, square space, equipped with a head mounted display and sensor system. In this space, their heartbeat is converted into audible pulses and visible globular shapes. The pulses and shapes are the only signals that make the position of each person perceptible. The subjects become aware of space between them not by their physical appearance or voice but in the form of virtual space made visible and audible. Three participants enter a pitch-dark room 5 x 5 meters in size, equipped with head-mounted displays and sensor systems. Spherical graphic objects shown on the displays, and the amplified sounds of the other participants’ heartbeats are the only means of locating each other. One can measure the degree of intimacy in personal relationships by the distance between individuals, as we generally back off when meeting strangers but move closer in the case of friends. MAEBAYASHI Akitsugu encodes optically and acoustically through variable sounds and images of pulsating spheres the “distance” between individuals that is usually determined instinctively, and anonymizes the persons concerned by highlighting only the relationships among them. In the case of the participants at “Audible Distance”, the visible/audible and the real “distance” between them get mixed up, according to whether the three are strangers, friends, or a mixed group of two friends and an unknown third. This work is at the same time an experiment to show how people choose to communicate when they are uncertain about their relationships to those around.) [http://www.nticc.or.jp/Archive/2005/art\\_meets\\_media/Works/work10.html](http://www.nticc.or.jp/Archive/2005/art_meets_media/Works/work10.html)

- **1997 \_\_ Biennale’ 97**, NTT ICC Tokyo (“As the twenty-first century is just around the corner, we are enjoying the benefits of advancement of technology more than ever. Highly networked communities emerge and the world today appears to be in a highly complicated state. Art has always been in close connection with science in the course of history. It would be no surprise that technological/media art have been enjoying a great attention recently. In the meantime, many artists today may feel that they live in

a time of great changes in history. ICC Biennale was planned to discover and support new talent in the technological/media art. Exhibitions are held bi-annually in the form of a competition. ICC Biennale '97 is the very first exhibition of this enterprising project. The theme of the first exhibition is "communication/discommunication." ICC requested eight contributors to recommend artists as candidates for participation in the Biennale. Among forty-one artists recommended, thirty-five artists submitted proposals for works in accordance with the theme of the exhibition. The judges for the Biennale held a meeting on the 22nd and the 23rd of October, 1996, as the first screening. Ten artists were selected to produce and exhibit proposed works at the exhibition." [http://www.ntticc.or.jp/Archive/1997/ICC\\_BIENNALE97/](http://www.ntticc.or.jp/Archive/1997/ICC_BIENNALE97/)

- **1997** \_\_ **Bitplane (AER)**, product bureau (bit plane is a highly compact spy plane, wingspan 20 inches: radio-controlled, video-instrumented and deployed over areas of scenic interest. Due to its refined dimensions bit plane is able to enter territory inaccessible to other aircraft. Pioneering flight: in an aerial reconnaissance over the Silicon Valley California 1997, bit plane flew solo and undetected into the glittering heartland of the Information Age. Video generated in this exercise includes footage retrieved over no-camera zones Apple, Lockheed, Nasa Ames, Netscape, Xerox Parc, Interval Research, Atari, Hewlett Packard, Oracle, Yahoo, SGI, Sun Microsystems.) <http://www.bureauit.org/plane/>

- **1997** \_\_ **Cathedral Project**, William Duckworth & Nora Farrell (Incorporating both acoustic and computer music, live webcasts, and newly created virtual instruments, Cathedral is one of the first interactive works of music and art on the web. Using the virtual instrument called the PitchWeb, website visitors perform online with each other and with The Cathedral Band, musicians who give periodic live performances from venues worldwide. While the Band is improvising online, website visitors play along with them by moving shapes that trigger sound samples. On line since June 10, 1997, the Cathedral website includes both acoustic and computer music, live webcasts with improvising ensembles from all over the world, and new virtual instruments called Chaos, the Sound Pool, and the PitchWeb that can be played by anyone and allow the Web audience to interact with the site. Duckworth explains: "Cathedral deviates from the traditional concert model where audiences attend a scheduled performance at a fixed place and time in that the venue, time, and location of performance, and even the performers themselves (both live and virtual) are variables. Time, for example, is no longer a factor in a piece of music that is always available, that has no beginning, middle, or end, and that no two people listen to in the same order or for the same length of time. For listeners on the Web, the effect is individual, and more like exploring an art gallery than attending an opera.") [Duckworth W., « Making Music on the Web », Leonardo Music Journal, Vol. 9, Dec. 1999] [Duckworth W., «Virtual Music – How the web got wired for sound », Routledge Publishing, 2005] <http://cathedral.monroestreet.com/> <http://www.monroestreet.com/Cathedral/main.html> (2004 version)

- **1997** \_\_ « **Connected Intelligence : The Arrival of the Web Society** », Derrick de Kerckhove (The question that McLuhan Program Director Derrick de Kerckhove asks is what happens when the amplified and accelerated intelligence of humans equipped with high-powered computers in the tens of millions connects on the Net? What might we expect from all of this networked intelligence? With the ability to construct and inhabit entirely new virtual environments, a "new ecology of networks" comes into existence according to de Kerckhove. In Connected Intelligence he identifies three principles at work in this new virtual ecology: 1. Interactivity, the physical linking of people, or communication-based industries (the industries of the body). 2. Hypertextuality, the linking of contents or knowledge-based industries (the industries of memory). 3. Connectedness, or webness, the mental linking of people, or the industries of networks (the industries of intelligence). The sum of these three principles results in humanity becoming "interconnected", which leads to a connected sensibility, and hence new social and personal cognitive habits. "Satellites figure importantly in the equation in that they give humanity the agency and the image of the new planetary scale of its reach; the new proportions of its collective body image. As individuals and as a species, we can begin to see the growing connections between our selves, our bodies, and our minds on the one hand and the planet on the other. Together, interactivity, hypertextuality, and connectedness constitute the basis for the planetization of ordinary people as well as organizations, nations, and continents, by a permanent, self-updating synergy of local computers, global networks, and satellites." "If we were to internalize the consequences of our technological innovations, especially those which extend our sensory reach well beyond our natural body's abilities, we would soon conclude that the standard psychology we have learned at home and in school, our everyday self-image, simply does not fit the scale that is now becoming the norm. If, for two thousand years, man was "the measure of all things," today the planet is the measure of all things. The change of scale brought to the content of our technology needs to be accompanied by a comparable change of scale in our psychological makeup. We might say that satellites globalize the Earth for the common person [sic]. They make the planet whole again. Psychologically speaking, this situation is not entirely unprecedented, insofar as most ancient cosmogonies and most aboriginal religions did and do cultivate a sense of the world's unity." If there is a concerted effort to interconnect with all peoples, which is made fathomable by technology, it is possible to start seeing ourselves as a whole. The Global Justice movement is doing just that. The key idea is that if we are oppressing others or destroying the environment, we are essentially oppressing and destroying ourselves. As a race of people, we need to make strides towards human liberation and reclaim our environments. Technology can be extremely beneficial to us in these respects. de Kerckhove summarizes his argument with a call to action: "With the common nervous system and senses of the world population now in the care of satellites, and with machines approximating the condition of mind and the minds of humans connecting across time and space, the future can and should be more a matter of choice than of

*destiny.*" [Donovan King ]

- 1997 \_\_ **Disclavier - a virtual instrument for collaboration**, Akitsugu Maebayashi, NTT ICC Tokyo (*Manipulate the "alter ego" or doppelganger ("Avatar") of yourself on the screen, and make it touch the disc that is revolving in front of your eyes. Various fragments of sounds are etched into the disc, and these sounds can be replayed by touching them. But in that space, there are two more Avatars like you, and they too are touching the disc to release sounds. Whether you regard these two others as a nuisance or as valued partners is up to you, but you should try to communicate by releasing as many different sounds in as many different ways as possible. You are sure to come up with some interesting music. "Disclavier" is a combination of the words "disc" and "clavier," and is the name of a musical instrument that performs in virtual space. The "disc" is a music medium like the familiar record or CD, and the "clavier" simply means "keyboard instrument." The Disclavier is a combination of the two in which directly touching fragments on a revolving disc releases sounds. The instrument is played by three players sitting separately from one another controlling their own Avatars in the virtual space. The method of performance could not be simpler: the players simply touch the disc directly with the hands of their Avatars. As long as the hand is within the sphere of the disc, performance may start from anywhere. Since the upper part of the disc is fitted with an Effector that can modify the sounds to be released, you can choose whatever effect you like. Any basic sound can be given a quite different timbre according to how the Effector is used. Since the structure of the virtual space does not differ substantially from that of real space, your intentions and movements can be carried over without modification into the virtual space. For example, you can move your Avatar to the position where someone else's is, and interfere with his performance. Alternatively, all three players can cooperate by moving their Avatars to the same position to produce the same sound in unison. Consequently, depending on the position of the three players relative to one another, where the disc is touched, and the timing with which it is touched, it is possible to produce sounds in many ways and achieve a variety of results. Since three players acting in cooperation produce more complex sounds than one player acting alone, the results are more interesting. And because the result is fed back instantly as a sound, it is not difficult to read the others' intentions nor to convey your own. This makes the Disclavier an instrument where communication is essential-exchanges of wishes and intentions themselves from the music. HyClass, the cooperative educational support system that formed the basis of the present work is, so to speak, a three-dimensional CG board MUD (multi-user dungeon). A number of users connected through the network can walk through the common space, manipulate objects and so on. Moreover, HyClass can flatten out the movement of an object on-line, and change its color, texture or scale. The user can also dynamically introduce a created object into the common space, manipulate it in cooperation with other users, or edit it. Some of the special characteristics of HyClass were incorporated into the present work, and improvements introduced in the user-interface. Since, in the present work, communication between users is supported not just in the graphics area but also through sound, the sound aspect had to be strengthened. To that end, a MIDI signal is put out by the PC to the Mac, and the MAX software that controls the MIDI signal in turn puts out the input MIDI signal to the sampler and effector, thus controlling the tone color.*) <http://www.ntticc.or.jp/Archive/1997/Disclavier/>

- 1997 \_\_ **Distributed musical rehearsals** (*Distributed musical rehearsals with orchestra and remote conductor, University of Geneva (CH), GRAME (F), GMD Birlinghoven (GER)*) <http://www.grame.fr/pub/ICMC97dvp.pdf>

- 1997 \_\_ « **Elements for an aesthetics of technological art** », Marcel Frémiot, MIM, Laboratoire Musique et Informatique de Marseille (*"I am putting a message into a bottle and throwing it into the sea . I would like to go more deeply into the aesthetic status of technological art: try and define the current aesthetic characteristics of the genre itself. The artisans of mechanisms and of interactivity may be caught unawares by this move. For them, what counts is to act and to cause to act, not to put into perspective. I express myself here as an European music composer , that is to say, of a race among whom "revolutions" have always been carried out not in the name of technology but of aesthetics. Whence these suggestions found in the message in the bottle: The listener will notice that the characteristics of aesthetics are often diametrically opposed to the characteristics of technological structures. 1/ Straight/curved: Replacing the traditional position of the audience opposite the musicians by positioning sound sources around, or even in the midst of, the audience, and orienting sound projections between these sources, has given priority to the aesthetics of the curve. The curve is reinforced by the non-linearity of accelerations and slowing of tempi and of trajectories in the field of pitch. 2/ Continued/discontinued: Discontinuity prevails in collages, rupture, scratch, channel-surfing, spattering, a refusal of discursiveness, contradictory materials, impulsions superimposed on the flow, and spatial destructions,--contiguous or discreet. 3/ Absolute/relative: The relative predominates over the absolute, whatever the nature of the "relative," whether it be of "scientific" nature as in interpolations, whether it be found in "approximation" since musical interplay is composed of relationships between registers and masses, and no longer the pitch of notes and specified chords, or, finally, whether it be "relational" as in the multimedia. 4/ Certain/uncertain: The uncertain dominates musical attitudes: taste is oriented towards "performance," the "open" work (both, in their essence, impossible to reproduce identically), the "happening", and performance in places formerly considered as "incongruous" . In the work itself, technical elements bearing the aesthetics of the curve engender perspectives and different perceptions from one listener to another. 5/ Finite/infinite: The aesthetics of the infinite and of the "non-finite" reign here: the "set groove", the "repetitiveness", the "open" composition, the short pieces whose energy surges without predetermined origin or end, the inexorable electronic flows without any apparent direction, the search for hypnosis produced by the intensity of sound and the concerts whose limits are*

stretched in a lasting manner. 6/ Specified/random: When the "register" and the evolution of a trajectory are more important than the precise pitch, when the idea of a "wrong note" gives way to that of a "cloud," when the composition is consigned to a module of "random production," filtered or not, the specified has given way to the random. 7/ Formal/Intuitive. The present trend is to the "logical matrix": ordinateur oblige! However, when considering the results, some composers intuitively add or cut elements - as in the old way; others, more rational, modify the original matrix. 8/ Real/fictive The reader will have noticed that I have tried to transpose into the field of aesthetics the scientific and philosophical pairs that Jean-Marc Lévy-Leblond has written about in his recent study "Aux contraires." I have not used True/False, since in music everything is both true and false. Nor can I apply Global/Local or Elementary/Complex, since in music these concepts are laden with technical rather than aesthetic meaning. I can see my way through Real/fictive from comic strips to cyberfilms. But in music everything is real and everything is also fictive. Everything considered, what is the case in other technological artistic fields? [in Proceedings Statut esthétique de l'art technologique] <http://www.olats.org/colloque/participants/fremiot/index.shtml> <http://www.labo-mim.org>

- 1997 \_\_ **The Encounter** (Electronic Café International - The first time a performer in a "motion capture" system, streamed live motion to a VRML avatar over the public internet. Dancer Mary Ann Daniel at the SGI booth at SIGGRAPH in downtown LA, was animating the avatar "Bliss" (R). In addition, Bliss/Mary Ann danced with Mona Jean Cedars (L), who was video rendered into the VRML-world at ECI-Santa Monica. The live hybrid compost-image was webcast back over the internet to Mary Ann using tunneling techniques and GTS webcasting technology so she could see Bliss and Mona Jean together. The performance included the passing of the Torch Of Media Superiority from the video avatar to the VRML avatar.)

- 1997 \_\_ **FMOL F@ust Music On Line**, Sergi Jorda (software project for real-time collective music composition through the net. The monitor shows vertical lines, similar to an instrument's strings. By clicking the mouse you can make them resonate, audibly and visibly. The sound can be processed by a broad and diverse palette of electronic effects. - »FMOL - F@ust Music On Line« is certainly a classic of web based sonic art: a virtual instrument, accessible through the Internet, which allows everybody to create complex sound compositions - without special technological knowledge. During a period of three months the website was open for participants. Everybody could produce 20 second short sound statements by using the virtual string instrument, upload them to the FMOL's database, from where they were available then for other participants, too. Those were able to download a certain piece, to alter it on their computers, by applying the FMOL-instrument, and to send their results again to the database, from where it could be downloaded and re-worked again and again. - By this, a widely branched tree with almost 1200 compositions came into being, from which finally fifty pieces were selected for the Faust-performance.) <http://www.iaa.upf.es/~sergi/>

- 1997 \_\_ **Global Visual Music Project**, Vibeke Sorensen, Miller Puckette, Rand Steiger, Mark Danks, George Lewis, Stephen Schick (In January 1997, after receiving our first Intel Grant, we began work on the Global Visual Music Project with the following goals: 1/ To develop software for the creation, mediation, and dissemination of real-time multimedia content, including high resolution two and three dimensional graphics, digital audio and video. 2/ To develop a networking capability for this software, so that multimedia data could be shared between users in many locations. 3/ To organize a high profile event to unveil these resources by staging a networked multiple site public performance with accomplished artists in established artistic and technological venues. 4/ To create a web site to disseminate information about our research. 5/ To freely distribute the software we create. 6/ To develop and publish a communication protocol for networked distribution of high quality real-time multi-media data. As anticipated, research has shown that the best strategy initially for networking performance sites is a direct ISDN connection. We are using ISDN hardware, and have developed an object in our software that provides a simple means of sharing data between platforms across the network. We are experimenting with cross-platform networking and are currently planning a series of multiple-site performances for next season. "Development of Software for Internet Broadcasts of Multi-Site Performances": Tools exist today for the broadcasting of audio and video, from one source, to an individual PC with a modest network connection. For example, the public affairs cable television network C-SPAN can be viewed on a networked PC using a web browser and plugins for streaming video. We would will develop tools that will allow us to simultaneously broadcast on the internet performances from two different sites, and give the user/participant software that allows them to make their own decisions about how to combine the audio and video signals (ex. mix the audio, and view site one video in a small window in the video from site two). In the next phase of our work, this software will be further developed to accommodate switching from among numerous sources of video and audio, and combining data from multiple sites. As this develops, the software will gradually evolve into that which will allow for anyone with a net connection to connect and jam with anyone else with the same tools, breaking down the distinction between audience and performer, and reaching our eventual goal of providing the infrastructure for a truly global visual-music jam session. "Establishment of a Multi-Media Server": To facilitate the goals outlined in c. above, a robust and powerful server will be needed to capture and stream video and audio from multiple broadcast sites, and to encourage and accommodate connections between end users. We will develop server software, and search for a partner institution to provide the server infrastructure. This server could also house recordings of performances, so that they would be available for net-re-broadcast. "Lemma Two - with net broadcast": By the end of the second phase we plan to have in place everything that is needed for a full dual site performance broadcast. This would naturally lead to a new performance, Lemma Two. This time we would like to have several performances, with both sites changing locations - a kind of double tour. Group one

might perform in Mexico City, Rio de Janeiro, Portland, and Tokyo, while group two moves from New York, to London, Prague, and Cairo, for example. Of course touring is expensive, and requires cultivation of presenters and sponsors. At this time we are optimistic that we could draw on our previous experiences to work with presenters we know in many different cities. However, we can not assure that there will be resources to make an extensive tour possible. If nothing else, we will certainly perform *Lemma Two* in one pair of locations. Currently plans are under way for a dual site performance, with webcast, in San Diego in Fall 1998, and another between New York City and Portland in Spring 1999. We see these performances on a trajectory leading towards a true realization of a global visual music jam session that we hope will serve as an inspiration for others to explore this new territory of real-time multimodal art with the software resources we develop. "We quickly decided that instead of doing "telepresence", we would try to do something actually explored the idea of the physical distance between the sites. Instead of sounding sounds and images across the network, we opted to send real-time audio analyses of the instruments and for each of the four instruments to create, on the other site, a possibly variable 'ghost' for the instrument. In the case of the pianos, we used MIDI interfaces that could either be used to play each other's physical piano remotely or to play synthetic sounds. For the percussion we did an instrument-by-instrument analysis (this is the genesis of the Pd's *bonk~* object) and could direct each percussion setup to samplers and/or totally different sound generators on the other side. In keeping with this, we connected the audio and computer graphics scenes in the same way, so that different audio sources could correspond via their analyses to movements in the graphical realm, either locally and/or remotely. Because the relationships between local and remote instruments, and between sound and graphics, were constantly shifting, the perceived presence of the remote performers was enigmatic rather than didactic. Each of the two audiences got a different show; at each locale, the 'here' and 'not-here' were treated as essentially different perceptible presences. When not approached carefully, "telepresent" performance is aesthetically dangerous ground. If you see someone on a screen, does that mean the person is really thousands of miles away, or just in a nearby closet? Our own group enjoyed a cruel proof at the hands of the Convention Brothers at the 1997 ICMC; they did a "telepresent" performance except that, after a few minutes, the 'remote' performer was smoked out from behind a side curtain." [Miller Puckette] <http://visualmusic.org/gvm.htm>

- **1997 \_\_ Global Visual Music Project**, Millet Puckette, Vibebe Sorensen, Rand Steiger (1/ Original Goals In January 1997, after receiving our first Intel Grant, we began work on the Global Visual Music Project with the following goals: a) To develop software for the creation, mediation, and dissemination of real-time multimedia content, including high resolution two and three dimensional graphics, digital audio and video. b) To develop a networking capability for this software, so that multimedia data could be shared between users in many locations. c) To organize a high profile event to unveil these resources by staging a networked multiple site public performance with accomplished artists in established artistic and technological venues. d) To create a web site to disseminate information about our research. e) To freely distribute the software we create. f) To develop and publish a communication protocol for networked distribution of high quality real-time multi-media data. 2/ Progress to Date a) Software - Miller Puckette has been developing PD, a graphical object oriented programming language optimized for real time audio and graphics applications. Mark Danks has simultaneously been developing GEM, a set of extensions for PD that enable it to draw on Open GL for control of two and three dimensional graphics. Rand Steiger and Vibeke Sorensen have been working with the alpha versions of PD and GEM, testing, developing applications and content for future performances, and providing Puckette and Danks with ideas and designs for additional objects and processes. b) Platform - The software we are developing has the capacity to mix and process multiple sources of audio and video while at the same time generating high resolution two and three dimensional graphics and high fidelity audio. It is clear, however, that due to limitations in processor speed and memory architecture we are not able (at this time) to accomplish all of our content generation and manipulation in software alone. Therefore we have adopted the strategy of using external dedicated digital video and audio processors, controlled via an RS232 serial interface and dedicated objects in our software, for the first phase of our project. This way the CPU's are concentrated on providing an integrated user interface, generating audio and graphics, controlling the external hardware, and performing signal processing which is not possible in the dedicated devices. The CPU's are also used for analyzing the live audio and video signals both for data reduction and transmission over the network, and to provide for the use of data from one medium to be used to control data from another (ex. audio amplitude controls color of texture mapping on a 3D object). As personal computers become more powerful and robust, we plan on migrating more of these tasks into the workstation, at first with internal dedicated co-processors, and eventually with an entirely software based solution which would allow any user with an Intel platform to use the full capability of our software without requiring any special internal or external hardware. Of course, significant advances in microprocessor speed and memory architecture would need to take place before this last goal could be achieved. c) Networking - As anticipated, research has shown that the best strategy initially for networking performance sites is a direct ISDN connection. We are using ISDN hardware, and have developed an object in our software that provides a simple means of sharing data between platforms across the network. We are experimenting with cross-platform networking and are currently planning a series of multiple-site performances for next season.) <http://visualmusic.org/gvm.htm>

- **1997 \_\_ Golden Boomerang Machine** (An eight hour, live to air and netcast performance. Composers and sound artists from Italy, Germany, Quebec, Slovenia and Austria performing the impromptu piece, Golden Boomerang Machine)

- **1997** \_\_ **GRM Tools**, Groupe de Recherches Musicales (The software known as GRM Tools is the result of the adaptation to personal systems of concepts and tools that were developed on the previous systems. Software specialising in the processing of sound associated with an original ergonomics make this tool a reference in its field. In 1997 GRM Tools was awarded the 'Editor's Choice' by the magazine Electronic Musician. Present developments concern the adaptation of GRM Tools to new computer environments and the devising of new algorithms. [Daniel Teruggi]) <http://www.grmtools.org>

- **1997** \_\_ **Hybrid Workspace**, Pit Schultz and Geert Lovink, Documenta X, Kassel (The Hybrid Workspace was a temporary media lab which operated during the 100 days of Documenta X. For the more than 200 participants, this was the "Summer of Content." Fifteen groups consisting of artists, activists, critics and their guests presented their work, produced new concepts and started campaigns that developed and continued long after the gathering. In 1997, at the Documenta X art festival in Kassel, Germany, and the Berlin Biennale, the artists Pit Schultz and Geert Lovink initiated the Hybrid Workspace, a "temporary laboratory" at Berlin's Orangerie: host to "100 days of 100 guests", where artists, musicians, scholars, curators, and activists tirelessly presented performances, lectures, screenings, interviews, and exhibitions to a local and remote public - via internet broadcasts on the [orang.orang.org](http://orang.orang.org) radio Website and the Nettime email forum. This ongoing workshop acknowledged that in a networked culture, artistic production exists in constant flux, and cannot simply be presented in the static form of an exhibition. The nature of the artists' creative explorations implied a shift in the way their work was to be presented to an audience. The exhibition strategy was changed to one which maintained the simultaneity, fluidity, interdependence, and unresolved relationships that characterize the society in which the artists were creating their media-based work. Among those groups were : the German Innercities campaign, No One is Illegal, We Want Bandwidth ([www.waag.org](http://www.waag.org)), some audio initiatives (which later turned into the Xchange real-audio/net.radio network: [xchange.re-lab.net](http://xchange.re-lab.net)), loosely affiliated or unaffiliated tactical media practitioners involved in focussing on global media ([www.n5m.org](http://www.n5m.org)), the Deep Europe/Syndicate group from former Eastern Europe ([www.v2.nl/east](http://www.v2.nl/east)), a group preparing the nettime\_README!\_book, which has now been published ([www.nettime.org](http://www.nettime.org)), and finally the first Cyberfeminist International, which brought out their own documentation ([www.obn.org](http://www.obn.org).) <http://www.documenta.de/archiv/dx/lists/workspace/>

- **1997** \_\_ **Hybrid Workspace - FUTUREScan**, ORF Kunstradio, Documenta X (FUTUREScan, was a live performance of generative soundscapes netcast from Toy Satellite. FUTUREScan was performed live from Toy Satellite, Friday, 25 July, 1997, as a contribution to Hybrid Workspace, Orangerie, Documenta X, Kassel and Recycling the Future, KunstRadio, Vienna. " I performed to a small international and local audience across a single telephone line, carrying both a RealAudio stream and web cam. We used a laptop, courtesy of Cinemedia, to run the RealAudio encoder and a Zyxel32 modem, courtesy of Colin Rentwick, to keep the connection to Pegasus Networks, sustained for the duration of the performance. The webcam, supplied by the Communications Centre, Queensland University of Technology, was installed on one of our PCs which was also running KoanPro, Cubase and sound processing software. Coordination between Melbourne, Austria and Germany was conducted via IRC, a mailing list, email and telephone. Simultaneous performances were also streamed from Kassel, Berlin and Linz." [Andrew Garton]) <http://www.toysatellite.org/future/scan/>

- **1997** \_\_ **Imagine**, STEIM (Image/ine, developed at STEIM from 1997, in close collaboration with Steina Vasulka, was the first piece of software (for normal computers) that allowed users to manipulate uncompressed video in real time. Limited, at the time, to 320x240 pixels at some 10 frames per second (the Macintosh 8600 was the dream machine), it nevertheless proved a point: artistic quality and stage guts made lack of frame rate and image quality of secondary interest; real time video manipulation could be done!" [Tom Demeyer]. When imagine beta version was presented at steim in december 1996 being controlled by steina playing her midi violin, i was seating two meters from her with a task to change between different presets. it was a necessary help, since the program was not yet incorporating what is called "display states" nowadays. and guess what, i had developed simple patches in max, just to switch on the fly some settings which steina wanted to pass through during her performance. no matter what wishes i had at that time, tom's answer was straight: i want imagine to fully occupy the processor of the machine on which it is running. i want to squeeze out the most for video processing and what is needed for live control. if you want more, use another computer or whatever other device you prefer." [Marko Kosnik]. "In 1996 Troika Ranch had a two-week residency at STEIM, where I first saw Tom Demeyer's real-time video processing program Image/ine. I first started using Image/ine in concert with Interactor, because Image/ine didn't allow the kind of complicated interactive decision making that I was used to having in Interactor. So, Interactor would process the MIDI data from my interactive sensors, and then tell Image/ine what to do." [Mark Coniglio, Troika Ranch]) <http://www.image-ine.org/>

- **1997** \_\_ **In Touch**, Ishii Hiroshi, MIT Tangible Media Group ("inTouch" is a medium that enables users, who are separated from each other by distance, to communicate through touch. Specifically, force-feedback technology is employed to makes the users feel as if they are operating a shared physical object. This research project embodies the concept of expanding targets of info-communication research from sound, text, and computer graphics to "tangible information," and has inspired many researchers, designers, and businesspersons since it was unveiled in 1997. "inTouch" Production Members: Scott BRAVE+Andrew DAHLEY+Phil FREI

+Victor SU+Rujira HONGLADAROMP+Joseph PANGANIBAN+Kenoloi KAIETANO+ Matthew MALCOLM+Angela CHANG +ISHII Hiroshi) <http://www.nttcc.or.jp/Archive/2007/Openspace2007/network/intouch.html>

- **1997 \_\_ Iriomote**, SoundExplorer, Yoshihiro Kawasaki (*A microphone is installed on a tree in a forest in the north of the island of Iriomote, relaying live sound. The relay was set up around 10 years ago as part of the Sound Explorer project. The project is now run jointly by Living World and Hiroki Kobayashi. ADSL access is now available, allowing a system upgrade last month to CD quality sound. Sit back and enjoy the changing of the seasons, exotic nights on a faraway isle, the chorus of frogs, birds awaking at dawn, the sound of an approaching typhoon... From September to April the prevailing wind blows from the north, amplifying the roar of the sea in the background. In summer the site is sheltered and calmer. Engine noise may be loud when vessels sail into the port of Uehara.*) <http://www.livingworld.net/works/iriomote/>

- **1997 \_\_ Lemma 1 (Global Visual Music Project)**, improvisatory jam session between Greece and USA, USD San Diego, USC South California (*ISDN real-time performance with networked improvising musicians. The performance of Lemma 2 involved 4 performers in 2 cities. Two of them, Steven Schick (drumset) and Anthony Davis (piano), were at Columbia University in New York City, and the other two, Vanessa Thomlinson (percussion), and Scott Walton (piano), were at Intel Headquarters in Hillsboro, Oregon. Each site had two computers, one for graphics and one for sound. Lemma 1 was the first performance experiment of the of the Global Visual Music project of Miller Puckette, Vibeke Sorensen and Rand Steiger. The concert took place on September 27, 1997 at the International Computer Music Conference and featured Steven Schick on drum set and George Lewis on trombone. George and Steve had small video cameras mounted on their hands, and microphones on their instruments, and they were on either side of a large video projection screen. The audio program was amplified through a quadrasonic speaker system. Puckette, Sorensen and Steiger ran the computers and associated video and audio devices.*) [http://visualmusic.org/Biography/Global\\_Eyes\\_China.htm](http://visualmusic.org/Biography/Global_Eyes_China.htm) <http://visualmusic.org/gvm/lemma1.htm>

- **1997 \_\_ Living with Electricity**, Paul DeMarinis (*Three domestic settings, each containing a throw rug, a lamp, a transduced rocking chair and a sound making device fitted with actuators. The three areas are interconnected via local area network so that rocking in one chair produces movement and sound in a different one.*) <http://www.stanford.edu/~demarini/exhibitions.htm>

- **1997 \_\_ Local 411**, Ian Pollock, Janet Silk (*"We are artists who have worked together for four years. Although we work in a variety of media, several threads carry through our work: We seem to use death as a starting point for many of our investigations. History has been the text of the dead, told to the living, articulated by an interpreter. The tradition of history has been one of collecting-the tradition of storytelling-a way to navigated the social sphere. In our work we have been interested in how we can set up an exchange for ideas and stories. In some of our recent pieces this led us to the use of voicemail technology and presently we are looking at the network as a way to engage with a large a group of people. Specifically, a recent project, Local 411, used voicemail to tell recorded stories about the Yerba Buena Redevelopment Zone (the area now known as Yerba Buena Gardens, Moscone Center and the Museum of Modern Art). People would call the voicemail system to hear these stories and were encouraged to leave their own. These messages in turn became publicly available to the audience which was calling in. Also we and several other performers called out to public telephones in the area. When the phone was picked up we would attempt to engage with the whoever had picked up the phone. We would start with a fictional premise, based on the same stories and research we had done for the project. In the course of the exchange there was a shift into a more personal conversation about what was going on in the person's life directly related to the issues brought up in the piece. These moments were exciting for us because they broke the boundary between artist and audience in a way that we had not previously experienced. The combination of anonymity and contact as determined by the use of the public phone was dynamic. It made room for a private, intimate conversation with a complete stranger about a complicated social issue. The project was a way to activate the site, to create a temporary public memorial to the people displaced by the redevelopment process, to look at the ongoing gentrification of San Francisco and to connect directly with the audience. We're always trying to challenge ourselves with unfamiliar territory and try not to get too comfortable with either medium or subject matter."*) <http://www.well.com/~couey/interactive/pollocksilk.html>

- **1997 \_\_ Makrolab**, Marko Peljhan (*Makrolab is an autonomous communications, research and living unit and space, capable of sustaining concentrated work of 4 people in isolation/insulation conditions for up to 120 days. The project started in 1994 and was first realised during an art exhibition, documenta X in Kassel in 1997. Makrolab has a projected life span of 10 years. The project as it envisioned now, will end in 2007, when a new architecture will be placed in the Antarctic as a permanent base. From then on, a new project, managed by a new Makrolab and Projekt Atol trust will start*) <http://www.krcf.org/krcfhome/cfa/hh/makrolab/makrolab.ljudmila.org/1997/index.html>

- **1997 \_\_ Malaise | Unsound | SASS** (short attention span syndrome), Andrew Garton, Kim Bound and Dale Nason, Kunstradio, Recycling the Future, Ars Electronica (*"From Ars Electronica, I performed simultaneously with Kim and Dale, adding incidental samples and generative sound events. The necast was conducted with a 28.8bps modem, carrying a live stereo*

encoded RealAudio stream directly to WiredAudio. The Linz end of the stream, carrying both Melbourne and Linz performances, was delivered across an ISDN link to a RealAudio server in Vienna. The quality of the stream from Melbourne to Linz was surprisingly stable and clear. It was considered one of the more successful netcasts during the Festival. Few dropouts, stable servers at WiredAudio and on-site technical support at both Toy Satellite and the KunstRadio setup at Ars Electronica contributed towards the success of this project. With the addition of a web cam in Melbourne, the overall impression was one of low-tech hi-fi. Both the web cam and live RealAudio stream were being delivered across a single domestic telephone line." [Andrew Garton] <http://www.toysatellite.org/future/malaise/>

- 1997 \_\_ **Mirage City - Another Utopia**, NTT ICC Tokyo (The exhibition will function as an experimental model for the conceptualization and realization of a Utopian city for the 21st century -- the age of informatics. Its format stems from a fundamental suspicion of the supporting principles of modern society; monolithic universality, linear progress, and vertical hierarchy. A clue to this transformation from modernity to the new age comes from the concept of various "inter-ness" : inter-activity, inter-communality, inter-textuality, inter-subjectivity, inter-communicativity. Directed by Arata Isozaki, and building on Haishi -- Mirage City is the stage on which four different models of a performance are to be presented during the course of the exhibition. This is not an exhibition of a complete work, but of a process through which a new Utopian idea can take shape. It is a workshop in which the public participates and communicates as "the other" through the different networks available. This method has been chosen because it is our intention to show that city planning is possible without a master plan. This is especially true in today's climate, when all concrete determinations are thought to be impossible. The modern Utopia has been dead for 30 years. In its place alternative Utopia(s) will appear like a mirage. Kaishi as Mirage City is the construction of an artificial island in the midst of the South China Sea, off Macao. The original conceptualization began at the request of the municipal government of Zhuhai City. Large-scale developments are currently underway on Hang-Qin Island, located south of Zhuhai City. They include the construction of a financial center, various government offices, and residential and recreational developments. They are expected to be completed before the year 2010 and will eventually accommodate 650,000 people. The municipal government of Zhuhai City invited Arata Isozaki to consult on the development around the southern coast of Hang-Qin Island. Isozaki proposed the creation of an artificial island on the shallow sea. On this artificial island, cultural and academic institutions, business and convention facilities as well as housing units and hotels could be developed. Isozaki's idea was that the project should not limit itself to the physical planning, but also involve a search for "Utopia," not in the context of modernity but in the context of contemporary society. Practical aspects of the project were developed in collaboration with the Center for Science and Engineering at Waseda University. The artificial island is located 20 km south of central Zhuhai City and 1.5 km offshore Hang-Qin Island. The size of the artificial island, Haishi - Mirage City, is approximately 400 hectares. The southern coast of Hang-Qin Island, which directly faces Mirage City, will be allocated mainly to resort facilities. It is interesting that Sir Thomas More -the first person who wrote about Utopia- plotted the nowhere land on an island to be discovered only after a long ocean voyage. Our artificial island will also appear in the sea, of South China; the difference is that the former was envisioned in an age when frontiers still existed with real expectations of new discovery, while the latter is a fictive construct to be fabricated on a sea where there is nothing to be discovered. By the way, in the first edition of his Utopia (published in 1516), More had an illustration of the island. In the second edition (published in 1518), he changed the image so that two bridges connected the island to the shore of somewhere land. The reason he made this change is unknown. In any way, the topographical conditions of More's illustrated island are quite similar to those of our island. Thus the idea of connecting our island to mainland China with two bridges -just as today's Venice is connected to mainland Italy with a long bridge. Therefore, transportation is necessary to bridge the distance. For the actual planning of Kaishi, there are three categories of intercourse. 1/ Flow of people and objects: transportation routes for cars, boats, and other vehicles, energy supplies, waste treatment, 2/ Flow of information: communication circuits, 3/ Flow of qi: circuit of invisible circulation. For the fundamentals of urban activities -people, objects and information- we are researching the use of alternative technologies, that is, a way to sustain facilities with as little energy as possible. As such, the characteristic gestalt of this project is determined by an experimental method: producing a clue as to how to construct a city by an arrangement of devices that corresponds to the invisible flow of qi. In other words, it attempts to construct the framework of the whole project by reinterpreting the traditional geomancy, feng-shui, which the local people still believe in. Simultaneous communication with the world over has been made possible by the information highway and satellites which are now transforming all institutions of our social activities; money, finance, correspondence, broadcasting, leisure, education, etc. Technology permeates the world by way of decomposing the elements into bits and reconstructing them into digital informatics. Under the circumstances, the transformation of our institutions is inevitable. However, customs and apparatus upon which nation states have been dependent are resisting the transformation. In order to escape from this bind, a new topos that is constructed from a tabula rasa is of primal necessity. Kaishi presents an active model for a society consisting of bits of informatics. To be certain, the model does not imply a so-called central business district but rather assumes a spatial mingling of work and living. Therefore, the idea of the living unit should also be reconsidered; a new space should be designed where there is no work/life distinction. In the Internet section we welcome "Anyone" to this Utopian project. While Signatures invites international architects and Visitors includes architects of the digital generation, this section asks for the participation of people from all domains. It is said that the internet is a spontaneously unified whole of scattered local networks. In contrast to the commercial networks which have "master plans", the internet is basically free and supported by innumerable volunteers, and it is changing the world. Can city planning simulate such a natural becoming? There

is a basic difference between networks through which electrons flow, and networks through which people, cars and energy circulate. In the world of electrons that travel 300,000 km per second, the notion of distance is disregarded. This is a topological world where only the relationship between objects is meaningful. City planning has been dominated by the geometry of three-dimensional Euclidian space, where the notion of distance is fundamental. The real city, however, is melting dramatically from this classical space into topological space. In what ways will cities be changed by these new elements; topological space, volunteerism, emergence and evolution? How will they be visualized? <http://www.ntticc.or.jp/Archive/1997/Utopia/>

- **1997** \_\_ **The Multi-Cultural Recycler**, Amy Alexander (The world wide web allows the public to become active participants. Viewers can be active in two ways; both as publisher, and through sites created for user participation. The more innovative New Media sites on the Internet are ones where one can give input or where there is an exchange. Artists explore interactivity on the web not merely as a point and click phenomenon but as an exchange of ideas. Artists are creating intelligent systems to respond to decisions being made by the participant, allowing the participant to be actively involved in the creative process. A unique project that utilizes existing web cameras' live images from multiple sites: "Ordinary people and places around the world are instantly subject to becoming part of the mass culture and are potentially also subject to cultural recycling. It examines the meetings and collisions of all of these disembodied representations out in cyberspace. The live images will be captured from their web sites, and processed through one of roughly twenty image processes. Creating a collage which is a document of their relationship as fragment of web culture and of their chance meeting in cyberspace." (The Multi-cultural Collider, Cyberarts, ARS Electronica 97). [Lucy Petrovich, "From Computer Art to Digital Art to New Media ", 2000]) [http://www.isea2000.com/actes\\_doc/25\\_petrovitch.rtf](http://www.isea2000.com/actes_doc/25_petrovitch.rtf) <http://shoko.calarts.edu/~alex/recycler.html>

- **1997** \_\_ **Natural Radio**, Tetsuo Kogawa (« When I was invited to Vancouver last year, I tried to show an idea of Natural Radio. This is an appropriation of surveillance system. I installed four FM transmitters at every corner of the building where my workshop/performance was held. The performance was that I showed making one of the transmitter, explained my idea showing my webpage on the large screen, installed the transmitters and then let the audience listen the sound. Nobody programmed and they listened "natural" sounds of birds, cars, voice of gathering people in the lobby... » (Tetsuo KOGAWA, interview with Josephine BOSMA, Radio conversation)) <http://laud anum.net/cgi-bin/media.cgi?action=display&id=947129242>

- **1997** \_\_ **Networked concert, Grottes de Saint-Cézaire** (Premier concert en ligne donné à l'Union Internationale des Telecoms à Genève, entre Luc Martinez sur la scène de PalExpo, et Alex Grillo, 60 m sous terre dans les grottes de St Cézaire, jouant sur 14 Stalactites naturelles, instrument "vivant" figé depuis plus de 6 millions d'années. "J'ai organisé un tel concert en 97, entre la scène du Palexpo de Genève et la grotte de St Césaire-sur-Siagne, près de Grasse dans les Alpes-Maritimes. D'un côté, 2500 personnes dans la salle d'un palais des congrès, face à un musicien sur scène. Ce public ne pourra jamais aller ensemble dans cette grotte minuscule. De l'autre, un musicien vibraphoniste, face à un instrument composé d'une draperie de 13 stalactites, âgé de 6 millions d'années, pesant plusieurs tonnes et qui ne sortira jamais de son antre... Ici, la mise en réseau a du sens, elle permet de donner vie à une situation impossible dans la réalité." [Luc Martinez])

- **1997** \_\_ **OMA: Ausländer und Staatenlose** (Grandmother: Foreigners and Stateless Persons), Andrew Garton (Interactive online opera. Ausländer und Staatenlose is comprised of an interrelated series of images, sounds and text viewed in real-time over the Internet. A live performance will be networked to various locations including the Ars Electronica centre in November 1997. The score is totally generative meaning that it may never be heard the same twice. OMA: Ausländer und Staatenlose (Grandmother: Foreigners and Stateless Persons) began in 1995 as a project based MA that was to research the use of online media for the creation and production of an experimental opera. It also endeavored to explore the Internet both as site for performance and as a means of accessing and engaging an audience. Specifically, OMA: Ausländer und Staatenlose was to address the following questions: 1/ How can we use the Internet's World Wide Web for live performance works? 2/ How can opera be created and produced with new media technologies? 3/ How do we design/compose an online multimedia performance? 4/ What specific technical and creative issues have to be addressed when composing online multimedia performance? 5/ How can we create interactions that engage audiences via online media? The final project was to be delivered as three individual components: a live performance, a live performance networked via the Web, an archive of the performance and the components of its creation accessible via the Web. (...)  
"The idea for the score was to create an ebb and flow of found sounds and music, in part, informed by the aural landscape of the environments the opera was set in. Its creation would also be informed by the technologies available to both deliver and have it heard via the Internet. Early 1995 I began working with the notion of a score that would be non-repetitive, that would be some how be different for every performance, both via the Internet and in real-time. The ideas were largely fostered by my experiments with improvised, systems compositions in the 80s. They would take the form of real-time audio collage and would also send me on a parallel research path: generative music and real-time, interactive compositions for performance and streaming via the Web. I was interested in the non-linear, non-repetitive nature of these possible sound works. These would be compositions working as metaphors for the notion of journey - dangerous, unpredictable, foreign and uncertain freedoms - the concepts that I would deal with personally in Europe and write about in my journals. (...) The more I worked with KoanPro (SSEYO Ltd, UK), the more I began to question the

idea of repetition in our musical landscape. Repetition, it seems, is at the heart of what drives the music industry. It sustains its market place by the cultivation of audiences whose ears are tuned to their pockets. This in turn sustains an industry that controls not only what we hear, but the artists who must churn out endless variations of the same. I began with simple MIDI files embedded within web pages. This ensured that anyone with a PC and soundcard would hear my composition. These would play as soon as a web page opened within a browser. Both of the popular browsers provided support for embedded MIDI, .wav and .aif files. However, the quality of sounds that came with soundcards at that time varied so much that it was near on impossible to create anything that didn't sound like a toy. Koan's Audio plugin technology meant that one could play pieces created with KoanPro via a web browser. It used the sample principle as MIDI files, being that it was reliant on the sound banks that came with standard sound cards. At the time, I was using a Turtle Beach Tropez, which came with 12Mgs of memory and an excellent General MIDI sound set. However, it was not possible to replicate the pieces I was producing with this card on another person's computer. However, I could stream them via a RealAudio server, both on-demand and in real-time. This was one solution, but along came the SoundFont. Koan's Audio plugin technology meant that one could play pieces created with KoanPro via a web browser. It used the sample principle as MIDI files, being that it was reliant on the sound banks that came with standard sound cards. At the time, I was using a Turtle Beach Tropez, which came with 12Mgs of memory and an excellent General MIDI sound set. However, it was not possible to replicate the pieces I was producing with this card on another person's computer. However, I could stream them via a RealAudio server, both on-demand and in real-time. This was one solution, but along came the SoundFont. SoundFonts were developed by Creative Labs as an attempt to create a standard for the distribution and playback of original samples. Sounds could be grouped into banks and saved as a single file, a SoundFont. These would then be stored in memory on the soundcard. The Koan Audio plugin could download SoundFonts from a web site onto a Creative Labs soundcard and replay your piece in the way that it was intended to sound. This was a breakthrough, but was still very much reliant on a specific combination of hardware, operating system and software. Streaming audio intrigued me, so I began to look for ways to utilise this within Ausländer. A Melbourne based ISP dedicated to streaming audio, WiredAudio, understood what I was trying to do and provided me with the infrastructure support I needed to experiment with on-demand and live RealAudio projects. It would become possible to combine my interests in generative music with that of tools that would make it possible to perform to international locations without ever leaving my studio." [Andrew Garton] <http://www.toysatellite.org/agarton/MA/>

- **1997 \_\_ OSC Open Sound Control** (A New Protocol for Communicating with Sound Synthesizers, Wright, M., Freed, A. International Computer Music Conference, Thessaloniki, Greece ((OSC) is a protocol for communication among computers, sound synthesizers, and other multimedia devices that is optimized for modern networking technology. Bringing the benefits of modern networking technology to the world of electronic musical instruments, OSC's advantages include interoperability, accuracy, flexibility, and enhanced organization and documentation. (OSC) is a communication protocol which allows musical instruments (especially electronic musical instruments such as synthesizers), computers, and other multimedia devices to share music performance data in realtime over a network. OSC is meant to supersede the MIDI standard, which was defined in 1983 and which many consider inadequate for modern multimedia purposes. Because it is a networking protocol, OSC allows musical instruments, controllers, and multimedia devices to communicate via a standard home or studio network (TCP/IP, Ethernet) or via the internet. OSC operates at broadband network speeds, allowing new types of realtime interactions which were not possible because of MIDI "lag", although this is usually attributable to factors other than the inherent speed of MIDI propagation. OSC also gives musicians and developers more flexibility in the kinds of data they can send over the wire, enabling new applications which communicate with each other at a higher level. OSC can transport over many protocols, but is commonly used with UDP. It was developed by the same team who proposed the unsuccessful ZIPI protocol. There are dozens of implementations of OSC, including real-time sound and media processing environments, web interactivity tools, software synthesizers, a large variety of programming languages, and hardware devices. OSC has achieved wide use in fields including new computer-based interfaces for musical expression, wide-area and local-area networked distributed music systems, inter-process communication, and even from within a single application. OSC uses UDP ports to make connections between applications. A program chooses any number of ports to send on, and any number of ports to receive messages on, and each message has an associated path, reminiscent of a UNIX filesystem path, or a URL. Messages that can be sent via OSC include: 8 bit unsigned integers / 32 or 64 bit two's complement signed integers / 32 bit MIDI packets / 32 bit IEEE floating point numbers / 64 bit IEEE double precision floating point numbers / NULL terminated arrays of 8 bit ASCII encoded data (C-style strings) / arbitrary sized blob (e.g. audio data, or a video frame). Many implementations only support character strings and 32 bit floating point numbers. The advantages of OSC over MIDI are primarily speed and throughput; internet connectivity; datatype resolution; and the comparative ease of specifying a symbolic path, as opposed to specifying all connections as 8 bit numbers. OSC messages arrive as fast as the underlying network stack can transfer them, and can be delayed to take effect at a specific time, whereas MIDI ensures synchronicity of messages by transferring them at a specific clock rate.) <http://opensoundcontrol.org>

- **1997 \_\_ Oudeis**, Kis Productions, Gernot Lechner, Monika Wunderer, Santiago Pereson (A theaterproject in which odysseus journey connected artists and audience all around the world via the Internet. In Austria, Kis Productions have been developing a re-interpretation of Homer's Odyssey, Oudeis - a world wide odyssey. It is proposed that seven stages, in different locations around the

world will provide for a real actor to not only perform, but interact with his virtual counterparts via the Internet. The Internet is being utilised as a kind of contemporary metaphor for the Odyssey with the suspended space as both stage and map of this exotic new terrain. *Oudeis* will be premiered at the 1997 Ars Electronica Festival, Linz, Austria. [Andrew Garton]. Our team first had the idea to produce a theater performance making use of the possibilities offered by the medium Internet in October 1995. Our choice of theme is nothing less than *The Odyssey* by Homer. Via mailinglists and online meeting an international group of artists, theater practitioners and theoreticians worked on a concept for a theater performance, appropriate to the characteristics of the Internet. The playscript was written in a collaboration of our webteam at the *oudeis*-idea list. The work in progress involved several public performances in Real Space and on the Internet. In Fall 1997, the work in progress was put on hold for the time being. (...) Besides participating in one of the theaters there will be the possibility to access the performance via the Internet. This gives the opportunity to not only see the ongoing on the stages but also take an active part in the performance. Each *Epeisodion* is framed by a *Stasima*, a part sung by the chorus. The chorus in the tragedy represented the people. In *Oudeis* the chorus will represent the audience who follow the play on the computer screens. There is a special opportunity for this audience that is connected via World Wide Web to interact and comment on the play. Sounds of voices singing 'a capella' in greek, composed by an international group round Santiago Pereson, will be produced by instructions sent by the virtual audience during the play. Two loudspeakers will reproduce this sound on the stage. This sum of voices will sound like a chorus, each voice being 'triggered' by someone over the net. Most of these voices will be processed to have a 'realAudio' sound, the sound format most used in the net.) <http://www.oudeis.org>

- 1997 \_\_ **Perfectly Strange**, Jan Kopp, NTT ICC Tokyo (This project is a joint venture between ICC in Tokyo and the Centre National de la Photographie in Paris. Each will install a instant photo booth (one machine in each place) and connect them together through the internet. As with the usual instant photo booth, the visitor who is to have his picture taken sits on a stool and sees his face reflected in the mirror in front of him. But what is delivered to him a few minutes later is not his own portrait but that of another, unknown person who has followed the same procedure in another place many miles away. The booths are installed in public places, which makes this a kind of chance communication between casual passers-by. They become momentarily involved with an entirely different person, though without any responsibility. It is as if one's own face, in the moment when the shutter closes, becomes that of a stranger. The booths in the system are wired with one another through the internet and the photographs pooled on discs can be output at a place which has no connection with the point where the pictures were taken. Photographs are pooled by servers, so there are no time difference problems.) [http://www.ntticc.or.jp/Archive/1997/Perfectly\\_strange/](http://www.ntticc.or.jp/Archive/1997/Perfectly_strange/)

- 1997 \_\_ **Points of Presence**, Institute for Studies in the Arts (ISA) at Arizona State University (ASU) / Center for Contemporary Music (CCM) at Mills College in Oakland, The Hub (multilocation concert. "One of problems of networked music is distance, in at least two senses of the word. First, a distancing of person from instrument : As instruments and ensembles get more complex, the observable connection of people with their own sound becomes difficult to maintain. Computer music instruments are at their best when they take on a life of their own, surprising their creator / performers with a liveliness and character that cannot be predicted; but there remains a need to guide them directly, to nudge their behavior in this direction and the next with gestures, and to hear the results of those gestures immediately. A computer network mediates those gestures further, and a disconnect takes place that can alienate the player, and the audience, from interaction with the music. Another problem has to do with physical distance : The Hub's first concert, and the publicity we got from it that fueled our career of over a decade, happened because of the public's fascination with the idea that musicians can play with one another in spite of being physically separated by great distances. But our own interests were actually never really aligned with concerns about telepresence. We were more interested in a sonification of the network : in the ways that networking changed the music, rather than in creating the means for networks to be transparent to it. The audience, and grants available for research into a sonification of the network, were definitely smaller than if we had embraced this distance issue. In fact, a failed attempt in 1997 to reproduce the group's music on the Internet became the swan song of The Hub : "Points of Presence", a live performance produced by the Institute for Studies in the Arts at Arizona State. We succeeded only in performing ten minutes or so of music with the full network : The technology, and physical distance, had defeated the music. The music of the League of Automatic Music Composers and The Hub was a "local" music, made by individual composers fascinated by the musical implications of musicians sharing information in a network. It was never intended to facilitate physical distance from each other, even though the technologies that we explored would allow it. Rather, we were exploring a new instrumentation for collaboration, and we chose to make a music that reflected the nature of our instruments. We collaborated in real time, but also in the design of the systems that made the connections and interactions between the flow of our automatically generated musics. The success of our music required that each composer give up the desire to control every detail of the resulting sound, and it delighted us most when the systems took on a life of their own. We were conducting musical experiments, and the music that resulted was the result of a process we embraced" [Chris Brown]) <http://www.fictive.org/cmr/appendix/brown.html>

- 1997 \_\_ **Pure Data** (Pure Data (or Pd) is a graphical programming language developed by Miller Puckette in the 1990s for the creation of interactive computer music and multimedia works. Though Puckette is the primary author of the software, Pd is an open source project and has a large developer base working on new extensions to the program. It is released under a license similar to the

BSD license. Pd is very similar in scope and design to Puckette's original Max program (developed while he was at IRCAM), and is to some degree interoperable with Max/MSP, the commercial successor to the Max language. Both Pd and Max are arguably examples of Dataflow programming languages. In such languages, functions or "objects" are linked or "patched" together in a graphical environment which models the flow of the control and audio. Unlike the original version of Max, however, Pd was always designed to do control-rate and audio processing on the host CPU, rather than offloading the synthesis and signal processing to a DSP board (such as the Ariel ISPW which was used for Max/FTS). Pd code forms the basis of David Zicarelli's MSP extensions to the Max language to do software audio processing. As with most DSP software, there are two primary rates at which data is passed: sample (audio) rate, usually at 44100 samples per second, and control rate, at 1 block per 64 samples. Control messages and audio signals generally flow from the top of the screen to the bottom between "objects" connected via inlets and outlets. Pd supports 4 basic types of text entities: messages, objects, atoms, and comments. Atoms are the most basic unit of data in Pd, and they consist of either a float, a symbol, or a pointer to a datastructure. (In Pd, all numbers are stored as 32-bit floats). Messages are composed of one or more atoms and provide instructions to objects. A special type of "content-less" message called a bang is used to initiate events and push data into flowing, much like pushing a button. Pd's native objects range from the basic mathematical, logical, and bitwise operators found in every programming language, to general and specialized audio-rate DSP functions (designated by a tilde (~) symbol), such as wavetable oscillators, the `fft~`, and a range of standard filters. Data can be loaded from file, read in from an audio board, MIDI, via Open Sound Control (OSC) through a Firewire, USB, or network connection, or generated on the fly, and stored in tables, which can then be read back and used as audio signals or control data. One of the key innovations in Pd over its predecessors has been the introduction of graphical data structures, which can be used in an endless variety of ways, from composing musical scores, sequencing events, to creating visuals to accompany Pd patches or even extending Pd's GUI. Like Max, Pd has a modular code base of externals or objects which are used as building blocks for programs written in the software. This makes the program arbitrarily extensible through a public API, and encourages developers to add their own control and audio routines, either in the C programming language or, with the help of other externals, in Python, Ruby, Scheme and many other languages as well. However, Pd is a programming language in its own right. Modular, reusable units of code written natively in Pd, called "patches" or "abstractions", are used as standalone programs and freely shared among the Pd user community, and no other programming skill is required to use Pd effectively. "Pd is designed to offer an extremely unstructured environment for describing data structures and their graphical appearance. The underlying idea is to allow the user to display any kind of data he or she wants to, associating it in any way with the display. To accomplish this Pd introduces a graphical data structure, somewhat like a data structure out of the C programming language, but with a facility for attaching shapes and colors to the data, so that the user can visualize and/or edit it. The data itself can be edited from scratch or can be imported from files, generated algorithmically, or derived from analyses of incoming sounds or other data streams." [Miller Puckette] <http://crca.ucsd.edu/~msp/software.html> <http://puredata.info>

- **1997 \_\_ Recycling the Future**, ORF Kunstradio Vienna (Avatar Québec, Toy Satellite Melbourne, Berliner Theorie Berlin, Radio Fro Linz,, Radio Laba Arles & Rimini), Geert Lovink, Pit Schulz (The project was to build a multimedia communications space in the Orangerie, including broadcasting (radio) and webcasting (internet) equipment, and expand the space to include other locations and partners around the world) <http://www.kunstradio.at/FUTURE/>

- **1997 \_\_ RemotePiano Installation**, Ryuichi Sakamoto + Toshio Iwai + Koichiro Eto, NTT ICC Tokyo (RemotePiano installation - is an experimental project to search for potentialities of new art expressions for the upcoming 21st century, including the Internet, computer graphics, automatic piano performance, etc. The themes of the project are collaboration over the network and interaction through sounds, graphics and instruments, featuring a musician Ryuichi Sakamoto, a media artist Toshio Iwai and a network artist Koichiro Eto. "If you access ICC home-page, you will see a page which enables you to play the grand piano placed in ICC by remote control system. If you push down a piano key, you will be able to perform a music session with other players over the Internet simultaneously. You will also be able to enjoy a picture of your performance." "You can play the piano installed at the ICC lobbt through the Internet. First of all, please create your sound pattern by clicking grids according a pattern you like. As you click one of the blue grid above piano image a white dot will appear. You can make a melody pattern by arranging those dots. The horizontal position of dot represents pitch of notes, left is low and right is high. The pattern of dots is sent to server from lower row to upper row. You can place only one dot in one row. Then click SEND. Your sound pattern will be transmitted to the piano at the exhibition site. By clicking on the piano keys, A pitch for your sound pattern can be selected by octave. The window below the piano image will show you the piano at the site at the very moment. Click the play button of RealVideo. The image and sound will be sent from NTTICC after a while. The piano play notes immediately after you press send button, however it took about 10 to 20 seconds to return to your computer through RealVideo according to the situation of the traffic of the network." During the exhibition, a net live event : mpixipm.) <http://www.ntticc.or.jp/Archive/1997/Piano/>

- **1997 \_\_ RGB**, synchronised music project between Berlin and Graz, ORF Kunstradio and Jazz Radio 101,9 Berlin; conducted and synchronised via TV-signal, Musikprotokoll 97, Steirischer Herbst (styrian autumn) 97, Josef Klammer (250 monoradios with headphones available at the concerts so that the audience can listen in on the radiomix as they like during the concert) [http://klammer.mur.at/texte/rgb\\_en\\_de.html](http://klammer.mur.at/texte/rgb_en_de.html)

- 1997 \_\_ **Satellite TV Workshop**, NTT ICC Tokyo (David Blair, Ingo Günther, Sensorband, Mark Pauline, Yoshinori Tsuda, Granular Synthesis, Stelarc)

- 1997 \_\_ **Sensorium Dial**, Andrew Garton, Grosse Sendesaal, RadioKulturhaus, Vienna (*Sensorium Dial was derived from radio frequencies drawn together by twenty antique radio receivers. A subtle and ever changing composition comprised of tunings made between licensed bandwidth carriers - free and yet to be commodified sound space. The installation would explore the silences amidst the frequencies that articulate the ebb and flow of radio broadcasting in Europe. The silences represented what remains of that space which existed prior to the emergence of the first publicly accessible communications network, a community of listeners bound to each other by glowing valves and tissue-thin speaker cones, and no less by the crisis of Europe's tumultuous history through which radio matured. It was a sonic wash of howls, screeches and noise. Given the size of the transformers in each of these radios, the magnetic field created by them would create wild, crazy, audible disturbances in the soundscape when ever someone walked within a one metre radius of the installation. People could interact with the installation merely by walking up to it or by waving ones hands around a single radio. Here was a kind of generative soundscape, changing in real-time according to the proximity of passersby and atmospheric changes within the foyer.* [Andrew Garton] [http://www.toysatellite.org/agarton/1997/12/sensorium\\_dial\\_installation\\_vienna.html](http://www.toysatellite.org/agarton/1997/12/sensorium_dial_installation_vienna.html)

- 1997 \_\_ **SoundExplorer**, Yoshihiro Kawasaki (*The mains for this work are mics that are positioned at five sites around the world, where they pick up environmental sounds and transmit them in real time over the Internet. In other words, a user can choose a street in Paris, a train station in Tokyo, a dense forest on Yakushima, a farm in Hokkaido, or a resort area in the suburbs of Los Angeles, and hear exactly what sounds are going on at any time in a distant place. By using a number of machines, it is also possible to hear the sounds of these various areas simultaneously.*) <http://www.sukothai.com/X.SA.16/X.16.Akamatsu.html>

- 1997 \_\_ **The Tables Turned - A Telematic Scene on the Same Subject**, Paul Sermon, net\_condition ZKM (*A live telematic installation, linking two remote sites via 3 x 64 K ISDN telephone lines. Two distant users sitting at separate tables observe a video image of themselves sitting at the same table with the user from the other distant site. Eight draws are located around each table top containing objects that enhance and suggest possible means of intimate communication between the users. The installation title is drawn from William Wordsworth's 18th century poem of the same name, as a critique of the romanticists' world view. The Tables Turned is preceded by Telematic Dreaming from 1992 and Telematic Vision from 1993. This installation is a continuation of the telematic theme placed within another social context. Dreaming used the bed, Vision used the sofa and The Tables Turned will use the table. Each context identifies a different set of rituals in human behavior, and with the table new forms of telematic interaction will be introduced. I will identify and define aspects of the installation design that are introduced toward this objective. The table is no less complex, but in comparison to the bed, a far less physical interface. Therefore the analysis of communication over a table is my main consideration here. Whilst The Tables Turned will suggest the physical capabilities of my previous works it concerns the table context, and will result in being far more user friendly and a more physically comfortable interface. The Tables Turned is experienced and used in two locations via a teleconferencing link, in much the same as my previous installation Telematic Vision. A table and a chair exist in two separate locations. A camera is located above each table at a 45° oblique view to the table. The first table is located on the first floor of the ZKM Medienmuseum Salon Digital, surrounded by four monitors. The second table site is situated in a remote location, also surrounded by four monitors - apart from the colour of the space it is identical to the first. Everything in the second site, except for the chair, is chroma-key blue - a blue box backdrop, carpet and table. i.e. only the chair and the person sitting on it are visible to a chroma-keyer, the blue area of the screen is replaced with the camera image from the ZKM location - an identical mapped image of a backdrop, carpet, table, chair, and another person. The combined image of the two distant users sitting at the same virtual table is displayed on the monitors in both locations, allowing the users to observe and control their telepresent bodies within 360° around the virtual table. The video flow and teleconferencing link works as follows. The video camera in the ZKM location outputs two identical images, one is fed directly to a local chroma-keyer, and the other is fed, via 3 x 64k ISDN telephone lines and teleconferencing link, to a second chroma-keyer in the remote location. The video camera in the remote location also outputs two identical images, one is fed directly to its local chroma-keyer, and the other is fed via the ISDN lines to the first chroma-keyer in the ZKM location. The two chroma-keyers now have exactly the same image inputs, each system simultaneously chroma-keys the camera image from the remote location as the key-image on top of the camera image from the ZKM location as the fill-image. The final chroma-keyed images are then feed to each set of four monitors independently from the chroma-keyers in both locations. Eight draws around the edge of each table top can be opened by the user. Each table top can also be rotated by the user. These draws will contain objects and props that have corresponding links between them that determine the potential narratives and dialogues that can unfold between the two persons sat at the table. The Tables Turned takes its title from a poem by William Wordsworth of almost the same name. The original poem accuses the science and art of the time of being nothing more than an outrageous imitation. The real truth and reality being found in a return to nature. So what is nature ? and what is real in the telematic space ? With the help of Timothy Druckrey this installation contains adapted verses from Wordsworth's poem on the bottom of each draw around the table tops. Verses that provoke the very question of reality from a rather ironic telematic point of view.) <http://www.hgb-leipzig.de/~sermon/>*

- **1997 \_\_ Sound Mapping**, Iain Mott, Marc Raszewski, Jim Sosnin (*This paper proposes an argument for the role of sound installation in addressing the physical relationship between music and the general public. The focus of the discussion is on an outdoor interactive music event titled Sound Mapping, which explores the issues raised. Sound Mapping is a site specific algorithmic composition to be staged in the Sullivan's Cove district of Hobart. Sound Mapping uses four mobile sound-sources each carried by a member of the public. Each source is a portable computer music module housed in a wheelable hard-cover suitcase. Groups of individuals will wheel the suitcases with a Museum attendant through a specified district of Sullivan's Cove following a path of their choice. Each individual plays distinct music in response to location, movement and the actions of the other participants. In this way a non-linear algorithmic composition is constructed to map the footpaths, roadways and open spaces of the region and the interaction of participating individuals. These sound sources are played with respect to geographical location and participant interactions using a system of satellite and motion sensing equipment in combination with sound generating equipment and computer control. The project aims to assert a sense of place, physicality and engagement to reaffirm the relationship between art and the everyday activities of life. The group of modules consists of a single hub case and three standard cases. All the cases contain: battery power; a public address system; an odometer and two piezoelectric gyroscopes. The standard cases contain a data radio transmitter for transmission to the hub and an audio radio device to received a single distinct channel of music broadcast from the hub. The hub case contains a Differential Global Positioning System (DGPS) receiver that generates spatial coordinates for the positioning of the group to an accuracy of 5 m. GPS is a worldwide radio-navigation system formed from a constellation of 24 satellites and their ground stations. GPS uses these satellites as reference points to calculate positions of GPS receivers anywhere on the earth. DGPS offers greater accuracy than standard GPS and requires an additional radio receiver that receives an error correcting broadcast from a local base station (Trimble, 1997). The Australian Surveying and Land Information Group (AUSLIG) offer subscriptions to such signals broadcast on the JJJ FM carrier signal. The hub produces music on a four channel sound module managed by a lap-top computer in response to its location as well as motion data from itself and the three standard cases. Each channel of music is produced for a specific case. The music is broadcast to its target case by radio transmission. Motion data is generated by an odometer and gyroscopes in each case and is broadcast to the hub from the standard cases by data radio transmitters. Odometers measure wheel rotation in both directions and two gyroscopes measure tilt and azimuth.) (SOUND MAPPING, de Iain Mott, Marc Raszewski et Jim Sosnin. Ce dispositif mobile, dont la production sonore est liée à la position et aux déplacements de l'utilisateur dans un milieu urbain, fait appel aux technologies informatiques, électroacoustiques, et de positionnement satellitaire. Le système est en apparence une boîte noire dotée de roulettes. Ce n'est plus l'interface qui est explorée, comme dans IOOp et Koan, mais c'est l'exploration physique d'un environnement architectural qui permet de révéler un univers sonore. Avec à cette interface, les artistes proposent une cartographie, qui se déroule au fur et à mesure de la visite. Il y a superposition d'un espace virtuel, une dimension supplémentaire à la réalité. L'interface devient un guide, une extension perceptive. [Yannick Dauby]) <http://www.aliak.com/node/1934>*

- **1997 \_\_ TAM TAM** - The Spirit of the Digital Djembé, Michel Waisvisz, July 1997 Nagoya, Japan (*After inventing the hands about than 12 years ago - and since than having played them during hundreds of concerts in many different countries and circumstances I felt the need to look back. Not with a nostalgic eye but with an exploring ear. As a physical reference for, and against, The Hands I choose one of the oldest instruments in the world and started learning to play it: the Djembé - the Tam Tam, the talking drum from Africa -. Both the Djembé and the Hands are in a cultural sense coming from telecommunications industries: the Djembe from the talking drum tradition to communicate between villages in Africa and The Hands from electronic telecommunication technology, covering greater distances. Both gradually also have been developed for musical purposes. Playing both instruments during one concert infers a controversial awareness of historical versus phenomenological presence in the players mind. Another notable fact is that the acoustic sound qualities of the Djembe acoustically enrich the electronic sounds in a way electronics cannot enrich the sound of the Djembé. "That's how 'technologies' communicate (!). This piece is labeled as 'Tam Tam - The Spirit of the Digital Djembé' as a sincere dedication to the fact that we can seriously doubt whether a digital Djembé has a spirit at all. Not to speak about how baylonic many people behave these days while having at their disposal this vast amount of new instruments for communication , numerous communication- and art theories and the urge to 'communicate' endlessly about the need for communication. Luckily music is from a another world; it can't be trapped in words 'Hit the phone Jack !' [Michel Waisvisz]) <http://crackle.org/Tam%20Tam.htm>*

- **1997 \_\_ TransJam** (*Allows synchronous peer-to-peer interaction between several users but going beyond the MIDI format supporting low fidelity digital audio. TransJam is a Java based server that allows people to jam together, or play games together, over the Internet. The Transjam server is a 100% Java program that runs on the same computer as the HTTP web server. Clients log in to the server and communicate using TCP/IP sockets. The client programs are written in Java (or 'C') and can be run in a web page as an Applet. This allows interaction between multiple people who are accessing web sites on the same machine. Interaction may consist of chatting, game play, music performance, collaborative design, etc. TransJam is a library and protocol for implementing distributed music applications. The TransJam server provides a way to create shared objects, acquire locks on those objects, and distribute notifications of changes to those objets. A difficulty encountered with TransJam is that the protocol is text-based. This makes transmitting floating point numbers expensive.) <http://www.transjam.com/>*

- **1997 \_\_ Variations for WWW**, Seinoshin Yamagishi, Kohji Setoh (*"Variations for WWW" is a network music application utilizing the interactive possibilities of the Internet. Users who access this site compose or play a piece, called "Variations". These "Variations" are interactive: they can be heard while they are created. "Variations" explores many possibilities of network music. It has established a creative and interactive music environment which any capable netizen can access, and furthermore, this music flows continuously as an installation in cyberspace. "Variations" is realized by an experimental way of connecting MAX and the WWW. Such MAX-Web connection produces new possibilities of musical communication and collaboration.*) [http://cmt.siba.fi/skanki/Net\\_composition/comp/varwww.pdf](http://cmt.siba.fi/skanki/Net_composition/comp/varwww.pdf)

- **1997 \_\_ Voice treated at a distance** (*Lors d'un concert avec Londres en mai 97 au I.C.A, Lawrence Casserley traitait en temps réel grâce à un lourd dispositif Midi, la voix d'une chanteuse improvisant à Nice. Elle pouvait ainsi jouer avec sa propre voix, filtrée, harmonisée et traitée à distance en temps réel. [Luc Martinez]*)

- **1997 \_\_ Webdrum**, Phil Burk (*Drum box that can be shared by several people over the Internet, based on Phil Burk's Audio Software Synthesis API for Java JSyn and the TransJam Architecture. A drum track can be owned by one person at a time and edited by the owner. Each user will see the same pattern as it is being edited, but the client machines are not synchronized. Editing a looping pattern is a good way to avoid the problem of network latency which would otherwise make live jamming very difficult.*) <http://www.transjam.com/>

- **1997 \_\_ Weblog** (*A blog (a contraction of the term "Web log") is a Web site, usually maintained by an individual with regular entries of commentary, descriptions of events, or other material such as graphics or video. Entries are commonly displayed in reverse-chronological order. "Blog" can also be used as a verb, meaning to maintain or add content to a blog. Many blogs provide commentary or news on a particular subject; others function as more personal online diaries. A typical blog combines text, images, and links to other blogs, Web pages, and other media related to its topic. The ability for readers to leave comments in an interactive format is an important part of many blogs. Most blogs are primarily textual, although some focus on art (artlog), photographs (photoblog), sketches (sketchblog), videos (vlog), music (MP3 blog), audio (podcasting), which are part of a wider network of social media. Micro-blogging is another type of blogging, one which consists of blogs with very short posts. As of December 2007, blog search engine Technorati was tracking more than 112 million blogs. With the advent of video blogging, the word blog has taken on an even looser meaning — that of any bit of media wherein the subject expresses his opinion or simply talks about something. The term "weblog" was coined by Jorn Barger on 17 December 1997. The short form, "blog," was coined by Peter Merholz, who jokingly broke the word weblog into the phrase we blog in the sidebar of his blog Peterme.com in April or May of 1999. Shortly thereafter, Evan Williams at Pyra Labs used "blog" as both a noun and verb ("to blog," meaning "to edit one's weblog or to post to one's weblog") and devised the term "blogger" in connection with Pyra Labs' Blogger product, leading to the popularization of the terms. Before blogging became popular, digital communities took many forms, including Usenet, commercial online services such as GENie, BiX and the early CompuServe, e-mail lists and Bulletin Board Systems (BBS). In the 1990s, Internet forum software, such as WebEx, created running conversations with "threads." Threads are topical connections between messages on a metaphorical "corkboard." The modern blog evolved from the online diary, where people would keep a running account of their personal lives. Most such writers called themselves diarists, journalists, or journalers. Justin Hall, who began personal blogging in 1994 while a student at Swarthmore College, is generally recognized as one of the earliest bloggers, as is Jerry Pournelle. Dave Winer's Scripting News is also credited with being one of the oldest and longest running weblogs. Another early blog was Wearable Wireless Webcam, an online shared diary of a person's personal life combining text, video, and pictures transmitted live from a wearable computer and EyeTap device to a web site in 1994. This practice of semi-automated blogging with live video together with text was referred to as sousveillance, and such journals were also used as evidence in legal matters. In 1993, Dr. Glen Barry invented blogging, defined as web based commentary, linking to other articles. The "Forest Protection Blog" (originally entitled "Gaia's Forest Conservation Archives") at <http://forests.org/blog/> was also the first political blog, as Dr. Barry campaigned there for forest protection and documented these efforts as his Ph.D. project. The blog initially used the gopher protocol, and has been on the web continuously since Jan. 1995, making it the web's first and longest continuously running blog. Prior to this, Dr. Barry provided forest conservation materials via email and bulletin board since 1989. The work has since evolved into the world's largest environmental portals. Early blogs were simply manually updated components of common Web sites. However, the evolution of tools to facilitate the production and maintenance of Web articles posted in reverse chronological order made the publishing process feasible to a much larger, less technical, population. Ultimately, this resulted in the distinct class of online publishing that produces blogs we recognize today. For instance, the use of some sort of browser-based software is now a typical aspect of "blogging". Blogs can be hosted by dedicated blog hosting services, or they can be run using blog software, or on regular web hosting services.) <http://www.essex.ac.uk/chimera/content/pubs/wps/CWP-2005-02-blogging-in-the-Knowledge-Society-MB.pdf>*

- **1997 \_\_ XChange Compilations**, Rasa Šmite, Raitis Šmits, Jaanis Garancs (*XChange mailing-list and network for creative internet broadcasters project was initiated in 1996 by E-LAB, Riga. It started in 1997 with "Xchange Compilations" - the online*

project on linking audio content on the net. It was online audio project on exchanging and linking up the real time audio content on the net, initiated by E-LAB artists Rasa Šmite and Raitis Šmits. This project was one of those we did based on the idea that 'data can be placed everywhere' (like net.radio OZOne's data were placed on 3 different servers in Riga, Berlin, Amsterdam). The idea was to make a picture of alternative Internet broadcasters at the present moment, using real audio as a tool for it. The content was built by contributors themselves - their sound material created the content. 'Call for contributions' we announced in the mailinglists (syndicate, nettime, others) and started to collect links of real audio files. For those sound artists and experimental audio-makers who didn't have access to real audio servers - it was possible to use Radio Internationale Stadt RA-server. Xchange Compilations had each month update - free flowing concept - free building content - free floating location. All together we made 4 monthly editions. Each of those issues was placed on different server in different physical locations and with reference to some on-going new media project (like Remote C at AEF') or event (last edition were made for P2P conference.) <http://re-lab.net/netradio/workshop01/06/index.html> <http://ozone.re-lab.net/Xchange/> <http://www.rixc.lv/reader/txt/txt.php?id=320&l=en>

- **1997 \_\_ XChange on-air session** (One of the first net.radio meetings and attempts to do live broadcasting in the internet from the event was the "Xchange On-air session" festival in Riga, November of 1997. It was 3-day event focusing on internet web-casting and real time net audio and radio experiments: net.radio conference, radio workshop, presentations, discussions about radio development, live music jam sessions and concerts, on-line press conference. There was every day live Internet broadcasting from all Xchange events, net.casting of remote participants and available chat room. There were live web-cam images and live real audio stream from various festival events - presentations, parties, net.radio workshops in different locations. So artists who didn't come to Riga could follow the event via the internet. Program : remote broadcasting of Erik Davis lecture "Network Subjectivity" in Budapest (Live Internet broadcasting from ParaRadio, Budapest) - live net.broadcasting experiments with participation of remote groups (Backspace, Workspace radio, Pararadio, JODI and others) - "Joint mission" = Xchange live broadcasting for e~scape lounge at Public Netbase (Vienna) (in collaboration with "Casablanca 2000" at FM Radio-Rigai) - live Internet broadcasting experiments with participation of remote groups, live music mix+jam session, DJs (Sentimental Beatz), etc.) <http://www.c3.hu/para/live.ram> <http://xchange.re-lab.net/festival/> <http://re-lab.net/netradio/workshop01/07/index.html>

## 1998

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- **1998 \_ ?** (In 1998: dj choum a weekly program of mix of music from sounds coming from the web.)

- **1998 \_ 6 Villages - Acoustic Environments in Change** (Improvement of sustainable qualities and strategies for local action), University of Turku and Tampere Polytechnic (Acoustic Environments in Change is an international, multi-disciplinary project, studying the changes of soundscapes in six European villages. It involves European researchers, artists, journalists, local inhabitants and Canadian pioneers of soundscape studies. They all share an interest in the relationships between the soundscape, the environment, and its various inhabitants. In 1975, five European villages were visited by a group of Canadian soundscape researchers and members of the World Soundscape Project (WSP). The villages were in France, Sweden, Scotland, Germany, and Italy. The Acoustic Environments in Change project, led by Dr Helmi Järviuoma from the University of Turku, is re-visiting the villages in 2000 to undertake comparative studies, and at the same time is adding new community based initiatives and approaches to the soundscape. In addition, the acoustic ecology of a village in Finland is studied. Are the church bells still chiming every 15 minutes in the German village of Bissingen, near Stuttgart? Does the hum of the glassworks even today remind the villagers of the Swedish Skruv about the source of their daily bread? Can one still hear the bagpipe orchestra of the famous school, the Dollar Academy in the Scottish village Dollar, even if the hum of the traffic in the nearby main road has increased considerably? The sound environment has a crucial impact on the well-being of humans and other beings as well. This is why we need to consider the ecological and cultural effects of changes in the sound environments. Amongst other things, the project is studying the acoustic communication of people and the ways in which they construct identities using sounds. The main goal of the research is thus to study the transitions in European soundscapes. We try to develop methods and concepts which would extend the analysis of sonic environments. Finally, our aim is also to create practical means that would assist each locality in designing and constructing its soundscapes. Cultural analysis of soundscape is, however, needed first. We cannot contribute much to the planning of the auditory environment before we know more about the ways in which people use sounds when interacting with their own particular environments. Phases I and II, 1998-2001/ Phase III, 2001-2004. Consultants: Prof. Jean-François Augoyard, Hildegard Westerkamp, Claude Schryer, Thomas Gerwin) <http://www.6villages.tpu.fi>

- **1998 \_\_ Acoustic World Atlas**, Thomas Gerwin, ZKM (People from around the world sent more than 1,100 sounds typical of where they lived. Gerwin then composed 3 - 21 second sound files that could be played via three World Sound Keyboards, where different play modes allowed a player to musically modify the original sounds) <http://www.swo.de/ThomasGerwin/>

[worldsounds1.html](#)    <http://www.inter-art-project.de/KlangWeltKarte.html>    <http://alcor.concordia.ca/~kaustin/cecdiscuss/1997/0707.html>

- 1998 \_\_ « *Agapē Agape* », William Gaddis (*Agapē Agape* is the final work of William Gaddis. Gaddis has compressed 50 years of research on the social history of the player piano into a novel narrated by a dying elderly man who is as concerned with his own physical collapse as he is with his piano-based literary project. Gaddis's cultural jumping-off point is the late 19th and early 20th century, as he explores the coincidence between the advent of techniques of reproduction that made mass-produced art possible and the drop-off in artistic participation by hobbyists and ordinary people that soon followed. The title captures much of the essential concept, referring to the unique sense of wonder that arises during the creative process and that is now missing from our daily lives. While working at the *New Yorker* magazine as a fact checker, he first became interested in the player piano, which was the subject of an article he was assigned to work on. This was the start of an interest -- obsession even, which would remain with him over the next 50 years of his writing life. Gaddis was not, however, interested in the player piano as a musical instrument, but as the manifestation of what he considered to be a disturbing trend in modern life: the growing use of mechanical reproduction in the arts, the resulting loss of autonomy and respect for individual artists, and a growing market for instant gratification entertainment. He set the project aside while he worked on his first novel, *The Recognitions*, which was published in 1950 (with in *Atlantic Monthly* in 1950, 'Stop Player. Joke no.4'). A-GAH-PE A-GAPE: five syllables, two languages and an oxymoronic opposition of meanings. The first word, Gaddis reminds us, refers to "that natural merging of created life in this creation in love that transcends it, a celebration of the love that created it." "Agape," meanwhile, which has embedded the word "gap," carries the customary meaning of something cleft or opened. The idea of the gap is relevant here, for Gaddis's great interest in the player piano is focused on the gap-filled piano roll, which, along with Joseph Marie Jacquard's early-19th-century punch-card loom, is seen as a forerunner of the on-off switch simplifications of binary-based systems, and therefore closely linked, at least theoretically, to the eventual emergence of cyber-culture. The player piano appeared in the late 19th century, putting this proto-binary mechanization in the service of popular entertainment; that it brought the finest fruits of high culture to the paying masses; that it was a way of "having art without the artist because he's a threat, because the creative artist has to be a threat so he's swamped by the performer." This hugely ambitious novel, nearly 1000 pages long, is now recognised as a masterpiece of twentieth century American fiction. He planned to write a detailed and comprehensive history of the instrument and its influence on contemporary life, but the project was never fulfilled. It seems this was in part due to his growing realization that the player piano was just one small part of the history of mechanisation and automation. He became overwhelmed by the sheer volume of material he accumulated on the subject, and the difficulty of marshalling it into an effective narrative. But it was also the case that Gaddis used much of the material directly or indirectly in his novels, and by 1989, had decided that the history, for which he had by then accumulated material over a period of nearly 50 years, was 'over-researched' and would never be published. So it was perhaps surprising that for his last work, he decided to return to the project. He spent two years working on the history, but then decided to re-cast it as a work of fiction. *Agapē Agape* was completed shortly before his death in 1998, and finally published in 2002. The novel is a stream of consciousness narrative by a sick, possibly dying man. Confined to his bed by ill-health, he frantically tries to sort and make sense of his chaotic papers and affairs, while raging at his physical deterioration and incapacity. The reader is immersed in the mind of a writer and thinker desperately trying to set down his thoughts about the nature of art in the modern world in a coherent way, before illness and muddled thinking overwhelm him. It hardly matters whether Gaddis and the narrator are one and the same: they share a preoccupation with the influence of mechanisation on art and artists, and a conviction that the player piano represents all that is worst in the modern desire for gratification without thought or effort. The book is a series of sustained reflections on art and the creative impulse, and the narrator's bitter disappointment and disgust at the commodification of art - whether it be painting, music or writing - brought about by mass reproduction: 'Authenticity is wiped out when the uniqueness of every reality is overcome by the acceptance of its reproduction, so art is designed for its reproducibility. Give them the choice...and the mass will always choose the fake'. The Pianola represents for him the desire for 'mindless' entertainment at the expense of art: 'Waiting to be entertained, because that's where it started and that's where it ends up, avoiding pain and seeking pleasure play the piano with your feet, play cards, play pool, play pushpin....don't have to read music know a clef from a G string just keep pumping'. For a man to whom music is at the centre of the universe, 'Music, that's where it all starts and ends' this careless, mindless approach to music making is almost intolerable. But at the same time, the narrator makes a sharp distinction between the Pianola and the reproducing piano, and has nothing but respect -- reverence even -- for the *Welte-Mignon*: '... the *Welte-Mignon* that didn't just record the notes but more perforations that actually reproduced all the shadings and subtleties of the artist, the unique performances of their own work by Debussy and Grieg, Rachmaninoff George Gershwin and the greatest pianists, Paderewski and God knows who, don't you see? These *Welte*, *Duo-Art Pianolas*, *Ampico* all over the place what they'd done was to make the transient permanent, given the fleeting nature of music of great performances of great music a permanence that's the heart of authenticity....when *Welte's* reproducing apparatus put Debussy into the piano you wouldn't need Debussy. You wouldn't need Grieg you wouldn't need Gershwin or Paderewski or any of them because you'd have authenticity and the whole concept of authenticity preserved, the music itself and the fleeting performances brought together forever, given permanence that's the heart of authenticity'. [Claire L'Enfant - in *The Pianola Journal* Volume 15, 2003]) <http://www.williamgaddis.org/agape/reviewpianolajrnl.shtml>

- **1998 \_\_ Always Three Words**, Matmos (*First word: 4-channel tape recorder. Second word: walkie-talkie (no input). Third word: another walkie-talkie (no input). Both of the hand-held walkie-talkies are put in transmit mode and moved over the recorder; producing interference which can be manipulated with gestural sweeps. Last word: smart and funny and it's got a beat.*) <http://www.free103point9.org/studycenter/historicaltransmissionworks>

- **1998 \_\_ Art Servers Unlimited** (ASU - was the conference and net.radio event by and about initiatives and organisations in Europe, which focus on supporting the artistic use of the internet. London, 1st to 4th of July 1998, ICA New Media Centre and Backspace. The conference was structured into four parts: the preparatory mailing list u-unlimited, working meetings at backspace, the conference at the ICA and the net.radio party 'UNLIMITED' at its New Media Centre. Among other things, Marko Peljhan is presenting the Insular Technologies project. Net.radio panel : Daniel Molnar/Pararadio/Budapest, Borut Savski/MZX/Ljubljana, Gio D'Angelo/Backspace/London, Rasa Smite/OZOne/Riga, William Rowe/ProteinTV, Pit Schultz/Mikro,Nettime/Berlin was moderator of the net.radio panel. "Let's start to talk about radio on the net. The question is, if the notion of radio is the right one for the praxis of what is called net.radio. We have a range of participants here, who have different approaches to practically define what net.radio is. To start with, we just had a meeting in Berlin under the name 'net.radio days 98', and one of the interesting outcomes was the plurality of the definition of net.radio, so I think this is symptomatic to all kind of definitions such as 'art servers' or 'institution'. I think we are in a time, where the technology follows the practise, so the practice is faster than the terms, or the bottom goes faster than the top." [Pit Schulz].) <http://asu.sil.at> <http://asu.sil.at/conf4.html>

- **1998 \_\_ Biophony**, Bernie Krause (*Biophony (aka ecological soundscapes) is the sound all animals make at a given location absent humans and man-made machines. The term was coined by Dr. Bernie Krause. The sound nature makes is usually recorded via acoustic reflection. The study of ecological soundscapes is called acoustic ecology. The opposite of biophony is anthrophony, i.e., man-made noise (also coined by Dr. Krause). Bernie Krause divide the sounds into three categories : biophony - the sounds emitted by animal beings, geophony - the sounds from the earth and the natural elements, and anthropophony - the sounds resulting from human activities. Nature sounds, and especially animals sounds have oftenly been represented in music, and recordings of these sounds are commonly associated to romantism, new-age and other weak interpretations of idealistic wilderness. But an animal phonography allows to enter into an animal's temporality : listening its signals is also trying to follow his time line. It gives a little access to his umwelt. Because animals sounds have sometimes a vocal quality (from the agony of a frog to the chanting of a stag) it transform also our conception of voice. Sometimes animals create patterns of sounds that are closer to weaving than doing music. Animal phonography propose a shift in our human perception of sounds. [Yannick Dauby] "The biophony, as most of us are lately beginning to realize, is a highly organized compilation of sounds within the natural soundscape. In fact, it reads like a musical score if one has the eyes and a ceertain level of experience to look at it. I am fairly certain, especially because of my background in music synthesis as a professional musician, and now as a bioacoustician, that music springs directly from the natural world. Further, it was the animals who taught us to dance and sing. Resistance to insight and more informed models is always extant in the academic community. It is a special paradigm all to itself. [Bernie Krause]) <http://www.wildsanctuary.com>*

- **1998 \_\_ Clickscape98**, Thomas Lehner (*Another large-scale communication sculpture controlled through the Internet is Thomas Lehner's Clickscape98. This ambitious project was a one week event. Users from all over the world had the ability to affect text, visuals, and sound in three separate physical spaces. The text of LED lights scrolling across a building, the lights in windows of a high-rise, and sound through 16 speakers on the Nibelungen Bridge in Linz, Austria, all were controllable by the input of a mouse click. The potential of what Thomas Lehner's piece and others represented is enormous. These projects utilize the medium in most compelling ways, and utilize the computer and network systems to the fullest. It opens up many possibilities for a digital future. What lead to the creation of this high level of interactivity on the web were the large-scale interactive installation of the present and the past.) [Lucy Petrovich, "From Computer Art to Digital Art to New Media ", 2000]) [http://www.isea2000.com/actes\\_doc/25\\_petrovitch.rtf](http://www.isea2000.com/actes_doc/25_petrovitch.rtf) <http://www.servus.at/clickscape98/>*

**1998 \_\_ Depois do Turismo vem o Colonismo**, Gilberto Prado (*The installation "Depois do Turismo vem o Colonismo" (After the Turismo comes the Colonismo\*) consisted of a "portal" with two Webcams connected to Internet which were started by sensors disposed in the physical space of the installation through the visitors' passage. That local image grabbed in real time was mixed with the ones of an image data base and made available throughout the net. The images available on the data base arise from scenes of anthropophagi, pictures of XVI and XVII centuries, witch portray the foreign view of the first visitors, tourists of the Terra Brasilis, mixed with artistic references, contemporary and also from other periods. The Web users could look at the space through webcam. The work was made with humor about the presence, the foreign look, the contamination and the cultural cannibalism. This Web installation took part, between September 3 and October 31, 1998, in the exhibition "City Canibal" at the Paço das Artes in São Paulo and in the sites selection in the Web Art of the 24th Biennial, in São Paulo, 1998.) <http://www.cap.eca.usp.br/gilberto/english/index.html>*

- **1998 \_\_ « Dissolution and Fragmentation: Problems in Online Communities »**, Elizabeth Reid & Beth Kolko (in

*CyberSociety II*. Edited by Steven G. Jones. Sage Publications, Thousand Oaks, California: 1998. - CMC (Computer-Mediated Communication is not just a tool; it is at once technology, medium, and engine of social relations. As Terry and Calvert (1997) noted, "Defining technology strictly in terms of objects, such as tools, machines, and appliances, implies a fundamental (but ultimately illusory) distinctions between the technology, its designer, and its user. In this formulation of the term, technology, then, has been described as neutral and autonomous, having no inherent or built-in moral or political qualities. In other words a tool can be used for good or for bad". Definitions of community largely have centered around the unproblematic notion of place, a "where" that social scientists can observe, visit, stay and go, engage in participant observation. They have relied, as Loftalian (1996) claimed, on terms "that refer to group dynamics such as assimilation, acculturation, adaptation, and participation (and) to the opposite : expulsion, expatriation, and exile. On-line the terms used for indicating communities are different, such as posting, cross-posting, reading, lurking, and flaming, which don't imply being part of a whole". Sandy Stone's (1991) definitions of virtual communities and virtual space are most helpful, as for her they are, "incronrovertibly social spaces in which people still meet face-to-face, but under new definitions of both 'meet' and 'face'. Virtual communities are passages points of collections of common beliefs and practices that united people who were physically separated". Thus cyberspace hasn't a "where" (though there are "sites" or "nodes" at which users gather). Internet researcher Elizabeth Reid of Australia, in an essay reprinted in *Communities in Cyberspace* (edited by Mark Smith and Peter Kollock), describes how some early BBS's -- she cites "CommuniTree" -- were intended to be free, open forums for intellectual and spiritual discussions. This community, she writes in a selection called "Hierarchy and Power," collapsed under an onslaught of messages, often obscene and hostile, posted by the first generation of adolescents with personal computers and modems. (Understandably, there is something about adolescence that doesn't care for free, intellectual and spiritual discussions.) In *Cybersociety 2.0*, a collection of essays about digital communication and community (edited by Steven G. Jones), Reid and co-researcher Beth Kolko write in "Dissolution and Fragmentation: Problems in On-Line Communities" that it's the ease of individual expression -- the "singularity of on-line personae," that can be the greatest threat to online communities. "It has been all too easy for virtual communities to encourage multiplicity but not coherence," write Reid and Kolko, "with each individual persona having a limited, undiversified social range. This cultural schizophrenia makes the virtual community brittle and ill equipped to evolve with the demands of circumstance." [Steven G. Jones, Nancy K. Baym])

- **1998** \_\_ **Distributed Legible City**, Jeffrey Shaw (*The Distributed Legible City* is activated by the visitors who ride a home bike. Position and audio data are exchanged via internet so that several visitors can explore the simulated urban spaces of Amsterdam, Karlsruhe or Manhattan. The buildings are replaced by text. Real world and virtual world are connected so that it's easy for visitors to get along with the rules of the virtual space. In *The Legible City* (1989) the visitor rides a stationary bicycle through a simulated representation of a city that is constituted by computer-generated three-dimensional letters, forming words and sentences along the sides of the streets. Using the ground plans of actual cities - Manhattan, Amsterdam and Karlsruhe - the existing architecture is completely replaced by textual formations written and compiled by Dirk Groeneveld. Travelling through the cities of words is consequently a journey of reading. The choice of path one takes is a choice of texts as well as the spontaneous juxtapositions and conjunctions of meaning. The handlebar and pedals of the interface bicycle provide the viewer interactive control over the direction and speed of travel. The physical effort of cycling in the real world is gratuitously transposed into the virtual environment, affirming a conjunction of the active body in the virtual domain. A video projector is used to project the computer-generated image onto a large screen. Another small monitor screen in front of the bicycle shows a simple ground plan of each city, with an indicator showing the momentary position of the cyclist. *The Distributed Legible City* encompasses all the experiences offered by the original version (*The Legible City*, 1989), but introduces an important new multi-user functionality that to a large extent becomes its predominant feature. In *The Distributed Legible City* there are two or more bicyclists at remote locations who are simultaneously present in the virtual environment. They can meet each other (by accident or intentionally), see abstracted avatar representations of each other, and can verbally communicate with each other when in close contact. While *The Distributed Legible City* shows the same urban textual landscape as the original *Legible City*, the database now takes on a new meaning. The texts are no longer the sole focus of the user's experience. Instead it is con-text (both in terms of scenery and content) for the possible meetings, and resulting conversations (meta-texts), between the bicyclists. In this way a rich new space of co-mingled spoken and readable texts is generated. The artwork has changed from being merely a visual experience, to becoming a visual ambiance for social exchange between the visitors. As a result of the increasingly ubiquitous nature of the Internet and the maturing of 3D interaction techniques, there is a growing need to define aesthetic frameworks for the technological development of new social interaction and interface paradigms for content rich, interconnected, shared virtual environments. *The Distributed Legible City* has become a context for exploration of these issues, adding a space of distributed multi-user social engagement to the space of interactive spectacle. This paradigm is a novel one for art, embedding and transforming its representational practices in the new and evolving net condition.) [http://www.icinema.unsw.edu.au/projects/prj\\_dislegcity.html](http://www.icinema.unsw.edu.au/projects/prj_dislegcity.html)

- **1998** \_\_ **Ebb and Flow**, Nina Sobell & Jesse Gilbert (*A series of three performances streamed live over the web that explore the relationship of technology, sound, and biological processes. Conceptualized by web-artists Nina Sobell and Jesse Gilbert, Ebb and Flow will consist of weekly webcasts of electronic experiments carried out using musical instruments, electroencephalographic devices (EEG), MIDI, and video. Drawing on Sobell's experimentation with EEG feedback, which dates back to her residency at the*

VA Neuropsychology Lab, Sepulveda, CA in the early 1970s, the team will use IBVA software to translate the brain wave data into sound, via a MIDI bridge. The sounds created will correspond to the frequency and amplitude of the peak wave, creating a musical baseline that will be accompanied by live musicians. The sounds will be mixed live to form an ongoing soundscape, and transmitted to a live audience on the web.) <http://turbulence.org/Works/ebb/>

- **1998** \_\_ **Electronic Café International's Roadside Attractions**, Kit Galloway (In 1998, ECI-Cofounder Kit Galloway created "ECI's Roadside Attractions," a 3D, navigatable, multiuser-world on the activeworlds.com's Alpha World Server - among its many unique and celebrated applications of this technology is the Avatar Stage, where 3D caricatures representing participants from anywhere in the world appear live "On Stage," and perform to an international audience who are also represented in this live online world as avatars.)

- **1998** \_\_ **EPC (Electro Pathological Consort)**, Andrew Garton, Sergio Messina, Ludwig Zeininger (The Electro Pathological Consort (EPC) performs live improvised music using computers, electronic instruments and samplers. EPC was formed in 1997. It owes its name to the Electro Pathological Museum, a Viennese institution founded solely to inform the public on the dangers of electricity. Being geographically problematic (the three members live in different countries and continents, Melbourne, Milano, Vienna), EPC uses the Internet as a workspace and as a distribution outlet. Very active on the defence of the web as a public media space, EPC has distributed freely its music on several web sites. Among the EPC members numerous projects, are the development of web based musical instruments, self-generative music and the research of new and improved relations with music consumers outside mainstream channels. Of themselves, the EPC says "...we're ideas based... that of free - flowing liberated ideas! At the heart of what we're doing, we're three people who share a common affinity with sound, a disdain of the music industry and a love of novelty. There's something moving, humorous and compelling about what we do and how we go about doing it. Electro Pathological says it all.") <http://www.toysatellite.org/epc/>

- **1998** \_\_ **Global String**, DEAF 2000, V2 Rotterdam, Ars Electronica Linz, Atau Tanaka, Kasper Toeplitz (multi-site network music installation, connected via the internet. It is a musical instrument where the network is the resonating body of the instrument, by use of a real time sound synthesis server. The concept is to create a musical string (like the string of a guitar or violin) that spans the world. Its resonance circles the globe, allowing musical communication and collaboration among the people at each site. The installation consists of a real physical string connected to a virtual string on the network. The real string (12mm diameter, 15m length) stretches from the floor diagonally up to the ceiling of the space. On the floor is one end - the earth. Up above is the connection to the network, to one of the other ends somewhere else in the world. Vibration sensors translate the analog pulses to digital data. Users strike the string, making it vibrate. A functional prototype was created in June, 1999. The structure consists of a base structure, steel cable, and bridge. Ceramic as well as Hall Effect sensors are used to detect both high and low frequency vibrations of the string. This signal enters the computer as audio-rate and control-rate signal, exciting a physical-model virtual synthesis engine. IP-TV video and MP3 audio streaming connectivity is in development. The server is the "bridge" of the instrument - the reflecting point. It runs software that is a physical model of a string of unreal proportions. Data is streamed back to each site along with video, providing a visual connection among the users. Global String is a scalable multi-mode installation. The number of sites can range from two and up (three being the ideal initial number). The installation can be used in concert mode for soloists at each site to perform together. Global String allows people, be it performers or gallery visitors, to create musical harmonies together over the net.) <http://www.sensorband.com/atau/globalstring/> <http://www.fondation-langlois.org/html/f/page.php?NumPage=284>

- **1998** \_\_ **GNUmusic - An Open Studio on the Network for Electronic Musicians**, Akihiro Kubota, Kenji Yasaka, Kohji Setoh (The GNUmusic(GNU + Music).net web site is an open studio on the network for electronic musicians. In the GNUmusic.net studio, we are distributing various sound files, tools, programs and tips as a kind of "free software /open-source software" and "copylefted software". The objective of GNUmusic.net project is to open the process of making music by being able to use/modify/redistribute its material freely. Until now, many creative musicians have made interesting music/sounds collaboratively using the Internet. However, it is almost impossible for us to obtain their evolutionary prototypes and reuse them for our own productions. This is because the musical material and prototypes are not free and copylefted. The GNUmusic.net is a first step to Internet-based community-building for bazaar-style musical development. Even if we have different views on life and music, it must be possible for us to share the same process (or part of it) toward them.) <http://www.gmusic.net>

- **1998** \_\_ « **Homesteading the Noosphere** », Eric S. Raymond ("After observing a contradiction between the official ideology defined by open-source licenses and the actual behavior of hackers, I examine the actual customs that regulate the ownership and control of open-source software. I show that they imply an underlying theory of property rights homologous to the Lockean theory of land tenure. I then relate that to an analysis of the hacker culture as a 'gift culture' in which participants compete for prestige by giving time, energy, and creativity away. Finally, I examine the consequences of this analysis for conflict resolution in the culture, and develop some prescriptive implications." "Cultures are adaptive machines. The open-source culture is a response to an

identifiable set of drives and pressures. As usual, the culture's adaptation to its circumstances manifests both as conscious ideology and as implicit, unconscious or semi-conscious knowledge. And, as is not uncommon, the unconscious adaptations are partly at odds with the conscious ideology. (...) To understand the role of reputation in the open-source culture, it is helpful to move from history further into anthropology and economics, and examine the difference between exchange cultures and gift cultures. (...) How does the community inform and instruct its members as to its customs? Are the customs self-evident or self-organizing at a semi-conscious level? Are they taught by example? Are they taught by explicit instruction? (...) We have examined the customs which regulate the ownership and control of open-source software. We have seen how they imply an underlying theory of property rights homologous to the Lockean theory of land tenure. We have related that to an analysis of the hacker culture as a 'gift culture' in which participants compete for prestige by giving time, energy, and creativity away. We have examined the implications of this analysis for conflict resolution in the culture. The next logical question to ask is "Why does this matter?" Hackers developed these customs without conscious analysis and (up to now) have followed them without conscious analysis.") <http://www.catb.org/~esr/writings/cathedral-bazaar/homesteading/> <http://www.freescape.eu.org/eclat/>

- 1998 \_\_ **Iccast** (Iccast is a free streaming media project maintained by the Xiph.org Foundation. It also refers specifically to the server program which is part of the project. Iccast was created in December 1998/January 1999 by Jack Moffitt and Barath Raghavan to provide an open source audio streaming server that anyone could modify, use, and tinker with. Version 2 was started in 2001, a ground-up rewrite aimed at multi-format support (initially targeting Ogg Vorbis) and scalability. The Iccast server is capable of streaming content as Vorbis over standard HTTP, Theora over HTTP, MP3 over the protocol used by SHOUTcast, AAC, and NSV over the SHOUTcast protocol. (Theora, AAC, and NSV are only supported in version 2.2.0 and newer.) It uses external programs, called "source clients", to originate the streams, and the Iccast project includes a source client program known as IceS. The source runs typically in the place where the audio is generated (e. g. a studio) and the Iccast server in a place where a lot of bandwidth is available (e. g., a colocation). It has similar functionality to the proprietary media server program SHOUTcast, by Nullsoft.) <http://www.iccast.org>

- 1998 \_\_ **Immersive Sound**, ORF Kunstradio Vienna, Kunst in der Stadt II Bregenz, Bill Fontana, Terry Fox, Stoph Sauter, Roberto Paci Dalò, Weidenhammer & Courtemance, Bill Furlong, Jérôme Joy, Les Gilbert, Robert Murray Schafer (constantly changing multi-layered live installation that extended the KUNST IN DER STADT II project beyond the geographical borders of the city of Bregenz into the space of the older and newer telecommunications media and connected it with other physical locations in Austria, Canada and Australia) <http://www.kunstradio.at/BREGENZ/>

- 1998 \_\_ **Koan^oasis**, SSEYO Ltd (Initiated by SSEYO Ltd, Koan^oasis was a unique opportunity to collaborate with twelve composers, including Brian Eno. The idea was to create a Koan based composition, each composer contributing at least one voice (track) and one SoundFont sample. The final piece worked as an inter-networked, patchwork with individual components located in numerous locations. A single page, scripted accordingly, pulled all remote assets into a single piece. SSEYO described Koan^oasis as "... a kind of global music eco system. Each composer contributes a musical life form with its own character and behaviour, and the music is the rich, ever-changing ecology of interactions between the life forms." "SSEYO Koan^oasis 198 is an online generative composition created by a networked community of Koan artists. It has allowed the Koan artists in their own time to realise, develop and amend their own online components of a generative sound environment and thus to compose music in a distributed manner. The artists do not have to be present or online when the work is consumed by you. For the first time, artist's all over the world have been able to contribute, offline and in their own time, to a low bandwidth generative community project which anyone in the world can hear 24 hours a day. It opens the doors to new forms of virtual performance and ultimately interaction." "A SSEYO Koan^oasis is an empty container Koan piece placed on a webpage at SSEYO's web site which contains links to participating Artist's contributions. When you visit the webpage the linked contributions are downloaded to create a composite virtual work on your PC." We used a mailing list to coordinate the project, each contributor sharing their Koan and SoundFont files as the composition came together. [Andrew Garton]) <http://www.intermorphic.com> <http://www.sseyo.com>

- 1998 \_\_ **The Messenger**, Paul DeMarinis (Email messages received over the internet are displayed letter by letter on three alphabetic telegraph receivers: a large array of 26 talking washbasins, each intoning a letter of the alphabet in Spanish; a chorus line of 26 dancing skeletons and a series of 26 electrolytic jars with metal electrodes in the form of the letters A to Z that oscillate and bubble when electricity is passed through them. "The Messenger is an internet-driven installation based on early proposals for the electrical telegraph, in particular those made by the Catalan scientist Francisco Salvá. As in many of my works I examine the metaphors encoded within technology, especially lost or orphaned technologies and try to trace their origins, speculating on the way that mechanisms are the repositories of larger unspoken conceptions and dreams. In The Messenger I take the telegraph as a point of departure from which to examine the relationship between electricity and democracy, and how electrical telecommunication technologies have participated in our solidarity and in our isolation, in our equality and our oppression, in the richness of our experience and the uncertainty of our lives. n The Messenger email messages sent from around the world are received by a computer in Galerie Metronom and spelled out, one letter at a time over three fanciful telegraph receivers. The central receiver, a circular array

of talking chamber-pots, speaks out the letters in twenty six different voices. Men, women, schoolchildren and aged pensioners are jarred into vocalization when their individual letter is activated. The watery resonance of the metal bowls creates a unique reverb for each voice, disconnecting it from the other voices and from the acoustic space of the gallery. Along the left alcove of the gallery is a chorus line of 26 little dancing skeletons. Each wears a tiny pancho emblazoned with a letter of the alphabet. When each letter of a message is activated, the skeleton jumps, producing a danse macabre as the email messages roll off the internet. In the right alcove the third telegraphic receiver is a line of 26 antique glass jars, each filled with an electrolyte and holding a pair of metal electrodes, one of them shaped like a letter of the alphabet. The electrical currents cause the electrodes to change from shiny metallic to black alternately and to produce hydrogen bubbles. Nowhere does the system possess any memory or understanding of the messages displayed. Unless the signals are observed, written down and interpreted, the installation is the final meaningless terminus for messages that have traveled around the world and died. Related images that come to mind are Babel, the tree falling in the silent forest, the dying cry of the last surviving human. That the phenomenon of the lost or meaningless message has become so frequent an experience in our daily lives is due in no small part to our increasing reliance on electricity as our dominant medium of communication." [DeMarinis]  
<http://www.stanford.edu/~demarini/exhibitions.htm> <http://www.well.com/user/demarini/messenger.html>

- 1998 \_\_ **Mélange à trois** (Blue - Version III), Shinji Kanki (A violinist in Warsaw, a cellist in Oslo and a viola player in Helsinki are connected via the Internet by means of live media (audio/video) streaming technology. Due to the imposed restrictions of net protocol and streaming technology, considerable irregular and unpredictable delays will necessarily occur. In the worst case, destructive net congestion may cause complete drop-outs of audio-visual contact) <http://www.notam02.no/warsaw/melange.html> [http://cmt.siba.fi/skanki/Net\\_composition/comp/melange.doc](http://cmt.siba.fi/skanki/Net_composition/comp/melange.doc) [http://cmt.siba.fi/skanki/Net\\_composition/](http://cmt.siba.fi/skanki/Net_composition/)

- 1998 \_\_ « **Metamusic/Telemusic/Programming/Composition** », Jérôme Joy (" As a result of the development of electro-acoustic devices and configurations, and with the emergence of musical information processing (computer assisted composition), the increasing tendency to use networks seems perfectly logical to me. Using the Internet to develop a musical piece, exploiting remote sound sources and using hypermedia functions (sending and downloading soundfiles, using midi commands for synthesizing sounds and vocals/speech synthesis on the machines linked up), provides me with the means to re-investigate the status and composition of a work under the new conditions established by music which is continually developing and which can therefore no longer be grasped as a complete entity, rather than as a linear event allied with the performance (concert). Therefore, the question of meaning in conjunction with creative work on the Internet is a musical question, and not only of technology. (...) Thus, in my work, the notation (scoring) is directed more towards process programming and time management for instance, and aims to challenge the ear. As far as I am concerned, the question of interactivity does not arise; I do not ask the listener to compose, I would prefer to have the audience participate by managing their own approach and engaging with a musical piece from another angle : in my case that would be without grasping it as a totality, since it becomes developmental and offers multiple entries, so that different "paths" are available. This links up with the long-standing question of open music. - Proceedings Imagina'98 - Digital and the Senses : New Perceptions)  
<http://jeromejoy.org/>

- 1998 \_\_ **Motifs**, Jérôme Joy, Alex Grillo, Lawrence Casserley, Daniel Biro, Festival Lust ICA London/ MANCA CIRM Nice (3 live performers located at 2 different locations, Nice and London, connected with a RNIS line. The concert took place in both concert halls without visuals and the musicians improvised only by listening. A part of this work was a tape broadcast from one place to the another, and the musicians got rules to improvise with. The framework of Motifs involved the combination of composition and improvisation with a distributed music ensemble (Chamber Music). The layers were multiple and the articulation of listening 'mirages' were used with both audiences. An instrumental networked concert and musicwork implies interesting conditions to overlap regular dimensions in instrumental music. The lack of verification between sound productions and listening involves the audiences in acousmatic conditions but with instruments and produced by processes of improvisation. The reactivity between remote and distant instrumental players (without seeing them) and the conversations they involved with the tape they discovered at the same time, brought new perceptions of an electroacoustic concert : a living situation of listening with sound without located sources. The audiences could listen to the entire played music on the two locations but with partial visual parts. The delay due to the live streaming on both locations were integrated within the improvisation by the musicians. 'Each' concert stood such as a live concert as usual but 'completed' and 'in reaction to' what was received from the distant location. The musicians played blind and followed each other only by listening. At the end of the concert, another one began : networked concert of applause.) <http://alcor.concordia.ca/~kaustin/cecdiscuss/1998/0647.html>

- 1998 \_\_ **Neo Shamanism**, Tjebbe Van Tijen, Fred Gales (The work reviews historically different forms of shamanism--one could say a non-electronic form of telepresence--. Fibre information systems from the Inca age 'quipu' to glass fibre cables mark the space in which a big drum is standing as the main interface. Two other interactive installations give the opportunity to relate information on the Internet on shamanism with stone age creation myths. The drum is not a 'mock up' but a real percussion instrument with a special prepared drumhead that serves also as a projection screen. Also there are the sixteen pictograms, printed on the drumhead at

regular intervals around the border. The pictograms represent the different sequences. By hitting a pictogram with the (special) drumstick a sequence is chosen. The first image will be an enlargement of the pictogram with a spoken short title of the sequence. The sequences are long picture collages that scroll in different directions through the circular space of the drumhead and have a length that varies between one and two minutes. At any moment the user can switch to another sequence.) [http://www.ntticc.or.jp/Archive/1998/PORTABLE\\_SACRED\\_GROUNDS/Works/neo\\_shamanism.html](http://www.ntticc.or.jp/Archive/1998/PORTABLE_SACRED_GROUNDS/Works/neo_shamanism.html)

- 1998 \_\_ **NetOsc (Network Oscillator)**, Studio 303 Montreal, Fondation Gulbenkian Lisbon, V2 Rotterdam, Podewil Berlin, Sensorband (software instrument used by Sensorband in performances of its network piece, *Oscillations* ([www.sensorband.com/oscillators](http://www.sensorband.com/oscillators)). NetOsc made use of internet over low-bandwidth connections. The system consisted of an internet relay server, akin to a chat server, modified to redirect musical messages. The clients were music synthesis software systems onstage in each of three separate and remote performance stages. As the transmitted information was reduced to just control data, the choice of sound materials also became reduced, to pure sine waves. The control signal being passed via the server were frequency indications for the single oscillator representing each site, detunings of which caused acoustic resonances and beating patterns at each concert site) <http://sensorband.com/atau/papers/netmusic2-iasai2000/> <http://www.csl.sony.fr/downloads/papers/2000/Atauiamusiquereseau.pdf>

- 1998 \_\_ « **FROM NET.ART TO NET.RADIO AND BACK AGAIN - rediscovering and enlarging the entire radio spectrum** », Josephine Bosma (*Important is not to confuse net.radio completely with net.art, as happens occasionally when my pleas for a more varied usage of this medium are misunderstood. Net.radio is a medium and therefore its features can be discussed like any other tool. Art is another story. It is the combination of the two that is explored at Ars Electronica this year. Webcasters in general can learn a lot from art and net.radio, but that is not the point now. What I maybe should add to make you understand my - personal- vision better, is that I use the term net.radio often for webcasting in general, trying to subvert the dominant visual aspect of it, in an attempt to make space for a more creative and innovative usage of both radio and television through and on the net. Confusion intended. A comment from Adam Hyde of Radio Qualia: " Net.radio is a PRACTICAL science, art can be for arts sake but net.radio has a more vital context - net.radio MUST respond to its environment and justify why it is preferred above other media if it really wants to be something other than merely an 'art project'...otherwise net.radio = net.art". (...) Of course net.radio in the sense we are discussing it here (audio art in its entire variety in connection to the internet) has not been limited to the mentioned groups. Individual artists worked and work on it, like Jérôme Joy from France, Tetsuo Kogawa from Japan, Joyce Hinterding and Zina Kaye from Australia... to just name a few more or less recent ones. Not every one of them would consider themselves as making 'net.radio'. The context of the work and idea behind the work is very different each time, as the medium, or maybe we should say media, net.radio invites to use a variety of artistic styles that is even bigger than in, for instance, dance productions or painting. It is in fact layer upon layer upon layer of different media and discourses which provide an rich dish of possibilities for artists to indulge in. These indulgements often include the traditional, common use of the centralised pre-fab or live broadcastshow as well. The three groups I mentioned as examples would produce them and still do (except for VanGoghTV), but there are many more of these 'stations'. These audiospaces on the net act as curator, producer and 'workspace' at once, each having their own specialities. (...) Databases will be more important in the near future. Several net.radio workers are building one. The first of these databases exists since the beginning of 1997: Radio Internationale Stadt (RIS) from Berlin. The concept of net.radio as a sample machine has been uttered many times, but little experiments have happened so far. Thomas Kaulmann, initiator of RIS, is now building a searchengine on his site which will be able to search audio databases on other sites too, if they have the same basic set up. As a treasure of databases will grow, and it looks like software is growing with it in both variety and capability, the desire to involve them in net.radio set ups of any kind will grow. [Josephine Bosma, on Nettime and Xchange mailing-lists, Sat, 11 Jul 1998, published in Ars Electronica Catalogue])*

- 1998 \_\_ "**Network Society / Eurecom**" (concert A.T.M - Sophia Antipolis avec .Stéfano Foger, Michel Pascal, Nathalie Lanoé. [Luc Martinez])

- 1998 \_\_ **Opening Ceremony 1998 Nagano Winter Olympics**, Seiji Osawa (Seiji Osawa conducted choruses on five continents : Beethoven's "Ode to Joy". 200 singers each in Sydney, New York, Beijing, Berlin, False Bay, 2000 singers at Olympic Stadium, conductor, 8 soloists, and orchestra in Nagano [culled from Jeremy Cooperstock] <http://www.cim.mcgill.ca/sre/projects/rtnm/history.html>)

- 1998 \_\_ **Le Placard**, Erik Minkinnen (*Handphones and Streaming Concerts Festival. Placard proposes sometimes a mix of on location artists and virtual remote artists. Usually a placard has between 12 to 24 headphones available for listening on live acts making music and sounds. It is not meant that all people shall listen at headphone all the time as an important factor is to socialize and talk about the sounds and music you or others have heard on phones. Pretty often placards are like a party at a friends place - and not without reason the device "Placard - headphone and beers" are put up at posters and invitations. The artists are usually often in the same room as the placard listeners but can also come in virtual thru audio streams on internet so placard often twists the listeners perception of a room. A sound room.*) <http://www.leplacard.org/> <http://placard95.dokidoki.fr/> <http://www.leplacard.org/>

[placard5.dokidoki.fr/](http://placard5.dokidoki.fr/) <http://leplacard.jp/> <http://room2room.noplacard.org/> <http://www.1904.cc/timeline/tiki-index.php?page=Placard>

- **1998 \_\_ Polar Circuit**, University of Lapland (Polar circuit is a workshop and residency series developed by Tapio Mäkelä that began in 1997 in Northern Finland. With later editions of 1998 and 2000, polar circuit workshops have brought together nearly 200 media artists for 3-8 weeks to collaborate, cook, workshop, and interact under the midnight sun. Organized in a very low budget manner, there was no pressure to produce visible results to a public at the end of each session. Participants would however produce a lot of new work and start collaborations, many of which are active today. Also a loose network of polar circuit participants keeps in touch. This network also facilitated a Solar Circuit workshop in Tasmania, Australia in 2002.) <http://polarcircuit.info> <http://re-lab.net/polar/>

- **1998 \_\_ Portable Sacred Grounds - Telepresence World**, NTT ICC Tokyo ([Portable Sacred Grounds: Telepresence World] reviews telepresence technology and its concept from the viewpoints focused on the nature of "collaboration", "memory and unconsciousness", "spiritual exchange", "primitivism", "multilayered reality" and "sacredness" to discover a new vision of the world. It proceeds through information space and present new form of sacred grounds such as "remote coexistence" where participant accesses to a virtual space to foster a new world and "telepast" where past and present resonate together. Participant will experience the fascinating world of images where boundaries--as for West/East, past/present and interior/exterior--do not exist. Participants : ART+COM, Bill Seaman, Gideon May, Tjebbe Van Tijen, Fred Gales, Minato Chihiro, Moriwaki Hiroyuki) [http://www.ntticc.or.jp/Archive/1998/PORTABLE\\_SACRED\\_GROUNDS/](http://www.ntticc.or.jp/Archive/1998/PORTABLE_SACRED_GROUNDS/)

- **1998 \_\_ Post-Sampling Music Theory - Music Production after Sampling**, NTT ICC Tokyo (With the emergence of sampling machines (samplers) in the 1980s, music and music production have changed greatly. Notable changes are the switchover to CD from the conventional form of music media, and digitalization of the production environment as exemplified in desk-top music and hard disk recording. It is natural that the change in the media should induce a change in the composer's environment and approach. The recent music and its production environment are creating something special that could not have been conceived before the days of digitalization. In this situation, network technology is giving rise to a new phase of music production. German techno group OVAL (Markus Popp)'s new release "dok" was produced through file exchange with Christophe Charles, which means that music produced by Christophe Charles is processed by Markus Popp. Markus Popp has developed software called OVAL PROCESS for converting all kinds of music into OVAL sounds. Although the OVAL PROCESS was not used for "dok," every part of the piece sounds like OVAL. This is an instance of an artist disclosing his production environment and production process (OVAL PROCESS) by presenting a system which enables everyone to produce similar works. This may be regarded as a new concept of sampling in the sense that it is an act of digesting rather than sharing the production process. A similar concept is put into shape in the world of computer software under a project called GNU. A group named GNUsic Project experiments (Akihiro Kubota, Kenji Yasaka, Kohji Setoh) with the music production environment on the network and proposes the concept of "copyleft" instead of copyright. A member of the group, Akihiro Kubota, says, "Even if musicians have different views on life and music, it must be possible for them to share the same process (or part of it) of reaching their goal." Are they trying not only to complete their work as the final form of expression but also to enjoy the process of producing that work and all things related to production?) [http://www.ntticc.or.jp/Archive/1998/Post\\_Sampling\\_Music\\_Theory/](http://www.ntticc.or.jp/Archive/1998/Post_Sampling_Music_Theory/)

- **1998 \_\_ Radiation**, Robert Adrian X and Norbert Math (An Installation for Short Wave Radio. The signals from four short wave radio receivers, each tuned to a different source, are fed into an amplifier and distributed to four loudspeakers installed about 400 cm apart and 350 cm high. A computer program controls the receivers so that they are always tuned to active and interesting short wave channels. The "RADIATION" project concentrates on short wave radio - the wave-lengths used mostly by security/espionage agencies, national propaganda/information stations and by amateur radio operators. Many short wave transmissions are received as bursts of coded or scrambled signal - morse, fax or image transmissions and secret commercial or political data. The short wave spectrum contains every human language and every kind of music. Short wave signals are often distorted by atmospheric conditions, bursts of electro-magnetic activity on the Sun, interference from other transmitters or local static - with short wave radio it is "radio" itself that is in the foreground. 1998: original installation at the Ars Electronica Festival 98, Linz. 2002: installed at "Broadcasting", Technical Museum, Zagreb. 2004: installed at "Reinventing Radio", Radiokulturhaus, Vienna. 2006: installed at "Waves", Latvian National Museum of Art, Riga. 2008: installed at "Waves", HMKV, Phoenixhalle, Dortmund.) <http://alien.mur.at/rax/RADIATION/index.html>

- **1998 \_\_ Revolting Temporary Media Lab**, ISEA 98, Manchester (The Revolting Temporary Media Lab in Manchester, which took place for five weeks in August/September 1998, has been a follow up of Hybrid Workspace. Revolting, organized by Micz Flor ([www.yourserver.co.uk](http://www.yourserver.co.uk)) took place in very different social environment, compared to Kassel, away from the big art crowds. It had a similar mix of people, themes, and low-tech approaches. It brought together local groups and communities to focus on practical outcomes, small presentations, and debates. Revolting had a special emphasis on spreading specific content via different media, such

as a regular free newspaper, local radio, and the Net.)

- **1998 \_\_ The Sensorium**, Andrew Garton (*The Sensorium, the culmination of several projects, is a living multimedia space, an immersive hyper-reality space evolving out of real-time events processed into an ever mutating experience. Three Sensorium projects have been produced, one of which, Sensorium Connect, is a radio-Internet composition which will be broadcast simultaneously on national radio in Australia and over the Internet. Afterwards, the piece will remain accessible via a Web site as mutating soundscape, re-generating itself 24 hours a day, 7 days a week for up to 4 months. The Sensorium, scheduled for release at Ars Electronica, 1998, is perhaps the definitive theatre as suspended space, but it is also space as instrument. The audience, upon entering the Sensorium will immediately be integrated into the space. The mere presence will add to the evolution of the space, its visual and aural components, diminishing further the separation between audience and performer/performance. [Andrew Garton]*) <http://www.kunstradio.at/FUTURE/RTF/INSTALLATIONS/SENSORIUM/sensorium.html> <http://www.abc.net.au/arts/lroom/sensorium/>
  
- **1998 \_\_ Talking Drum at CNMAT**, Chris Brown (*interactive installation made with four networked laptop computers programmed to explore cyclical polyrhythms in large acoustic spaces. While the performance of the entire system is synchronized by one computer, each computer station generates independent results using genetic-programming algorithms which are affected by acoustic musicians' performances. Each station in the space "grows" its own rhythmic response to the situation, like similar plants growing differently in adjustment to their locations in an environment. The musicians improvise with the rhythms, interacting with the response of the computers they play next to, and the whole is a quartet of these human-machine duets*) <http://www.cbmuse.com/>
  
- **1998 \_\_ Terra Present / Terra Past**, ART+COM (*This project is based on the concept of ART+COM's protracted project titled "T-Vision". T-Vision is a system which enables participant to travel around the virtual earth--generated out of topographical data and satellite images--with a special user interface. The cloud satellite images are delivered in real time via Internet. In the exhibition, the project does not proceed only to the original target of the system, "Present Earth"; it proceeds also to "Past Earth". T-Vision's interface visualizes a voyage through time-series when participant moves on toward the particular location (Potsdamer Platz in Berlin, for this exhibition). The work employs satellite images and 3D architectural models to target two aspects of telepresence, namely, the concepts of "remote" and "past".*) [http://www.ntticc.or.jp/Archive/1998/PORTABLE\\_SACRED\\_GROUNDS/Works/terra\\_present.html](http://www.ntticc.or.jp/Archive/1998/PORTABLE_SACRED_GROUNDS/Works/terra_present.html)
  
- **1998 \_\_ Time Out**, Fred Forest (*This project, created for the inaugural French "Internet Fest" (Fête de l'Internet), combines a symbolic (liminal) suspension of time and a virtual around-the-world journey in one hour in a festive rite of passage into the age of the digital global village. It involved placing webcams in cities located in each of the world's 24 time zones. Beginning with a live shot of the Arc de Triomphe in Paris, the camera in each location began transmitting at precisely 12:00 p.m. on March 20. The very instant the clock was about to strike 1:00 p.m., the image on the screen switched over to the input of the camera in the next time zone to the west thus allowing visitors to the project web site to "relive" the same hour of the day throughout the 24-hour duration of the event. The web site also offered people a number of thought-provoking and fun ways to make use of their time away from time including an online poll about the role time plays in their frenzied lives, a means to send scanned outlines of their feet to a server in Guadeloupe for a brief vacation, and a chance to buy extra time in increments of 30 seconds, 1 minute, or 1 hour.*) <http://fredforest.org/>
  
- **1998 \_\_ TransMIDI** (*allows performers (and listeners) to perform together with MIDI controllers in multiple session groups - A System for MIDI Sessions Over the Network Using Transis*) <http://www.cs.huji.ac.il/labs/danss/papers/1997/transmidi.ps>
  
- **1998 \_\_ Two Places at One Time**, Amy Knoles, Neil B. Rolnick, Composers Forum, Inc, The Kitchen, The iEAR Studios of RPI, Harvestworks / Studio Pass (*teleconferencing with ECI@ The Kitchen in New York City, Neil B. Rolnick and band FISH LOVE THAT with percussionist Amy Knoles of the Techno-Lust fame will premiere Rolnick's new work for transcontinental music and video*) <http://www.ecafe.com/1998.html>
  
- **1998 \_\_ Web radio**, Tetsuo Kogawa (*Right now, I am preparing Web radio using RealAudio/Video system. It will start next week. The linkage of Mini FM and the Web radio should create more polymorphous relationships. That's why I am interested in the Internet. My plan using the Internet is, at the present stage, to make a sound version of Webcam. You access to my Web page and listen to various live sounds. I link the RealSystem and Mini FM (natural) radio transmitters because the present condition of streaming technology does not like heavy streaming. So, I will use one input of RealSystem but the input has various outputs from plural Mini FM transmitters that have no limitation of the number (the using frequency is limited, of course). (Tetsuo KOGAWA, interview with Joséphine BOSMA, Radio conversation)*) <http://laudanum.net/cgi-bin/media.cgi?action=display&id=947129242>

- **1998 \_\_ XChange 56h Live** ("Acoustic spaces can create different subjectivities; they open possibilities and potentials, particularly on an aesthetic and informational level that can help us feel our way through the spaces we are opening up and moving into" (Erik Davis). *The Acoustic Space* In the framework of the 1998 theme: INFOWAR - information.macht.krieg . There was created live audio environment during the entire Ars Electronica festival, using real-time net audio technologies (real audio), including an open broadcasting studio in the 'real' space, as well as the creation of a virtual sound environment in cyberspace, involving both on-site and remote participants. One main LIVE stream and different parallel streams - will be on-line 56h. Xchange are broadcasting live from OpenX at Ars Electronica from Monday 7 - Thursday 10 September. The Xchange network are a collection of different groups and individuals from around the world, experimenting with net.radio and audio. 25 participants of the Xchange network are gathered at OpenX. The live broadcasts created at the Acoustic Space will involve collaborations with remote participants and other OpenX groups, such as Kunstradio, the Infowar web magazine, Radio Fro and HEART) <http://www.nettime.org/Lists-Archives/nettime-1-9809/msg00017.html> <http://xchange.re-lab.net/56h/>

- **1998 \_\_ XChange Open Channel** : a space for co-broadcasting experiments and live co-sessions (X-Open Channel was an attempt to develop a co-platform for experimenting with live streams, exploring the feedback mechanism and collaborative broadcasting possibilities. X-Open Channel experiments most actively happened in 1998 and 1999. Every Tuesday night during the riga net.radio OZOne live sessions call for co-broadcast was announced and everyone could join in the live session with his/her real-audio live stream. "There are several possibilities for co-streaming\*. The simplest one is to mix your sound source with another (one or more) real audio live-stream. In this case each of participants is doing one part of this live session (e.g. one is streaming voice, another - background music). There one can listen two (or more) different streams - the final one with all transmissions mixed together or each 'input' - live stream separately. Another interesting experience of co-streaming is creating the loop. Each broadcaster takes another's live stream, re-encodes it and sends it further for next participant. In this loop sound input is going around and coming back with little delay (5-10 sec.) and it creates multiply sound layers. If sound keeps travelling around, the stream gets more and more noisy, and finally it turns into one continuous noise (it depends also of amount of participants). Another way of using loop-connection is to cut down the feedback, it can be used e.g. for remote interviews and discussions, news exchange, etc." (by Raitis Smits). Xchange Network (<http://xchange.re-lab.net>) has been provoking cultural, artistic and theoretical practice and discourse since the advent of streaming media in the mid 90's. Xchange reflected the new approach to collaborative, autonomous ad-hoc broadcasting. Network broadcasts were common place for the first years of Xchange, with each node in the network contributing to an online cacophony where no single node could be distinguished in the mix from another. Ownership was impossible to maintain and hence forgotten. Participation became the goal. The sharing of transmissions was more exciting than the simultaneous reception of the same transmission. The doors to the broadcast towers were not forced open by these pioneers but ignored, and the landmark symbols of one-to-many broadcasting was replaced by rambling a network of many-to-many net.casters) <http://irc.re-lab.net/xchange> <http://xchange.re-lab.net>

- **1998 \_\_ XChange Unlimited, Riga** (The event was focusing on issues about internet radio development, Interfund establishment, new media culture exchange and networking in Latvia and the Baltic Sea region. Last day workshops - where the participants splited in to 4 groups - was especially fruitful - the idea about establishing Baltic Sea Media Space and the Interfund emerged.) <http://re-lab.net/xu/>

- **1998 \_\_ Your Favourite London Sounds**, Peter Cusack, radio station ResonanceFM (aural collage that has inspired Londoners to close their eyes and listen to their city. The goal is to find out what London noises are found appealing by people who live in London. This was so popular that it has been repeated in Chicago, Beijing, and other cities. He is involved in the "Sound & The City" art project using sounds from Beijing in October, 2005. The aim is to discover what city dwellers find positive about their city's soundscape by asking the simple question, "what is your favourite London, or Beijing, or ..... sound, and why?" The replies create a database of knowledge about the city's sounds and what people think and feel about them. The responses are fascinating. There are regularly unexpected suggestions and everyone has a different perspective on the question. Collectively it reveals much about the significance of sound in everyday life. In London over 1000 responses have now been received. Many of the sounds have been recorded, by both project members and those making the suggestions, leading to radio programs worldwide, a CD entitled "Your Favourite London Sounds", exhibitions (together with photographs of London) and a wide variety of educational and arts involvements. A follow up "Favourite Sounds of London" CD is planned for 2007. The project has generated much discussion in the media and education and also in more unexpected places, such as the Greater London Authority environment department who were interested in relation to London's new ambient noise strategy, published in 2004. Discussions around the project raise issues like the sound identity of cities, the rapid changes to our soundscape caused by local developments and by globalisation, the disappearance of traditional sound and the emergence of new ones, how noise problems are tackled and future creative approaches to the sound environment. It is intention of the Favourite Sounds' project to continue to contribute to this debate and to raise awareness of the need for a positive approach to planning as far as our everyday soundscape is concerned. The "Favourite Sounds' project is now international. Favourite Sounds of Chicago was set up in 2006 with significant involvement of local radio. In 2005 'Favourite

*Sounds of Beijing* was carried out in the Chinese capital as part of the British Council's 'Sound & the City' initiative. A CD "Your Favourite Sounds of Beijing" is in preparation and will be released in 2007. Educational workshops were arranged with the Central Academy of Fine Art and the Beijing Conservatory whose students subsequently made a major contribution through their own recordings. Again it generated wide attention with interest from the media, artists, urban planners and educational institutes. As the project takes place in different cities, comparisons can be made, not only across geographies, but also culturally. The responses in London and Beijing revealed not just different soundscapes, but differences in the way that people felt and spoke about their relationship with the sound environment. Exploring these cultural differences in attitudes to sound is one of the project's long-term aims. As is the investigation of how, and by what routes, sounds migrate from place to place, city-to-city and world region to world region in this era of rapid globalisation.) <http://www.favouritelondonsounds.org/> <http://www.lcc.arts.ac.uk/17617.htm>

## 1999

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- **1999 \_\_ ART'S BIRTHDAY 1999 - 24 HOURS OF RADIO ART**, Western Front, Vancouver (*Each year the network widens slightly. Some Canadian cities have even proclaimed the day as Art's Birthday or Artists' day. As its contribution the Western Front often produces a tele-performance event. Anna Friz at CiTR FM radio in Vancouver produced the 5th edition of "24 hours of Radio/ART". This event connected with non-stop web broadcasts - squished through the web-sites of Kunstradio in Vienna and Western Front in Vancouver. Hundreds of participants from Tokyo, Vancouver, Vienna, Montréal, Linz, New York and more ... All three of CiTR's production studios will be taken over by local audio artists and DJs. The Western Front will be transformed into an Internet multi-media lab. Using RealAudio, participants around the world will send contributions by Internet. A live CUSeeMe videoconference will launch an ongoing telecommunications workshop linking Western Front to Galerie Oboro in Montreal.*) <http://projects.front.bc.ca/1999/artsbirthday/index.html>

- **1999 \_\_ audiostructures**, Steve Symons, SUPERSTRUCTURES showcased the innovative new media work produced by the 1999 MA Creative Technology course at The University of Salford. (*audiostructures uses electronics to sample sound from 3 sample points distributed through the gallery building. The sounds are recorded onto digital Dictaphones and played back in part or in full according to a generative system written by myself.*) <http://stevesymons.net>

- **1999 \_ Bits & Pieces** - a sonic installation for the web, Peter Traub (*Bits & Pieces is a continuous composition that gets its source sounds from the web. Every morning a special process looks for web pages with links to sound files. If links are found, the sound files are downloaded. The day's "catch" is then used to create the pieces in bits & pieces for the next 24 hours. Every 15 minutes a sound generating process randomly picks a few sound files to work with. There are several sound generating processes that each generates different sounding pieces. Bits & Pieces randomly picks which process will be used each time a new piece is made. The number of processes that bits & pieces chooses from will change over time as new ones are added or old ones removed. Once a sound generating process is complete, its output is converted into two mp3 files (one for high bandwidth and one for low). Your mp3 player will play back the ten most recent pieces from newest to oldest. It is suggested that you listen to them in that order.*) <http://www.fictive.org/bits/>

- **1999 \_\_ A Body of Water**, Paul Sermon and Andrea Zapp (*A site-specific telematic installation linking the shower room of the Ewald/Schlaegel und Eisen mine in Herten with the Wilhelm Lehmbruck Museum in Duisburg. The images of visitors in the shower room in Herten are mixed with images of the Museum visitors in Duisburg and appear on one side of a water screen. Historical film footage of miners showering are projected onto the other side of the water screen. Realised for the Connected Cities Exhibition, Wilhelm Lehmbruck Museum Duisburg in Germany, June 20th to August 1st 1999 (catalogue printed).*) <http://www.hgb-leipzig.de/~sermon/herten/> <http://www.connected-cities.de/e/sermonzapp.html>

- **1999 \_\_ capital magnetic**, Mark Trayle, Net\_Condition - Art in the Online Universe , ZKM (*M. Trayle swipes credit cards and parses the magnetic information of each card treating the data as 'musical DNA.' The 'contents of its magnetic stripe are captured and parsed to form the melodic rhythmic, and timbral motifs of a short musical composition.' The sonic attributes produced via parameter mappings according to some rules do not seem to be as complex as the process itself, and he certainly does not utilize the so-called 'state-of-the-art' synthesis algorithms for their sonification*) [http://on1.zkm.de/netcondition/projects/project55/default\\_e](http://on1.zkm.de/netcondition/projects/project55/default_e) <http://music.calarts.edu/~met/work.html>

- **1999 \_\_ Chain Tape Collective** (*"The focus on this project was to explore the sounds of different locations, as well as the musical ideas, sensibilities and techniques of the artists who recorded the sounds, most of whom are residents of these areas." The CT Collective was originally started by Michael Klobuchar as a chain tape group; that is, as a group whose members recorded music by*

mailing a master tape throughout the United States and Europe. The finished tape was then cleaned up and distributed to the members as a CD. No one got paid for any of this, and the organization, mastering, and mailing of our collaborative projects was done by members who volunteered their time and resources.) <http://www.ct-collective.com/index.cfm?page=home>

- **1999 \_\_ Constellations**, Atau Tanaka, Coexistencias Lisbon 1999, Web2000 Webbar Paris (Constellations is a network music installation by Atau Tanaka connecting the physical space of a gallery to the imaginary space of the internet through sound and image. Visitors in the gallery navigate an onscreen universe of planets, invoking audio to stream into the gallery. The planetary system is the interface to a library of soundfiles existing on servers throughout the internet. Each planet represents a contribution from a different composer. The sounds coming from the network space resonate in the acoustical space of the gallery, connecting these two universes.) <http://www.sensorband.com/atau/constellations/>

- **1999 \_\_ CTRL-SPACE**, JODI, net\_condition ZKM (CTRL-SPACE plunges the visitor into profound agitation: bouncing pictures and twisted information appear on the viewer's screen. They make him believe that the program has gone haywire or that the computer is infected with a virus. It almost seems as though the web sites are trying to evade communication. The artists responsible for JODI - Joan Heemskerk and Dirk Paesmans - refuse to solve the puzzle. But this is precisely the message: perhaps it is not as easy to achieve meaningful communication as you might think.) <http://wwwwwwwww.jodi.org>

- **1999 \_\_ da braccio**, Karlheinz Essl (da braccio is a new realtime composition project by Karlheinz Essl. Based on his interactive realtime composition environment m@ze°2 (1999 ff.) it represent itself as a computer program for guided improvisations with one or several string players. Several structure generators (implemented in MAX) which work in realtime allow the composer to react spontaneously on the input given by the live musicians. Each structure generator is conceived for a specific compositional task such as musical gestures, textures and sound scapes. The parameter of those generators are controlled in realtime which allows the composer to play this environment like an instrument. This work-in-progress started on Tue 6 Dec 1999 as a contribution to the KUNSTRADIO project "The Relative Violin" which takes place as two parallel concert events - one at the RadioKulturHaus in Vienna (A), the other at Westen Front Grand Lux in Vancouver (CDA). Both live concerts (feat. artists such as John Rose, Iva Bittova, Barre Phillips, Peter Courtemanche) are broadcasted at the same time on the national radio networks and also on the Internet as RealAudio streams. While the musicians are performing on stage, composer Karlheinz Essl receives their sounds (as audio signal resp. RealAudio) in the RP4 studio at the Austrian Radio as a source on which he will build up three different live performances.) [http://www.essl.at/works/da\\_braccio.html](http://www.essl.at/works/da_braccio.html)

- **1999 \_\_ EARTH SOUNDS FOR SPACE**, Michel Redolfi, Amsterdam Planetarium, Ysbreker Festival (a collection of personal sounds - YOURS ! - received via the Web and assembled to create a sonic portrait of Earth in 1999. After the Amsterdam presentation produced by the YSBREKER Music Center, this collective montage will be placed on a CD and submitted to NASA and ESA (European Space Agency), which have expressed interest in launching it in future space programs. The goal of EARTH SOUNDS FOR SPACE is to update and extend a similar project created by Carl Sagan. The LP he compiled, entitled "Murmurs of Earth", was stowed aboard the Voyager spacecraft in 1977 in the hope that it would be discovered in the future by some extraterrestrial listener. Today Voyager and its sonic message continue to race from our solar system at speeds of over 35,000 kph... Be a part of the 1999 project by contributing to the next world sound signature. ONE DAY, SOMEONE MAY HEAR YOU (screaming, laughing, honking, etc...) IN OUTER SPACE. <http://www.imaginet.fr/manca/joy/earthsounds/> [original mail announcement, Michel Redolfi])

- **1999 \_\_ Eternal Network Music**, Chris Brown, Net\_Condition - Art in the Online Universe, ZKM (Mills College, California Institute of the Arts, Princeton University, Rensselaer Polytechnic Institute, Stetson University, and the Zentrum für Kunst und Medientechnologie (ZKM) in Karlsruhe Germany) (14 live performers at 6 different locations - connects you to a site where you can login and play with other quartets of players on the net. The program uses the Transjam and JSyn software for music networking and synthesis) <http://www.transjam.com/eternal/> <http://www.fictive.org/cmr/appendix/brown.html> <http://www.cbmuse.com/>

- **1999 \_\_ First real-time Multichannel Audio Internet Demo**, Cooperstock J. R. et al. (109th AES Convention (Audio Engineering Society), New-York. Organized by NYU/McGill University. Demonstration of the Internet transmission of multichannel music in high-resolution, production quality 24bit/96kHz PCM between McGill University in Montreal, Canada and the University of Southern California in Los Angeles. "On Sunday, September 26, NYU dance students will perform to music played by a McGill University band. This, however, will be no ordinary performance. From New York City, the NYU dancers will dance to live music by the McGill University Swing Band, direct from McGill University's Redpath Hall in Montreal, Canada. The two performing groups will be brought together for the first real-time multichannel audio Internet transmission demonstration thanks to the technical wizardry of software developed at McGill University by a team comprised of several members of the Audio Engineering Society (AES) Technical Committee on Network Audio Systems." "This technology opens the way for people in

entertainment, business, education, or research to collaborate live on line," said AES Technical Council Chair Wieslaw Woszczyk, a professor in McGill University's Faculty of Music. "It will be much more appealing than the current teleconferencing telephone model because it will offer an experience more like a movie theatre. For collaborative musical performances and compositions over the Internet, it will be like a virtual classroom." From a commercial standpoint, the software promises a world of possibilities. For instance, recording studios would be able to transmit recorded material from one side of the continent for mastering on the other side, or around the world. Universities might very well become the conduit for these high performance, high bandwidth transfers. "The advanced university networks could provide an express train for data," said Professor Woszczyk. "The significant investment of time and research by both NYU and McGill University clearly illustrate the importance of advanced networking. We're working on enhancing the continuity of data streams, something that's very crucial to streaming and broadcasting information over the Internet." Both demonstrations will be identical, and each will feature two modes of multichannel transmission. Level 1 transmission of 48kHz, 16bit, AC-3 compressed (448kbs) audio will make use of existing encoding and decoding hardware provided by Dolby Labs. Level 2 transmission of 96kHz, 24bit, uncompressed (13Mbs) PCM audio will utilize encoding and decoding hardware currently in development by dCS, Ltd. (UK). The underlying software for the demos was developed at McGill University by a team comprised of several members of the AES Technical Committee on Network Audio Systems led by McGill Professor Jeremy Cooperstock. The collaboration of two national networking groups, CANARIE Inc. in Canada and Internet 2 Corporation in the U.S.A, was essential in creating this first international multichannel live audio transmission over the Internet.) <http://www.aes.org/events/109/MoreInfo4109.html> <http://www.cim.mcgill.ca/sre/projects/aes/pr-nyu2.html>

- **1999** \_\_ **fmwalks**, Udo Noll (fmwalks started 1999 as an experimental setting for various techniques and concepts, mobile FM radio, networks, internet streaming, telephone systems in various configurations. it was the starting point for radio aporee, which is a more consistent form for these different approaches, all related to spaces, places, topographies, sense of place and esp. sound. There are references to my first radio, an old receiver called nordmende raumklang, with its densely stacked short wave scales, which was the first of these maps: names of unknown places, spoken words in incomprehensible languages, sounds, noise, space. "FMwalks" is a project to create, collect & organize sounds, to obtain an constantly moving audible topography, publically accessible on the internet and compiled by various contributors. The idea comes out of a lecture/reading in 1998, which to give i was not very interested in. Finally i decided to go there and say nothing, only sitting in front of the audience and listening to radio. What I had to say had been recorded, with some surrounding ambient sound samples, on a tape, connected to a home made portable fm transmitter. This sender was placed in the backyard of that gallery space. The pirate was tuned to the frequency of a well known local station, & while the audience was listening to a description of a "travel without moving" on an old 70s transistor radio, probably other people living in that area had a sudden & hopefully intriguing audio experience at home which they did not expect and could not locate, but which was very present. The transmitter is portable, so reversing the usual concept -- means: moving with it along cityscapes, virtually entering acustic spaces of people at home, or in cars, or with earphones drifting around -- opens up a private/poetic & maybe political sphere for some minutes, shifting with the speed of a pedestrian, quickly fading in & out. walks & words, the moving body along the shapes & path' of our daily surroundings becomes a stream of sounds & maps itself into an acustic space. "And though on any printed landscape, directions never tell you where to go, maps are an evening comfort to the traveller, a pencil line could quickly take him home" (recording of an unknown radio broadcast, found by a friend, in a garbage can). FMwalks tries to extend the idea to an accessible collection/archive on the internet, using recent technologies like web- & streaming-servers, to store and order the material from various sources (live recordings, found pieces, composings, readings etc.). sounds & streams can be compiled out and connected to places and situations, "real" & "virtual", thus describing locations and creating corresponding acustic spaces, to browse & listen to by an interface on the net. This way, a constantly moving and re-arranging composition can be created by means of time, topics, geography & people. localisation can take place as well as adoptions by related projects. All FMwalks' material, e.g. pieces of sound, related texts, images, links, is organized on an internet database server. The server is a linux box, connected to the internet by a fast broadband connection, with apache webserver, php4 as a programming interface and mysql as a relational database. This combination, all software open source, is used in many technical environments for the creation of dynamic web systems because of its robustness, flexibility and, last but not least, because there's no need for expensive licencing. Sounds are preferably stored in mp3 or ogg/vorbis (a new open source streaming format) files, together with other related material like texts (ascii), digital images (gif, jpeg, png) and links to other locations (URLs). Sounds can be played on demand, or in case of (live) events, broadcasted by a icedast streaming server. possible input can be static files, dynamically created playlists or live recorded input from various sources. FMwalks will have one or more public and a private interface. The public interface can be accessed by a webbrowser and allows dynamical, maybe individual browsing through FMwalks' content. The private interface provides tools for the organisation of the database and all digital material. It allows groups of interested users to work in a collaborative manner over the network. The private interface is protected by a login screen which requires a name and a password in order to access it. A FMwalks "content object" will consist of one or more sounds, descriptions/keywords and visibly related material. this can be arranged by a web interface. content objects are connected to each other by means of computed relations (keywords and other attributes) or by intentionally linking them together. this allows dynamical arrangements, audible as a series of sounds, depending on the "perspective" of a visitor/listener, or as a common internet radio broadcast experience. Interested people can contribute to FMwalks by getting a login to the database system. They should be able to create & work with digital sounds and have a clue about the net and its methods and technologies, esp. sound

and web authoring. FMwalks content objects can be redistributed, linked and included into other related projects. Basically everybody can do with it what she wants, as long as she takes care about proper credits. sort of community should take place, by private & public mailing lists and chats, for discussion, development & information.) <http://aporee.org/aporee.html> <http://archive.constantvzw.org/events/vj5/fmWalkN.html>

- **1999** \_\_ **ForumHub**, moderated by Jérôme Joy, The Thing ("HUB is a discussion on issues of today new sound and musical investigations and of the emergent mutations of these practices. It is opened to all the composers, to musicians, to organizers, to artists, all actors in the musical and sound fields. (...) Do you think that the musical investigation on the telematic networks (Internet, etc.) as tools for composition, of diffusion, production, and representation, have a convincing validity? Which would be the suitable tools to develop? Does it seem to be an extension of the electronic and electroacoustic practices? Do these investigations seem to you close to your concerns, your preoccupations and which prospects consider you or would wish you to see appearing?". This mailing-list gathered two years long a lot of composers and sound artists, and theorists too, around crucial questions related to music, sound, technologies and networks; among them : Michael Northam, Jon Appleton, Alexandra Hettergott, Rhys Chatham, Alvin Curran, Bernhard Guenter, Josephine Bosma, René Bastian, Andi Freeman, David Gamper, Andrea Polli, Scot Art, Louis Dufort, Kasper Toeplitz, Otomo Yoshihide, Sabine Breitsameter, Justin Bennett, Joachim Montessuis, Arie van Schutterhoef, Joergen Teller, Tom Mays, JLLAT, Atau Tanaka, Kathy Kennedy, Roberto Paci Dalò, G.H. Hovagimyan, Ram Samudrala, Tony Hardie-Bick, etc. The archives 1999-2001 are accessible on jeromejoy.org) <http://jeromejoy.org>

- **1999** \_\_ « **From Broadcasting to Narrowcasting** », Josephine Bosma (The term 'narrowcasting' was invented a few years ago, when it became clear that radio and television would have some kind of twin on the internet. 'Narrowcasting' points at the difference in the path taken by the product of especially radio. No longer does it spread itself like a cloud, like an oilstain, through the ether. It can only follow the distinct lines that make up the internet. Furthermore listeners are no longer obliged to choose from a limited number of frequencies, they can choose from a huge variety of livestreams and archived material. Listeners can compose their own radio channel from them. A number of 'agents', interfaces and preference guides have evolved to present the choosy listener with radio that often leaves little more room for surprise than ordinary radio though, because of the 'agent' they select. The design of the piece of software which an 'agent', or special digital 'intelligent' robot, is in the end, depends on the input of its maker. With most commercial, popular (which often means American) agents this means they have the same flaws as search engines. Not all data is accepted, certain other data is 'privileged'. Some websites offer the user an interface that enables him or her to create a 'personal' channel, but the content is a selected one from a certain network. The technology somewhat reminds us of commercial stations with names like Classic Rock FM, Radio 10 Gold or Sky Radio, stations that buy prepared blocks of music to fill each part of the day, week or year with an appropriate sound. For this the term 'narrowcasting' seems more than fitting.) [http://subsol.c3.hu/subsol\\_2/contributors3/bosmatext.html](http://subsol.c3.hu/subsol_2/contributors3/bosmatext.html)

- **1999** \_\_ **Future Schwitters**, Andrew Garton (Future Schwitters was a live, generative "spat" word composition created and netcast in real time on the 19/09/1999. The process entailed voice sampling, audio editing and processing, synthesis and finally, the construction of Future Schwitters within koan (generative music s/ware). The text was comprised of onomatopoeic voice combinations and original poetry. The latter had been edited so as only fragments of words - unwords - remained to be cut as loops and added to the suite of sounds that was Future Schwitters.) <http://www.toysatellite.org/future/schwitters/>

- **1999** \_\_ **Getting Ready**, Michelle Teran ("Getting Ready" is a time-based web-cam performance and installation for internet broadcast. It takes anticipation as its subject and therefore the process of preparing the environment is the focus of the event. The event is presented in real-time and is received by both viewers at ART Firm gallery in Toronto via a computer monitor installed in the gallery, and by viewers in the virtual community. The performance begins in my studio. A video camera points at an empty white space. During the course of the presentation, a three dimensional recreation of Edgar Degas' painting "La Famille Bellelli" is constructed and I enter the finished environment in character. A video camera in my studio captures images every minute and sends them to a server. Images will therefore be refreshed every 1-2 minutes on the website, illustrating the developmental stage of the room installation. When the room is complete and I am in costume the performance ends, and images are no longer transmitted.) <http://www.ubermatic.org/ready/>

- **1999** \_\_ **H|U|M|B|O|T**, Daniel Burckhardt, Roberto Cabot, Jürgen Enge, gruppo A12, Udo Noll, Philip Pockock, Wolfgang Staehle, Gregor Stehle, Florian Wenz, Birgit Wien and others, net\_condition ZKM (H|U|M|B|O|T installation and web project, makes reference to Alexander von Humboldt's report on his journey through Central and South America. 200 years later, the artists retrace his steps. On the internet they combine his and their own travel accounts with audio and visual documents, drawings and video recordings of their journey to create an associative, constantly reorganising network. The map allows visitors to navigate through this network and establish their own positions. The travel report on the New World becomes an exploration of cyberspace.) <http://www.humbot.org>

- 1999 \_\_ **Idoru**, Michelle Teran, Amanda Steggell, Ulf Knudsen, Per Platou, InterAccess Toronto (Idoru is a playful piece of improvisational internet theatre, an on-line meeting and collaboration between digital personae Mindoru and Rala Froct. Within virtual environments created using webcam and java, two performers (one based in Oslo and one in Toronto) interact with each other by creating live compositions of image and text from within a browser window. Iidoru broadcasts are carried out in cooperation with musicians, computer programmers, artists and cultural institutions throughout the globe. As Iidoru, we subscribe to the belief that the net is not only a medium, but also a space that is based on communication. Iidoru developed from the desire between artists Amanda Steggell and Michelle Teran to collaborate on a project. Net space is used to facilitate this collaboration by providing a logical solution to the issues of geographical distance. "What first struck me was the combination of different programs: Two Netscape windows with the two women, IRC, Real Audio, ivisit. I didn't know that you could do it that way. That was important to see and opens so many possibilities – and that it was done from different physical locations. Also that you lifted text from the irc/ivisit into the images of the two women.") <http://www.ubermatic.org/idoru/> <http://www.notam02.no/motherboard/lonelyhearts.html>

- 1999\_\_ **InfiniteCD**, Antoine Schmitt, Vincent Epplay (The concept of infinite CD is of course deeply anchored in the history of music generation and of ambient music, both of which started at least a century ago, and have roots even earlier. Of course, the creation of real-time generative music systems, and especially infiniteCDs is greatly simplified since the widespread arrival of computers, and computer programs. An infiniteCD is based on a computer program, which creates sound and music, here and now, according to the rules previously designed by the infiniteCD author. The rules may include degrees of freedom. Whether the program creates the music, improvises or merely plays a partition remains a hot debate. An infinite CD is a creation. And it has a creator. Whether it is a musical creation or a more general, yet unnamed, artistic creation also remains a hot debate. The infinite CD concept is a form of algorithmic art. It is also a form of sound environments research. It is deeply linked to the plastic art field. An infinite CD has no end : it generates sound and music potentially indefinitely. Also, each time the infiniteCD starts, it may start differently. An infinite CD is not designed to be listened to, but to be heard, or (not) noticed. On the author's side, this puts the emphasis on how the music is created rather than on which music is created. Technically, an infiniteCD is a CD-Rom containing sound data and a program. When inserted in a computer, the program starts and generates sound and music, through the computer sound card, and using the sound data that is on the CD-Rom. It only stops when someone stops it. The computer can be used to do other tasks while the music is playing.) (Il s'agit ici d'un Cd-Rom pour ordinateur Macintosh, et qui produit une musique infinie, sans cesse renouvelée, construite à partir d'échantillons sonores stockés sur le Cd-Rom. Ni ces matières ni le programme lui-même ne sont accessibles à l'auditeur. L'infiniteCD fonctionne indépendamment, animé d'une vie particulière. Ces deux processus génératifs impliquent un questionnement autour du contexte de la création : l'expérience de l'évènement sonore n'est possible qu'avec l'aide d'un ordinateur. Si le créateur devient programmeur, l'auditeur devient utilisateur de son logiciel. Ce qui remet en question les relations à l'acte de création (doit-on identifier l'œuvre au logiciel ou à son algorithme ? est-ce que le logiciel est le produit d'un artiste ou d'une entreprise ? est-ce que tout logiciel ne gagne pas le statut d'œuvre ?) et à la réception de l'œuvre (un logiciel échappe-t-il aux circuits de diffusion, aux modes de représentation et aux critères d'évaluation traditionnels ?). Dans le cas de Koan, il est possible de créer, à l'aide de la multitude de combinaisons de paramètres, une musique véritablement personnalisée. Cependant, le contrat d'utilisation et les copyrights mis en place par le programmeur empêchent toute recontextualisation de ce travail dans une activité de création. Les représentations publiques ou la publication de ces créations sont impossibles. L'inventeur de Koan, s'il a offert la possibilité de transformer son œuvre en outil, s'est réservé les droits de propriété sur toute la descendance de son logiciel... Les auteurs de l'infiniteCD ne s'embarrassent pas de telles considérations : l'ensemble du processus reste inaccessible, et le choix des paramètres a tellement été étudié, d'une personnalité, un style propre à émergé. L'infiniteCD est donc bien plus proche d'un support phonographique traditionnel. [Yannick Dauby]) [http://kalerne.net/joomla/index.php?option=com\\_content&task=view&id=51&Itemid=49&limit=1&limitstart=1](http://kalerne.net/joomla/index.php?option=com_content&task=view&id=51&Itemid=49&limit=1&limitstart=1) <http://www.infitecd.org>

- 1999 \_\_ **Introduction to net.art**, Blank & Jeron / Natalie Bookchin & Alexej Shulgin, net\_condition ZKM (Introduction to net.art is a manifesto of net.art formulated by Bookchin & Shulgin and carved in stone by Blank & Jeron. The representation procedure is derived from Dump your Trash! With the aid of a software agent, this on-line cemetery recycles existing web pages into new pages. Pages filed at this site stay stored, even after the original site has long been shut down. On the one hand, the real texts carved in stone secure their presence in physical space and at the same time indicate the subversive character of the information overkill an ironic commentary on the way we deal with data trash in the information society.) <http://www.easylife.org/netart/catalogue.html>

- 1999 \_\_ **Invention#5**, Mills College Oakland, Chris Brown (for computer network ensembles via the internet) <http://www.fictive.org/cmr/appendix/brown.html> <http://www.cbmuse.com/>

- 1999 \_\_ **IO\_Dencies**, Knowbotic Research, net\_condition ZKM (IO\_dencies is a series of projects by Knowbotic Research who develop experimental interfaces between digital technologies and social processes. IO\_dencies creates fields of collaboration and collective investigation in electronic networks. The recent project IO\_lavoro\_immateriale raises the question what kinds of action and

intervention are possible in the public sphere today. A group of editors invited especially for the project build up a database with texts and comments on changing notions of the public sphere, subjectivity, economy and work. The content of the database and the relations between the different contributions can be experienced through an interface that translates these relations into visual and physical force fields. The visitors can physically feel the tendential forces within the database through a magnetic interface and investigate the content data on a separate screen. Thus, the discourse of the editor group can be experienced on different intellectual and intuitive levels. Knowbotic Research in collaboration with Maurizio Lazzarato, Luther Blissett, Michael Hardt, Hans Ulrich Reck, Enzo Rullani, Iaia Vantaggiato. Produced with ZKM Karlsruhe (eSCAPE) and KHM Cologne. Software: Detlev Schwabe, Andreas Schiffler, KR+cF, Andreas Weymer. Installation: KR+cF, Peter Sandbichler Large Surface Magnetic Force Feedback Technology by ZKM. Interface: Loan from Förderkreis des Wilhelm Lehmbruck Museums e.V.) <http://www.krcf.org>

- **1999** \_\_ **Lascaux2.org**, Paul Devautour, Jérôme Joy, Villa Arson Nice (The Villa Arson, a relatively well-known center for contemporary art located in Nice, France, has closed its doors for the summer and opened itself up to the web with an exhibition called "lascaux2" (<http://www.lascaux2.org>). The ludicrous title of Villa Arson's show "lascaux2" is a transparent reference to "Lascaux II": an immersive reproduction which copies the shape of the Grotte de Lascaux's Salle des Taureaux and the Axial Gallery. Here painters have reproduced the figures and symbols of these two galleries exactly as possible using the same painting materials as the Magdalenians used. The catch-as-catch-can approach of lascaux2.org, however, holds nothing of the layered, nuanced, cadenced, and revelatory aesthetic qualities of even Lascaux II. It is rather just another summer group show - this one of primarily web-casts augmented by chilly chat [Joseph Nechtaval]. The exhibition process, called e-exhibition, played with a reverse principle of the regular conditions - (Proxy) : the art center is closed, the artists was at proximity, the preparation time is the exhibition time (3 months), the artists took part in the co-ordination of the project, and so on. Each artist worked in rooms they had chosen in the art center galleries, a webcam is permanently placed in each artist's room and the public can access to the on-going works via the online website. This proposed to each artist to develop new ways in their works : processes, performances, evolutive installations, and so on. The relation with the public was renewed : the angle of the webcam was fixed, and they can visit everyday and every hour. In parallel of Proxy, another part of the project, named Hypex, concerned a kind of forum or survey with requests to various curators and artists about the modification of the concept of exhibition in our Internet context. "Now imagine: the exhibition is closed. Art is coming home to you! How is that possible? The world of art will soon use Internet in fields hardly imaginable today. Not like an electronic window. Nor like a collection of Web sites. But as a catalyst of an artistic practice increasingly turned towards the collective. The exhibition practice, no longer the exclusive media for art, has been radically transformed during recent years. A new chapter of art history is about to be written. And it will have nothing to do with you working the Web. The Internet will work for you. The next E. exhibition." More than 10 artists were invited to develop a in-progress work in the closed Art Center with the help of webcams in order to the public can follow each work (Proxy - Pascal Broccolichi, Gregory Moulinet, Maxime Matray, Jean-Luc Verna, Patrick Bernier, Ludovic Burel, Jens Gebhart, Natacha Lesueur, Ingrid Luche, Pascal Pinaud, etc.). In parallel a forum was set up by questioning some artists and art directors about the today question of art exhibition (Harald Szeemann, Lawrence Wiener, Sieth Siegelaub, etc.) <http://lascaux2.info/> [http://joy.nujus.net/files/webs/1999\\_0507\\_lascaux2/](http://joy.nujus.net/files/webs/1999_0507_lascaux2/)

- **1999** \_\_ **IOOp**, Makoto Yoshihara (IOOp is an interactive sound interface. You can change pace and panoramic of sound by control of each ball on the screen. There are Six sample sound will load at start. However IOOp allow you to load your choice of the sound. If your sound is in the AIFF format or SD format. No matter what you do. Please do not delete the sample sound file in the IOOp folder. IOOp will need these file when it start. And please use IOOp at inside of IOOp folder.)(Ainsi le programme LOOP, de Makoto Yoshihara, invite à la fois l'utilisateur à manipuler à l'écran des billes dont les vitesses de circulation déterminent la fréquence de lecture des échantillons en boucle qui leur sont assignés, mais aussi à laisser le système évoluer librement. La tentation est grande, alors, de reprendre le contrôle de certaines billes afin de les "relancer" dans une autre direction ou à une autre vitesse. [Yannick Dauby]) <http://tz0057327.net/pub/IOOp/> <http://www.teleferique.org/stations/Yoshihara/>

- **1999** \_\_ **The Music While You Wait**, Alvin Curran ("There is in fact one more place, perhaps the current place of places, mall of malls, park of all theme parks, the Souk of Souks, -Life beyond shopping. A life of eternal surfing. The Internet and its globalized remix of human behavior is the last major invention that the Twentieth Century may be remembered for as we all carry our new electronic toys with us furiously and with intrepid pride into the unknown spaces of "anyplace.com." Barring some kind of catastrophe, this unparalleled but fragile technology is according to most cultural critics becoming vital for all forms of human communication, behavior, and economics in the future. As for the performing arts, if cyber-space is to become our new-music-making place, it has a long way to go in terms of simultaneity and audio quality. Nonetheless, I have conceived a project for the Net which exploits its present potential while not having to compromise my usual musical standards: MUSIC WHILE YOU WAIT - employing the same real-time composing and processing software created for Toto Donaueschingen, can be offered as a limited or permanent sound-Installation on the Internet . Based on the premise that this system can transform any sound of any duration into a coherent, evolving piece of music, the producers will extend an invitation to anyone, anywhere to send in a brief sound-file. These in turn will be stored on hard disk and be utilized by the system's random choosing algorithm. The resultant sonic transformations form the music menu of the day, a conceptual portrait of the moment. The place where this occurs is not "anywhere.com" but the

unique locus in every individual that collectively define the human species as a musical one - one that will never cease to discover places that we can not even imagine today." [Alvin Curran - Published, in German, in Positionen, issue 42 ("Orte"), February 2000)] <http://www.alvincurran.com/writings/out%20of%20place.html>

- **1999** \_\_ **Musikschrank Rheingold**, Johannes Goebel / Torsten Belschner / Bernhard Sturm, net\_condition ZKM (Musikschrank Rheingold in a living-room from the fifties: dark brown and shiny, with golden gleaming handles and edges, converted into an apparatus for selecting radio stations on the internet via keys and a radio dial. At first everything is as it always has been on the net: one person transmits, many people receive. The big radio stations occupy their places with throughput capacity. The innovation: everyone can transmit and send data to the net with a minimum of technical equipment. This new distribution could also change production and content. But you have to fish in the endless ramifications of the net to find what you are looking for; there is no linear dial like in radio.) [http://on1.zkm.de/netcondition/projects/project24/default\\_e](http://on1.zkm.de/netcondition/projects/project24/default_e)

- **1999** \_\_ **Napster** (Napster was an online music file sharing service created by Shawn Fanning while he was attending Northeastern University in Boston and operating between June 1999 and July 2001. Its technology allowed people to easily copy and distribute MP3 files among each other, bypassing the established market for such songs and thus leading to the music industry's accusations of massive copyright violations. Although the original service was shut down by court order, it paved the way for decentralized peer-to-peer file-distribution programs, which have been much harder to control. The service was named Napster after Fanning's hair style based nickname. Although the recording industry denounced music "sharing" as equivalent to theft, many Napster users felt justified in using the service for a number of reasons. Many believed that the quality of new albums had decreased by the Late 1990s, with the typical bestselling album containing only one or two good songs bundled with many low-quality "filler" songs. At the same time, the cost of the CD format had decreased immensely, but the price of CD albums had stayed constant. People praised Napster because it enabled them to freely obtain hit songs without having to buy an entire album. Napster also made it relatively easy for music enthusiasts to download copies of songs that were otherwise difficult to obtain, like older songs, unreleased recordings, and songs from concert bootleg recordings. Some users felt justified in downloading digital copies of recordings they had already purchased in other formats, like LP and cassette tape, before the compact disc emerged as the dominant format for music recordings. Irrespective of these justifications, many other users simply enjoyed trading and downloading music for free. With the files obtained through Napster, people frequently made their own compilation albums on recordable CDs, without paying any royalties to the artist/composer or the estate of the artist/composer. High-speed networks in college dormitories became overloaded, with as much as 80% of external network traffic consisting of MP3 file transfers. Many colleges blocked its use for this reason, even before concerns about liability for facilitating copyright violations on campus. The service and software program were initially Windows-only, but in 2000 Black Hole Media wrote a Macintosh client called Macster. Macster was later bought by Napster and designated the official Mac Napster client, at which point the Macster name was discontinued.) <http://free.napster.com>

- **1999** \_\_ **nato.0+55+3d** (previously nato.0+55) (Set of modular video processing and QuickTime control objects, authored by the Netochka Nezvanova collective. Built upon the Max software environment (on the Macintosh platform), it provides tools for recording, playing, combining, creating and manipulating video in real time, and allows flexible integration with internet/networks, 3D, text and sound. Earlier software such as Image/ine developed in 1997 at STEIM was drawing in a similar direction, but the fact that nato.0+55+3d was operating inside the Max/MSP framework, using its "visual programming" protocol, provided at the same time greater ease of use and more flexibility, allowing the user to create his own applications and tools. Therefore, despite (or thanks to) the controversies raised by the aggressive self representation of the authors (aka "korporat warfare") and the mechanisms of arbitrariness and control that the users were subjected to, it gained popularity among video artists and performers, which were using it for a large variety of purposes, prominently for live performance and interactive installation. After two years, the development of nato.0+55+3d came to a halt, the last published extension being the object 242.nasdaq, released in June 2001 (an external that allowed the interfacing of Max/MSP with stock exchange data). While at that time, Macintosh users were shifting towards the new operating system Mac OS X, nato.0+55+3d was never ported to OS X and cannot run in classic mode. Most users regard it nowadays as obsolete, since it is not possible to run it on computers produced after 2003.) [http://www.bootsquad.com/old\\_site/nato/nato00.html](http://www.bootsquad.com/old_site/nato/nato00.html) <http://www.1904.cc/timeline/tiki-index.php?page=nato.0%2B55>

- **1999** \_\_ **net\_condition, art global - global media**, Barcelona - Graz - Karlsruhe - Tokyo ("net\_condition" is a four-country networked event organized under the "steirischer herbst" art festival hosted by the city of Graz, the provincial capital of Steiermark, Austria. Media centers in Austria, Germany, Spain and Japan will be participating in this event. The event will be under the overall direction of Peter WEIBEL, a distinguished theoretician in the field of art and media technology and organizer of numerous projects. The following four institutions will be organizing a number of installations and Net.art exhibitions: steirischer herbst (Graz, Austria: Peter WEIBEL); ZKM Center for Art and Media Karlsruhe (Karlsruhe, Germany: Jeffrey SHAW; MECAD (Barcelona, Spain: Claudia GIANNETTI); and NTT InterCommunication Center (Tokyo, Japan: ITO Toshiharu ). The emergence of photo media ("The Photographic Condition") changed the art of painting, video has changed film, and digital technology has changed film and video. Now the question is: "How will the emergence of networks (the net condition) affect and change conventional media ?" This

event will link art and media centers in four cities of the world in a cross-matrix of real space and virtual space while focusing on the animation of human consciousness in the net. The ICC event features four artists in an experiment in interactive communication and the merging of real and virtual space to create a networked heterotopia (interactive dislocation). "However, reality consists of the co-resonance and merging of actual images and virtual images." [ICC presentation] -- But - can net-art really be exhibited? As the title of the exhibition supposes, *net\_condition* is not about "net-art for net-art's sake"; rather, it's about the artist's look at the way society and technology interact with each other, are each other's "condition": At the dawn of information society, there's a growing demand for knowledge, data exchange, entertainment, and it frequently has to be "just in time", "on demand", "in real time". The technical answer to this is called "internet". At the same time, the net itself is shaping society, new fields of social, commercial, and artistic interaction emerge. There are new possibilities, even those no one ever asked for. In this rich field of opportunities, utopian and emancipatory hopes re-appear on stage; equality of chances, world citizenship, participation without borders are regarded as technically doable and are promoted by private communities, while the global players in the commercial world go for their goals with the very same technical means. Social interaction is changing with the net. From the point of view of the history of media, we also see a change in the way people play music, remember, tell stories, design, play. *net\_condition* is talking about how these changes are reflected, presented, and researched by net artists. Also, *net\_condition* is about how events in real space and events in the virtual "space" of the net react to each other, trigger each other, or just collide. Distributed Virtual Reality, Shared Cyberspace, non-local communications, multi user environments and net games - these are some of the main topics of *net\_condition*. For Peter Weibel, head of the ZKM and curator of *net\_condition*, has high hopes for the role net-art is about to play. Says he: »At present, net art is the driving force, which is the most radical in transforming the closed system of the aesthetic object of modern art into the open system of post-modern (or second modern) fields of action.« [ZKM presentation] [http://www.ntticc.or.jp/Archive/1999/Net\\_Condition/](http://www.ntticc.or.jp/Archive/1999/Net_Condition/) <http://on1.zkm.de/netcondition/>

- **1999 \_\_ Nocinema - Interludes**, Jérôme Joy, Walker Art Center, AEN Art Entertainment Network curated by Steve Dietz (nocinema.org is an automatic net-based documentary/fiction of interludes, drawing upon a string of live webcams across the world transmitting live scenes collected from different locations. The sound, each time offering a different overlay, comes from a real-time shared database which is fed and updated by a team of sound artists/partners, including Magali Babin, DinahBird, Christophe Charles, Yannick Dauby, Jérôme Joy, Luc Kerléo, Alain Michon, Jocelyn Robert and Chantal Dumas. The first version of nocinema, Interludes, used refreshed images of webcams and unusual treatments of midifiles and processes of short looped sound samples (In 2003, nocinema.org were upgraded with full streaming webcams and sounds), because the bandwidths were not sufficient. The project were developed on a simple HTML/DHTML-based configuration directly accessible on the WWW. The sequences of full-image pages with embedded sound mixes, was realised with javascript commands played by the browsers. This project referred to TV Interludes one watched in the 70s during program breakdown : countryside images and syrupy music. I remember these TV Interludes as slowdowns of time. To use this process on the Internet were an issue to bring musical states (by slowing down) on a fast medium : no interactivity, the machine launches its internal and aleatoric processes and grasps and selects in the real world, composing an improbable cinema with unpredictable images and sounds. Because the process uses combinations of aleatoric engines (javascript), the associations of images and sound were never identical and not reproducible. Each 'internaut' connected to the project via the website, watches a film different as his/her neighbour. Fictions are created by simple successions and articulations of live audio-visual selections in real world. From surveyance devices (webcams), the project opens a fictional 'flanerie' and promenade. The images were treated with javascript commands to be enlarged (fullscreen) in a dimension larger than the regular screen-sets, and to be mobile : in fact the scripts create fictional panning shots (like if a camera does a panning) within the browser window. The creation of mobile images from small and fixed pictures (and then pixellised) enhances the perception of details and of a live process, close to cinema. All the conditions of this project are coming from cinema, but with 'no-cinema' materials and dimensions.) <http://nocinema.org/> <http://aen.walkerart.org/sitemap.cfm> <http://jeromejoy.org/>

- **1999 \_\_ Orchestra !**, Dino Giuli, Franco Pirri, Paolo Bussotti (Orchestra ! proposes a platform for musical group sessions over the Internet. It's a distributed platform for virtual musical groups and music distance learning over the Internet in Java™ technology. It has been conceived as an useful instrument for collaborative music developing and enjoying, both at the professional and at the "amateur" level. It has been designed for music distance learning, as well. The system, that we named "Orchestra!", is based on a distributed software architecture and its services are universally accessible through a simple http-client (a browser) and a sound card. Geographical packet-switched network latencies make it impossible to reach a real musical synchronisation among all members of a virtual group. As an alternative, it has been developed a system of progressive and collaborative elaboration of musical audio streams which is insensitive to delays: this idea permits to reproduce "live" performances as well as recording studio activities.)

- **1999 \_\_ Peer-To-Peer** (A peer to peer (or P2P) computer network uses diverse connectivity between participants in a network and the cumulative bandwidth of network participants rather than conventional centralized resources where a relatively low number of servers provide the core value to a service or application. P2P networks are typically used for connecting nodes via largely ad hoc connections. Such networks are useful for many purposes. Sharing content files (see file sharing) containing audio, video, data or

anything in digital format is very common, and realtime data, such as telephony traffic, is also passed using P2P technology. A pure P2P network does not have the notion of clients or servers but only equal peer nodes that simultaneously function as both "clients" and "servers" to the other nodes on the network. This model of network arrangement differs from the client-server model where communication is usually to and from a central server. A typical example of a file transfer that is not P2P is an FTP server where the client and server programs are quite distinct, the clients initiate the download/uploads, and the servers react to and satisfy these requests. History : July, 1999: publication of Freenet protocol / September, 1999: creation of Napster / November, 1999: first release of Direct Connect client / March 14, 2000: first release of Gnutella / September 6, 2000: first release of eDonkey2000 / March, 2001: introduction of the FastTrack protocol / April, 2001: design of the BitTorrent protocol / May, 2001: first release of WinMX Peer Network Protocol / July, 2001: shutdown of Napster / November 6, 2001: first release of GUNet / March, 2002: publication of the Kademia DHT / November, 2002: start of the Gnutella2 project. Peer to Peer or P2P for short, in this context refers to the meme of egalitarian networking that is currently emerging throughout society, made possible by internet technologies and a critical look at current authoritarian and centralised social structures. The P2P paradigm has been elucidated by Michel Bauwens in his thesis *Peer to Peer and Human Evolution*. P2P is a specific form of relational dynamic, based on the assumed equipotency of its participants, organized through the free cooperation of equals in view of the performance of a common task, for the creation of a common good, with forms of decision-making and autonomy that are widely distributed throughout the network. It expresses itself through three fundamental social processes: 1) peer production, as the collaborative production of use value that is open to participation and use to the widest possible number (as defined by Yochai Benkler, in his landmark essay *Coase's Penguin*); 2) as peer governance, which is the manner in which these projects are managed; 3) and as peer property, which refers to the distribution of peer services and products through new modes of property, which are not exclusive, though recognize individual authorship (i.e. the GNU General Public License, the Creative Commons licenses). Peer production does not produce commodities for exchange value, and does not use the price mechanism or corporate hierarchy to determine the allocation of resources. It must therefore be distinguished from both the capitalist market (though it can be linked and embedded in the broader market) and from production through state and corporate planning; as a mode of governance it differs from traditional linear hierarchies; and as a mode of property it differs from both traditional private property and state-based collective public property; it is rather the common property of its producers and users and the whole of humankind. P2P is a network, not a linear or 'pyramidal' hierarchy (though it may have elements of it); it is 'distributed', though it may have elements of centralization and 'decentralisation'; intelligence is not located at any center, but everywhere within the system. Assumed equipotency means that P2P systems start from the premise that 'it doesn't know where the needed resource will be located', it assumes that 'everybody' can cooperate, and does not use formal rules in advance to determine its participating members. Participants are expected to self-select the module that corresponds best to their expertise. Equipotency, i.e. the capacity to cooperate, is verified in the process of cooperation itself. Validation of knowledge, acceptance of processes, are determined by the collective through the use of digital rules which are embedded in the project's basic protocol. Cooperation must be free, not forced, and not based on neutrality (i.e. the buying of cooperation in a monetary system). It exists to produce something. It enables the widest possible participation.)

- 1999 \_\_ « PRÉSENCES À DISTANCE - Déplacement virtuel et réseaux numériques : POURQUOI NOUS NE CROYONS PLUS LA TELEVISION », Jean-Louis Weissberg ("Les "présences à distance" visent une région particulière, celle des déplacements fluides gérés par les technologies numériques, mais conçus dans leur dépendance aux "machines" intellectuelles et corporelles (langage, vision, audition, geste, etc.). Il ne s'agit, ici, ni d'une lecture généalogique, ni d'une description fidèle du paysage technique et politique des télécommunications. Nous explorons, en revanche, quelques logiques homogènes aux procédés actuels de déplacements des signes de la présence en les comparant à celles qui ont gouverné leurs prédécesseurs. Nous ne présupposons pas que la Téléprésence est appelée à se substituer aux rencontres charnelles dans les activités humaines. D'où le pluriel qui affecte le terme "présence", exprimant le développement de solutions intermédiaires entre l'absence et la présence strictes : les modalités de la présence à distance se multiplient, et surtout, le coefficient corporel augmente dans ces transports. La Téléprésence agit comme une "forme culturelle" qui redéfinit la notion même de rencontre (comme d'autres, telles que la photographie ou la télédiffusion audiovisuelle, l'ont déjà accompli). Nous aurons bien sûr, à nous expliquer sur cette notion de "forme culturelle" dans ses rapports à la technique en général et aux techniques particulières qui la sous-tendent. Ainsi -c'est l'une des propositions principales de ce livre- la Téléprésence transforme l'exercice de la croyance telle qu'elle se concrétise aujourd'hui encore dans la télévision, parce qu'elle affecte les conditions du déplacement de la présence. (...) Transporter suppose alors de modéliser préalablement l'événement. Et c'est là qu'interviennent les technologies numériques, non pas seulement pour transporter l'information mais pour la mettre en forme et la rendre ainsi expérimentable. Et l'on voit bien que ces questions pourraient être prolongées dans le domaine politique puisque le système de la démocratie représentative repose sur la séparation entre représentants et représentés. Quelles formes politiques pourront-elles bien correspondre à une situation où l'on peut être à la fois ici et ailleurs ? À ce commerce entre le technique (la maturation, la disponibilité des techniques de modélisation numérique) et le culturel (l'exigence d'expérimentation que personne n'exprime en propre et que tout le monde partage), la notion de "forme culturelle" vient apporter un cadre. Il s'agit bien d'un lieu de mixage où se négocient, s'interpénètrent et se contraignent mutuellement, dispositifs, usages sociaux et désirs collectifs. On pourrait aussi bien parler de "forme technoculturelle". Ce serait, au plan épistémologique, parfaitement justifié ; la "culture" se constitue fondamentalement dans le technique, et doit-on les différencier ? Je préfère, cependant,

conserver la notion de "forme culturelle" pour ne pas laisser entendre que la Téléprésence relève essentiellement de techniques, éléments indépendants avec lesquels nos sociétés devraient négocier comme avec une contrainte imposée de l'extérieur. Notre monde, en effet, secrète les appétits que les dispositifs viennent satisfaire. Et c'est au niveau le plus général, la culture (orientations, visions du monde, modes de travail, habitudes, croyances, désirs collectifs, comme on voudra) que le frayage s'opère. Dans l'étude de la présence technologique à distance, le terme "technologique" pourrait être supprimé, si on admet que la notion même de déplacement de présence l'inclut implicitement. On le conservera néanmoins pour marquer la spécificité des technologies dures face aux technologies mentales "molles" (imagination, fantasme éveillé, etc.), la séparation entre elles, pour réelle qu'elle soit, pouvant accueillir des voies de passages. Nos investigations tentent, notamment, de relier les segments durs de circulation des signes (écriture, imprimerie, enregistrement, numérisation) aux transferts et traitements propres à l'activité mentale (imagination, mémoire, souvenir). Le chapitre VI, consacré à une discussion du travail de Gilles Deleuze sur le cinéma, tente, en particulier de concrétiser cette direction d'étude. Dupliquer non seulement l'apparence de la réalité mais sa mise en disponibilité -c'est-à-dire le mode d'accès à cette réalité transposée-, telle pourrait être la définition de la Téléprésence. S'ouvre dès lors la controverse sur l'ampleur et l'intensité possible de cette mission. Doit-on appréhender la réalité transposée comme une réalité en compétition globale avec notre monde empirique habituel ?" [Jean-Louis Weissberg] <http://hypermedia.univ-paris8.fr/Weissberg/presence/presence.htm>

- 1999 \_\_ **The Relative Violin**, Vienna/Vancouver, Jon Rose (This piece was performed as part of the marathon The Relative Violin Night in the concert hall of Austrian Radio, Vienna on 7 December 1999. Simultaneously, versions of it appeared live on radio throughout Austria; in a parallel concert at the Western Front, Vancouver and on the internet) <http://www.jonroseweb.com/>

- 1999 \_ **Safe Distance**, Paul Garrin (Current events induced Paul Garrin to create his newest work Safe Distance. It comments upon the Balkan war taking place at this moment and the role of the media in war reporting. Images from a technical war threaten to become routine. Their constant repetition does not lead to an understanding of distant events, but to just the opposite: an apathy toward violence and destruction. In Safe Distance live images broadcast into the museum via the Internet from cameras in Belgrade, Duisburg, New York, Jerusalem, Los Angeles and other cities. At the same time, sniper-cameras from Garrin's work "Border Patrol", which is installed in New York, take people in their sites and broadcast these images to Duisburg. Between the images, the heads of the museum's visitors appear on the projection screen - directly confronting them with the distant events. The live character of Safe Distance ensures that the work progresses and changes in the course of the exhibition. Garrin himself has access to the Web servers through which he programs the content of the works.) <http://pg.mediafilter.org>

- 1999 \_\_ **Séance Box No.1**, Ken Feingold, net\_condition ZKM (As if it might be a mediumistic being, this networked telepuppet performs on its stage at the whim of the one who moves it from a distance, and only this puppet master may speak with the ones from somewhere else. The visitors are seen by this puppet-medium, who learns to be the lens for the desires of the audience as they try to communicate with the ever-listening artificial actor. This agent provocateur floats in the image landscape before them, a speaking fountain given to rhyme, alliteration, and seemingly prophetic speech. In this work-in-progress presentation of what will eventually be the setting for two parts of a 3-site performance, the boundaries crossed by voices are the keys to finding messages in the network medium. "In the version of this work produced for the 1999-2000 exhibition "net\_condition", there are two spaces. One space is nearly filled by a stage that is like a box or a large table, with a stepped roof that disappears into the ceiling of the room. The scale of things is skewed. On this electrified stage is a robotic telepuppet (with a video camera and microphones in its head) looking a bit damaged - its head is bandaged and the body is wrapped up - in something of a human form. It is a new form of one of the puppets from my earlier work "where I can see my house from here so we are" (1993-95). The projected digital backdrop of this stage is inhabited by a floating head which is a software agent driven by artificial intelligence. Its role is that of an artificial actor with whom the telepuppet may converse; this agent provocateur has the power of conversation - it understands spoken language and responds in a synthetic voice. It floats in and out of the changing landscape as the one behind the telepuppet speaks with it, coming and going in various disguises - as smoke or flames, people from the past, imaginary beings, or as a frozen corpse - and acting like a speaking fountain given to rhyme, alliteration, and seemingly prophetic speech. In another space, what is seen by the telepuppet is projected to fill a large wall - things in this space are "life-size", including the visitors to the other space when seen by the telepuppet. In the middle of this room is a small table, out of which emerges a human skull. The skull is a force feedback joystick device and it is the means of moving the telepuppet. When the telepuppet bumps into its boundaries, one feels this in the resistance of the skull. The one controlling the movement of the telepuppet in this space has a microphone for speaking with the visitors and with the artificial actor, and this person's voice is transmitted to the telepuppet and moves the telepuppet's mouth, like that of a ventriloquist's doll. These two spaces (and four computers running backstage) are connected on a local network, but they may as easily be in different parts of the world, connected by the Internet. The exhibition of "Séance Box no.1" in this state is an experiment during its development. In fact, it is really not meant, when completed, to be interacted with directly by the public. Rather, the telepuppet is meant to perform in a specific role with an actor controlling it, and, though it is capable of carrying on something like a conversation, the "intelligence" of the artificial actor was written to respond to specific cues in dialog, much as a real actor does. There is also to be an actor who

performs in the puppet's stage space. When the work is completed, these spaces, stages, and figures are to be the setting and props for a performance, titled "Séance".") <http://www.kenfeingold.com>

- **1999 \_\_ Sonic Interface**, Akitsugu Maebayashi, FutureSonic04 (*Sonic Interface* by Akitsugu Maebayashi alters the way the city is perceived by processing sounds heard as you wander through the urban environment. Sonic Interface is a portable hearing device that is made from headphones, microphones, and a laptop computer. The participant is invited to walk around the city, and experiences modified sonic environments processed real time from the sounds it picks up. Three different stages generated by the software program influence and question our sense of space and time. Participants are given a back pack, containing a G4 laptop, and a set of headphones, and invited to experience the city as they never have before. As they wander the streets of Manchester the sounds they hear are sampled and processed live. Imaging crossing a road, and jumping with surprise when you hear a car rushing by 10 seconds later. Or if the sounds you hear never disappear, but are built up into layers of subtle texture. Conversations become puzzles, as participants make sense of the strange sensory environment. Sonic Interface explores mobility and location, challenging the way we perceive the city through creative applications of advanced technology.) <http://www2.gol.com/users/m8/>

- **1999 \_\_ Sound Bum**, Yoshihiro Kawasaki, Haruo Okada, Yoshiaki Miyata, Yoshiaki Nishimura, ("Bum" is the word signifying wide-ranging travel in a quest for something. This project enables the going on a trip to search and enjoy sound with the aim of feeling the world from the ears through "sound." Stated plainly, these travelers roam the world as they carry recorders instead of cameras. Soundmap with streaming pre-recorded sound files) <http://soundbum.org/>

- **1999 \_\_ Sound Drifting : I silenzi parlano tra loro**, ORF Kunstradio Vienna, Andrew Garton, Justina Curtis, Andrew Sargeant, Andrew Thomas (Melbourne - tat fat size temple - degenerative observations in sound), Honor Harger, Adam Hyde (Adelaide - pso.net, Radioqualia), Andreas Krach, Johannes Sienknecht (Weimar - I/Osonic), Seppo Gründler (Graz - dunes & redundancy), Winfried Ritsch (Linz - sound drifter), Robert Adrian, Martin Breindl, Groß, Maria Schubert, Markus Seidl, Andrea Sodomka, Gerhard Wieser, Eva Wohlgemuth (Linz), Dusan Bauk, Aleksandar Vasiljevic (Belgrad - communication noises), Robert Klajn, Gordan Paunovic (Belgrad - a mic), Emilia Telese, Tim Mark Didymus (Brighton - mecha voices), Colin Fallows (Liverpool - the plant room), Will Sergeant (Lancashire - tear drop in space), Tim Cole (Berkshire - intermorphic koan' oasis), Roland Bastien, Shawn Chappelle, Joelle Ciona, Peter Courtemanche, Anna Friz, Eileen Kage, Bill Mullan (Vancouver - silence descends), Matt Smith, Sandra Wintner (Vancouver - public piano), Andrea Sodomka, Martin Breindl, Norbert Math (Network - alien city), fon : Groß+Söllner (Network - dynamo 0.0-1.0) (*interdependent temporary system of 16 international remote sub-projects, which used a wide range of methods and approaches to the generation, processing and presentation of data/sounds/images. (The silences speak to each other: Marinetti) project/installation involved 16 sites across the globe (including 2 in Australia - a bit of nationalism there) which were intended to create a continuous stream of generative music online, some also included vision, and others a physical presence such as in Linz*) <http://www.kunstradio.at/SD/>

- **1999 \_\_ summer99 \_\_ Sha** (*Die Klanginstallation summer99 von sha.\_ verdichtet Stadtklänge in der Struktur des Netzes und spielt sie in den realen Raum zurück. Das Netzwerk wird dabei als Musikinstrument eingesetzt: Mikrofone fangen Berliner Hinterhof-Geräusche auf, die an eine Reihe von Computern auf verschiedenen Kontinenten gesandt werden. Nachdem die Klänge den Erdball automatisch umspannt haben, kehren sie zum Ausgangspunkt in unserer Welt der drei Koordinaten zurück und werden dort in einem dunklen Raum zu einer rollenden Collage überlagert - jede verschickte Version je nach Netzauslastung ein paar Augenaufschläge früher oder später. Die Struktur des Netzes bestimmt die Struktur der Musik. Ein RealAudio-Stream spiegelt die Installation als musikalischen Fluß für die Dauer der Ausstellung in Berlin zurück ins Netz. summer99 wird präsentiert in Zusammenarbeit mit HD - High Density - NGBK (Neue Gesellschaft für Bildende Kunst) Berlin.*) [http://on1.zkm.de/netcondition/projects/project601/default\\_e](http://on1.zkm.de/netcondition/projects/project601/default_e)

- **1999 \_\_ Tat Fat Size Temple (TFST) - Sound Drifting**, Andrew Garton (*Composers and sound artists from 16 different international locations collaborated on a unique, perhaps the first of its kind, remotely actuated generative soundscape. Sound Drifting could be heard via numerous web sites and public installations including the OK Media Deck, Linz (Austria), one of the host venues of the international Ars Electronica Festival. Toy Satellite artists created Tat Fat Size Temple (TFST), a challenging installation comprised of sounds and images accessible via a dedicated web site, public installation and Sound Drifting installation sites in Linz. Early November 1999 Toy Satellite launched the first iteration of the Temple; a nine-day generative soundscape drawn from recordings we made in Sarawak (Malaysia). Tat Fat Size Temple was streamed in real-time into a global generative collage entitled, Sound Drifting. Sound Drifting was produced by Austria's KunstRadio, for the 1999 Ars Electronica Festival held in Linz. The idea was to create a soundscape that represented the fragmentation of Dayak culture due largely in part to the encroachment of western style values, religion and economies. A generative approach to the project gave us the opportunity to replicate the ebb and flow of such influences as they cross into the social structures that have bound these communities together for more than three centuries. It was an awesome and sublime experience. The soundscape intermingled with the streetscape of Smith Street becoming*

part of our lives - an aural waterfall if you like, always fresh, always illuminating, never tiresome. We were so pleased by the response to this work, both to its online and onsite presence that we could not lay the Temple to rest. We asked ourselves, how do we take the generative properties of these sounds and bridge them with the rich source of images we had accumulated from Sarawak? How do we create perhaps a deeper experience of Sarawak, its people, and its traditions? How can we demonstrate this fragile relationship between what was, what is and inevitably will be? And can we demonstrate that despite what is crushed on the surface can never be truly buried within?) <http://www.toysatellite.org/tfst/>

- **1999** \_\_ **TEMP, a Temporary Media Lab**, Kiasma, Museum for Contemporary Arts, Helsinki, Finland (The third Temporary Media Lab [after Hybrid Workspace, Kassel, 1997, and Revolting, Manchester, 1998] will take place in the project space on the fifth floor of the Kiasma, the Helsinki contemporary arts museum, which opened in June 1998. The media lab will be open for five weeks. In principle, the space will be open for the general audience a few times a week when lectures, debates, on-line conferences, net.radio casts are being given there. The main focus of the lab will be to produce content and concept offered both by local and by international groups. Each group could do a presentation, party, (press) conference at the end of each week to inform the audience about the outcomes of their working period, perhaps in collaboration with different halls and institutions outside Kiasma, depending on the group and the topic.)

- **1999** \_\_ **There's no simulation like home**, Paul Sermon (This installation entitled There's no simulation like home is the culmination of artistic telematic research since 1992. The exterior of the installation resembles the back of a plasterboard stage set, or as if the bricks of a house had been removed to reveal the back of the inner plasterboard skin. Electricity and video cables are traced and attached all around the surface of the structure, looking like the back of large circuit board. The installation is architected on the ubiquitous form of the English terraced house. Using a walk through narrative sequence, from front door to back door, the audience encounter differing telepresent interfaces in each of the four rooms: the living room sofa, the bedroom, the dining room table and the bathroom mirror. Before entering the installation the audience have the possibility to view the installation through a series of peepholes positioned along the plasterboard exterior. Inside the installation the audience are encompassed within a simulated domestic home environment, exemplified in the dimensions of the rooms, the wood-chip wallpaper, the light fittings, skirting board and wall sockets. The living room sofa and television screen form the first telematic link outside the installation space, where a second sofa and video monitor are located. By using a system of live chroma-keying the two separate people, who could be any distance apart, share the same sofa on the same telepresent screen. In the bedroom the viewer can lie down on a bed onto which a live video projection is being made of another person, who is located outside the installation space on a second bed. A video image of the combined audiences together on the projection bed allow the viewers to interact in a telepresent space by touching with their eyes. The exterior installation space communicates a contrasting image to the domestic interior. Unlike the inside, the technology is very visible - akin to a media lab environment. The telepresent interfaces located on the outside of the installation, appear as areas for interaction and observation of the experiment like situation taking place inside the installation. In keeping with the techno reference of the exterior installation, video images from small surveillance cameras inside are constantly being displayed on monitors outside. The dining room table is the third telematic interface to the outside installation. Offering a slightly less psychological complex platform for interaction. Working with a system of live chroma keying between two separate tables the remote viewers are able to sit at the same table in the same telepresent room. The final room and interface the audience confront before exiting out the back door, is the bathroom mirror. What initially appears to be a normal mirror, lacks one essential truth - the viewers own image. A momentary illusion that is broken only when the viewer realises the mirror is in fact a window into an identical room. Whilst we have become accustomed to accept the existence of ourselves in telepresent forms throughout this installation. we are finally denied the most simple telepresent truth we expect from a mirror, putting the notion of the real and the virtual into question. By representing the domestic reality inside the installation as a fabrication of the technological apparatus outside. There's no simulation like home attempts to present realities as a construct of language. This installation serves as a contextual wrapping for the telematic research and developments used within it.) <http://www.hgb-leipzig.de/~sermon/simulation/>

- **1999** \_\_ **Toto Donaueschingen**, Alvin Curran ("The peak of my sonic "megalomania" may have been reached in the very recent TOTO DONAUESCHINGEN - a work which, alas, falls into the "installation" subgroup of second-class musical citizens. It remains a fact of life that in the context of the "E-Musik" establishment worldwide, the acceptance of sound installation or better the placement of any sound work outside the center stage of the concert hall, is viewed with suspicion and often disdain, for its uncertified, impure musical qualities; Armin Koehler's unusually creative programming for the Donaueschingen festival must be praised as a sterling exception. Installation is tout-court a bastard form; or is it the new Gesamtkunstwerk? Who really cares? For now, it's what's happening. In this installation project, with great respect and joy, I created for the 1999 edition a personal representation of the entire archival history of the internationally renowned Donaueschingen festival from 1922 to 1998. In effect I was making a "new music" of all the new music of this century. To do this I collaborated with two brilliant computer musicians, Nicola Bernardini and Domenico Scianjo. We linked two computers (a Mac running MSP and a PC-Linux OS running CSound) which independently and in tandem processed 8 simultaneous streams of samples from the source material, warping, morphing, splitting, stretching, extracting, shuffling, looping polar frequencies to create minute or gigantic blocks of new music from the

original sources. These were then sent through a mixer to 16 amplifiers and speakers, a pair of speakers for each stream, equidistantly spaced in over 5000 sq mt of the Schloss Park. In this work I was aiming my creative sights beyond the confines of sampling, far beyond collage, or other well worn concepts and techniques of our post-post-modern condition. I was simply trying to make a piece of eternal music e basta. A music not simply "ewig" in the 19th century sense, but in the practical everyday sense of an ongoing process which creates and recreates itself anew in every moment - something akin to living Buddhism (though that is not my religion), or like the impossible feats that enable Morton Feldman's music to float weightlessly and timelessly. Using quite different machinery from Morton's universal acoustic instruments, I and my colleagues created a computer system which could extract, as it were, the molecular essences of sound and recombine them into new and evolving galaxies according to a set of randomly selected rules. So with the entire facade of the Schloss Furstenberg and the surrounding trees, shrubs, flower beds, fountains and streams all seemingly emitting aperiodic sound structures of recombinant historical origin, this work was a true theme park, not just some Mickey-Mouse avantgarde adventure, but a genuine attempt to take MUSIC for a walk in space as part of our expanding notion of music-theater and our unending efforts at cultivating the seductive magic of "place." The nature of this kind of music making is related to the ancient traditions of ceremonial and celebratory music: that is, music written for special occasions. These occasions are usually unique, unrepeatabe events and therefore the musics themselves are created and consumed in those special moments. As John Cage said of the now defunct New Music America Festival, "we should have one every day" and thus the Web could in fact be the place where such a wish could come true." [Alvin Curran - Published, in German, in Positionen, issue 42 ("Orte"), February 2000)] <http://www.alvincurran.com/writings/out%20of%20place.html>

- **1999** \_\_ **Traces**, Simon Penny (Traces is a project for networked CAVEs (immersive VR spaces). But it is very different in its goals and its nature from any other CAVE or VR project (to the knowledge of the author). The root of the project is a long standing concern over the disembodied quality of the VR experience, which stands in stark contrast to the rhetoric around VR, which argues that the experience allows the user to interact in a bodily way with digital worlds. As I first argued in my essay "Virtual Reality as the end of the Enlightenment project" (in "Culture on the Brink", Eds Druckrey and Bender, Bay books 1994), conventional HMD (Head Mounted Display) VR dissects the body, privileging visuality to the exclusion of bodily senses. The body is reduced to a single Cartesian point, the body is checked at the door. In Traces, virtually all sound and visual experiences are generated in real time based on the users behavior. Unlike other VR projects, I have no interest here in illusionistic texture mapped models, the illusion of infinite virtual space or building "virtual worlds". All attention is focused on the ongoing bodily behavior of the user. Traces will be a telematic, networked experience. But creating an illusion of close proximity (like in the work of Paul Sermon) is not the goal. Rather, there is an emphasis on the highly technologically mediated nature of the communication. The users never see each other, only the results of each others behavior. The user interacts with gossamer spatial traces which exhibit the dynamics and volumes of bodies, but are translucent and ephemeral. In the earlier parts of the project, where the user is building volumes, sound will emanate from the parts of the body from which volumes are being produced, i.e., those parts which are moving. I imagine a groaning, grinding sound. Various approaches to the generation of sound are being researched. One approach uses a physical model of a human larynx, in which the parameters of the model are given changing values generated by the history of the body model. To our surprise, full eight-channel spatialisation of sound in CAVE environments is not a well established or even thoroughly researched field. We are moving toward building a custom and self contained PC based eight-channel sound system which can be networked into various CAVE systems.) <http://ace.uci.edu/penny/works/traces.html>

- **1999** \_\_ **Truth in Clouds**, Nicolas Collins, net\_condition ZKM (Chamber opera and audio installation, for small ensemble, distributed sounds, projected texts, and participatory audience. Written for the Kammerensemble Neue Musik Berlin. Premiered at Podewil, Berlin, 1999. Truth In Clouds is at one and the same time a site-specific interactive audio installation, and the set and principle mechanism for a musical performance. The piece takes its form, and its inspiration, from the 19th Century culture of seances, and the tumult of scientific and philosophical thought that surrounded it. The set's central object is a »seance table« -- a large round wooden table upon which stands an inverted wineglass. The movement of this wineglass by visitors or performers controls localized audio and visual manifestations throughout the room and directs the actions of live musicians. From the ultra-rational perspective of our digital age it may be difficult to understand the profound connection that once existed between the science of electricity and the »pseudo-science« of Spiritualism. As with atomic physics a generation later, early electrical discoveries -- man-made lightning, telephony, telegraphy, radio -- all seemed to point beyond the known physical world into one of essences, from intuitive mechanical causality into something demonstrable but nonetheless unknowable. Seances drew the interest not only of artists and theologians, but of scientists and engineers: Faraday, Wheatstone, Morse, and Tesla all attended them. They sat, grouped around a table, while spirits spoke to them, writings mysteriously appeared on table tops, wine glasses moved, or furniture tapped. Using a combination of digital technology, traditional instruments, and familiar household objects, Truth in Clouds attempts to recreate this poignant causality, flickering between forthright and mysterious, as well as to explore the collective collaboration with invisible comrades that so strangely links Spiritualism to Cyberspace.) <http://www.nicolascollins.com>

- **1999** \_\_ **Vertical Elevation**, Rafael Lozano-Hemmer (»Vectorial Elevation« was an interactive artwork designed to transform the Zócalo square in Mexico City. Using a three dimensional interface this web site allowed you to design a light sculpture with 18

robotic searchlights located around the Plaza. A web page was made for each participant with photos from 3 webcams. The piece was unplugged on the 7th of January, 2000, after receiving hundreds of thousands of visits from 89 countries and all the regions of Mexico. A connection between the physical and virtual also occurs in the numerous tele-presence or tele-robotics projects that establish connections between remote locations or allow users to intervene in a site-specific installation via the Internet. Examples would be the "Relational Architecture" projects by Raphael Lozano-Hemmer, among them Vectorial Elevation, which allowed the public to transform an urban landscape by means of more than a dozen robotically controlled gigantic searchlights that could be positioned via a Web site. [Christiane Paul] <http://www.medienkunstnetz.de/works/vectorial-elevation/> <http://www.lozano-hemmer.com>

- **1999** \_\_ **World Tune**, Wolfgang Neuhaus (Transnational sound machine which constantly generates arbitrary sounds of events and activities from all over the world. World Tune is a transnational sound machine which constantly generates arbitrary sounds of events and activities from all over the world. It is lively - a permanently transforming sculpture machine which encompasses our entire globe. Horn loudspeakers organically connected to the sculpture arise and disappear in different regions of the planet. Human sensors track local sound events, record them with the help of microphones and portable audio recorders and finally transfer them to the digital network of the World Tune soundsystem. Other inhabitants of the earth, no matter which particular region of the planet they reside, send the sounds of the World Tune soundsystem to the loudspeaker sculptures. Other visitors to the World Tune loudspeakers and World Tune homepage experience these sounds and decide if they want to change the current sound immediately...) <http://www.worldtune.com/archive99/art9801.htm> <http://www.worldtune.com/> [http://www.worldtune.com/sub/sharing/worldtune\\_1996\\_2001.pdf](http://www.worldtune.com/sub/sharing/worldtune_1996_2001.pdf)

## 2000

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- **2000** \_\_ **Internet** (The Internet comprises 72.3 M hosts (in fact, over 72,398,000 hosts) (Internet Software Consortium 2000).)

- **2000** \_\_ **The Internet Archive** (The Internet Archive ([www.archive.org](http://www.archive.org)) keeps on file 14 terabytes of archived copies of the WWW sites from the early 1996 onwards. For comparison, the The Library of Congress, Washington, DC, contains 20 million books, which - not counting pictures - are an equivalent of 20 terabytes of information (Internet Archive 2001).)

- **2000** \_\_ **Archives sauvées des eaux, Exploitation des concepts n°1 (2000) et 3 (2000/2005)**, Luc Ferrari, Gent Vooruit May 2000 with DJ Olive (Luc Ferrari is one of the most legendary musical figures of the twentieth century, whose work and aesthetic continue to influence several generations of contemporary composers. Among the founders and pioneers of the 'Groupe de Recherche Musicale', he is recognized to be alongside P. Schaeffer and P. Henry, one of the great masters of concrete music. He is also among the first to influence the 'musique concrète' with elements from other fields of electronic and acoustic music. Educated by Honegger and Messiaen, some steps, as an example the research work in Darmstadt or in Colony or the crucial meeting with Varèse, remain however fundamental. From Varèse, above all, Ferrari learned a fundamental lesson in his search: to consider and to accept the sounds 'for themselves'. The sounds must retain their own original identity, as an abstract quality. This has then been inserted in works in which the sound folds towards a form of narrative, and towards something, eventually, that has been called 'an imaginary musical story'. In this 'story' voices, sounds, orchestral sound, magnetic tape reach levels of extraordinary elaboration and effectiveness. Luc Ferrari's composition Archives sauvées des eaux for two DJs was premiered in Japan and performed by the composer himself and Otomo Yoshihide at SuperDeluxe in Tokyo in 2003. Ferrari was one of the first composers to seriously build upon John Cage's maxim, "music is all around us if only we had ears". Ferrari's soundscapes based on ambient sounds of daily life are both evocative and socially engaged. "Since autumn 99 I undertook the composition of a new series with the general title "Exploitation of the concepts". The aim is precisely to use the concepts I experimented during my whole life as a composer and this in all possible directions. Just as well in writing for instruments as in electroacoustics, in video, in multimedia-installations, in using the new technologies as well as the old ones, in composing concertlike works, which means with a duration that suites to the idea of concert, or concertunlike works which means with an "undetermined" duration. These exploitations are going in all directions: the tautology, the superposed cycles, the minimalism of the "Presque rien", the random architecture, the anecdotal, the narration, the everyday life, the poor art, the memories and so on, all these concepts which came up in my preoccupations but which I have not really exploited until now. The idea for using my archives grew up from the necessity to update the aids of these memories. In my studio I have actually magnetic tapes representing all the recordings I have made since 1960 and which I have used or not. Copying these elements on CD I suddenly felt the desire to transform this boring work into creative work. And instead of copying I began to compose. By this way was born a new composition which exploits the archives from 1974 (one must begin somewhere), was born also from the commission I got to perform with a DJ: encounter between Wim Wabbes, leader of the Vooruit in Gent, DJ Olive from New York and me." [Luc Ferrari]) («L'idée d'utiliser mes archives est née d'une nécessité d'actualiser le support même de ces mémoires.

*J'ai en effet des bandes analogiques dans mon atelier qui représentent tous les enregistrements que j'ai faits depuis 1960 et dont je me suis ou non servi. En copiant sur CD ces éléments, j'ai été pris de désir de transformer ce travail fastidieux en travail créatif. Et au lieu de copier, je me suis mis à composer» [Luc Ferrari]. Archives sauvées des eaux (Exploitation des concepts n°3) est réalisée à partir de «morceaux de mémoire magnétique» sauvés d'une inondation. L'ensemble réagit à sa guise, mais en restant groupé et peut glisser quelques citations de Patajaslotcha, suite de danses composées en 1984. « Cette pièce montre un aspect particulier de l'art à la fois libertaire et inspirant d'un compositeur que l'on sait, par ailleurs, plus que tout autre sensible à la réalité du quotidien.» S'ouvrant de plus en plus à l'improvisation, Luc Ferrari aurait dû interpréter en 2005 lui-même en direct la partie de mixage de la version pour deux CDs et ensemble instrumental de ses Archives sauvées des eaux, mais sa disparition est survenue six jours avant la séance d'enregistrement. Nul n'était plus qualifié pour tenir ce rôle à sa place que le pianiste electro eRikm avec lequel il s'est souvent produit en public. C'est finalement sur un pré-mixage réalisé par ce dernier que se sont greffées avec bonheur les réactions de la clarinette, de la harpe, de la flûte, du violoncelle et de la percussion aux véritables «sculptures sonores» mouvantes des archives musicales miraculeusement préservées de la destruction. Ces improvisations alternent avec les ritournelles à l'unisson de la suite de danses de 1984 Patajaslotcha. Des ritournelles qui renvoient au «folklore imaginaire» cher au compositeur dont, à la fin de la pièce, on entend au loin la voix d'une façon indistincte, comme au travers des brumes d'un rêve éveillé. [Daniel Caux] <http://www.lucferrari.org>*

- **2000** \_\_ **Art's Birthday 2000** (January 16 - live from Vienna, Belgrade, Nove Zamky with Alien Productions, Subtolerance, LENGOW & HEyeRMEarS. January 17th - 24 hours of live radio broadcast on CITR FM 101.9 FM Vancouver, web-cast by the Western Front/FirstFloor Eastside (Vancouver) with connections to Tetsuo Kogawa and DJ Turbonator in Tokyo, Alarm 112 in Copenhagen, Kunstradio (central command station) in Vienna, and Steve Bates in Winnipeg.) <http://projects.front.bc.ca/2000/artsbirthday/index.html> [http://kunstradio.at/2000A/ART\\_BDAY/index.html](http://kunstradio.at/2000A/ART_BDAY/index.html)

- **2000** \_\_ **Brain Opera, Future Music Blender** (House of Music, Vienna), Tod Machover (FMB will evolve and grow constantly as a result of user input to the Brain Opera, both physically at the House of Music and via the Internet.) <http://www.media.mit.edu/hyperins/bovienna/indexnew.html> <http://web.media.mit.edu/~tod/Tod/research.html> <http://crossings.tcd.ie/issues/3.1/Tanzi/>

- **2000** \_\_ **CA\*net3** (In the year 2000, the CA\*net3 fiber optic network in Canada became the fastest computer network in the world capable of transmitting all nine symphonies of Beethoven in 0.065 seconds. [Robbie Dingo - Internet Audio Experiments]) <http://digitaldouble.blogspot.com/2006/07/internet-audio-experiments.html>

- **2000** \_\_ **Carnivore**, Alex Galloway (The project Carnivore by Alex Galloway and the RSG (Radical Software Group) : Inspired by the packet-sniffing software DCS1000 (once nicknamed "Carnivore") that is used by the FBI to perform electronic wiretaps and search for certain "suspicious" keywords, Carnivore consists of an application that performs packet-sniffing on a specific local area network and serves the resulting data stream, as well as the "client" applications created by numerous artists, which interpret the data in visual ways. The project makes the source code of the software available to anyone interested in using it — as opposed to limiting its use for the purpose of surveillance — and defies an easy categorization of surveillance as either positive or negative. Carnivore is a surveillance tool for data networks. At the heart of the project is CarnivorePE, a software application that listens to all Internet traffic (email, web surfing, etc.) on a specific local network. Next, CarnivorePE serves this data stream to interfaces called "clients." These clients are designed to animate, diagnose, or interpret the network traffic in various ways. Use CarnivorePE to run Carnivore clients from your own desktop, or use it to make your own clients.) <http://r-s-g.org/carnivore/>

- **2000** \_ « **Du Contre-Pouvoir (On Counter-power)** », Miguel Benasayag & Diego Sztulwark (Miguel Benasayag, a former member of the Argentinean Guevarist guerrilla army PRT-ERP, is now psychoanalyst and philosopher and activist residing in Paris. He participates in the collective Malgré Tout and played an important role in the early life of Colectivo Situaciones. The thought of practices is thought with the body, because bodies encounter each other in acts that immediately define their mutual capacities to be affected. History can only be the history of contingency, a sequence of moments with their own non-detachable intensities. Miguel Benasayag argues that act and state – to which correspond potencia and poder – are two levels of thought and life None of them can be subsumed under the other. Either one takes the side of potencia or the side of the poder. Potencias found in different forms of resistance are the foundation of counterpower, but both terms are not the same. Counterpower indicates a point of irreversibility in the development of resistance, a moment when the principal task becomes to develop and secure what has been achieved by the struggle (Benasayag & Sztulwark). Counterpower is diffuse and multiple. It displaces the question of power from the centrality it has historically enjoyed, because its struggle is "against the powers such as they act in our situations". To be on the side of potencia is to recognize that the state and the market originate at the level of the values we embrace and the bonds that connect us to others. Potencia defines the material dimension of the encounter of bodies, while poder is a level characterized by idealization, representation, and normalization. Colectivo Situaciones avoid a name to define their political identity, which would freeze the fluid material multiplicity of militant research by subordinating it to the one-dimensional nature of idealizations. "We are not 'autonomists',

'situationists', or anything ending with '-ist'" they once told us. Identities have normalizing effects: they establish models, they place multiplicity under control, they reduce the multiple dimensions of life to the one dimension of an idealization. They make an exception with Guevarism, because Che Guevara clearly preferred to stay on the side of potencia and opposed those who calmed down concrete struggles in the name of ideal recipes on how to achieve a communist society. [Nate Holdren and Sebastian Touza, Introduction to Colectivo Situaciones] <http://www.ephemeraweb.org/journal/5-4/5-4colectivo.pdf>

- **2000 - Cycle des Souvenirs, Exploitation des concepts n°2** (1995/2000), Luc Ferrari, CCMix 2000 Paris ("I have been composing a new series of works under the general title Exploitation des Concepts. The point is to take concepts I have been experimenting with throughout my entire life as a composer, and to put them to use in every possible direction: in instrumental as well as electroacoustic music, in video, in multimedia installation, in new technologies as well as old ones.... These Exploitations go in all directions: the Tautology, superimposed cycles, the minimalism of the Presque Rien series, architectures of chance, anecdote, narrative, everyday sounds, arte povera . . . souvenirs . . . etc. - all these concepts that have always preoccupied me but which until now I hadn't really exploited. So we find images of my childhood, my street, my subway; places I passed through and which struck me enough to record them, certain villages in Italy or the sea in Portugal; of my present, too: workplaces, my souvenirs, my house. The Cycle des Souvenirs also means that all the elements are structured in cycles which, when superimposed, produce chance encounters." [Luc Ferrari]) (Installation son et image pour 6 lecteurs de CD et 4 projecteurs vidéo. L'utilisation des souvenirs n'est pas une chose nouvelle pour moi qui suis un récidiviste de l'autobiographie. Ce qui est différent ici, c'est l'installation du son et de l'image. De la même manière que je suis un compositeur-preneur de son, je suis là un compositeur preneur d'image. Le cycle des souvenirs signifie aussi que tous les éléments sont architecturés en cycles qui, en se superposant, produisent des rencontres hasardeuses. C'est pour cela que tout est tournant. [Luc Ferrari]) <http://www.lucferrari.org>

- **2000 \_ Dakar on line**, Voix-ci, Voix-là, festival de préfiguration de la cité des Musiques vivantes (premier concert en réseau organisé avec le continent africain, récemment connecté au réseau ISDN. Direct entre la Cité des Musiques vivantes de Montluçon (alors en projet) et le Metissacana, web Bar installé au Sénégal depuis 95. Outre l'intérêt musical indéniable, le projet est ici sociologique et culturel, voire politique Nord/Sud. Avec Dandan Diédhiou, Ouza Diallo, Lamine Conté, Steve Shehan, Loy Erlich... Lignes ISDN Son / Image [Luc Martinez])

- **2000 \_\_ Discs**, Jane Dowe, Sound Art - Sound as Media, NTT ICC Tokyo (The anonymous artist Jane Dowe has placed her work in the visitors' lounge. She is also a music journalist and has released a collaborative CD with Terre Thaemlitz on the German label Mille Plateaux. Her installation here, entitled <Discs,> is a combination of her ongoing CD project <Sound A1 & Sound A2 >and a project conducted over the Internet called <My Life on Minidisc.> Piping music into public spaces is typically done, as in ambient music, in order to neutralize a specific environment. But Dowe's approach is different in that it seeks to make us aware of slippages in our perception of environments and places. Her CD project <Sound A1 & Sound A2> consists of two CDs including approximately seventy tracks of processed digital sounds from six seconds to under a minute in length, as well silent tracks. These tracks are randomly sampled to create an intermittent, non-linear, and fragmentary musical work. The listener finds his or her daily space suddenly intruded upon by a song with no beginning or end containing any number of unforeseeable interruptions. <My Life on Minidisc> is a project that solicits recordings on minidisc from the private lives of individuals who have stumbled across an announcement on the Internet. By presenting both of these sound sources at the same time it is possible to mix, or confuse, concepts and situations such as the presence or absence of sound or public and private space. Dowe also seems to be trying to defamiliarize and render chaotic the neutral public space of the visitors' lounge. [Hatanaka Minoru]) [http://www.ntticc.or.jp/Archive/2000/Sound\\_Art/Works/discs.html](http://www.ntticc.or.jp/Archive/2000/Sound_Art/Works/discs.html)

- **2000 \_\_ « Empire »**, Antonio Negri, Michael Hardt (In Empire, Hardt and Negri (2000) argue that the new paradigm of the global world order is configured as a dynamic and flexible systemic structure that is constructed horizontally — a "governance without government" that subsumes any "actor" (and, one would assume, agency) under the totality of the order of the whole. The supreme authority of the ordering effectively integrates everything and at the same time calls for more central authority. Hardt and Negri think of this "governance without government" as a machine that predetermines the exercise of authority and action across the entire social space where every movement can find its designated place only within the hierarchical relationship imposed on it by the system itself. While one can understand Hardt's and Negri's imperial world order as a unique mode of economic, political and cultural organization in general, it seems harder to apply it to the technological network of the Internet in specific. The previously mentioned "both/and" structure of the Internet certainly involves numerous protocols but at the same time, every module or protocol in this structure inherently encapsulates the possibility of both command and control and is configurable: what constructs control and authority also encapsulates the possibility of undermining and dismantling it. In the context of the networked commons, the concept of "governance without government" could also be revisited in terms of the interplay between openness to public participation vs. rules and mechanisms of access. [Christiane Paul]) <http://www.infoshop.org/texts/empire.pdf>

- **2000 \_\_ Fiber Jelly**, ZKM, Justin Bennett, Nicolas Collins, Kaffe Matthews, Scanner, Anne Wellmer, Zeitblom (Fiber Jelly

was a networked concert where each musician performed in a different space in the ZKM building in Karlsruhe. The musicians listened to and processed each other's sound as part of their own concert. The audience could choose to wander around between the concerts or sit in the main hall and listen to a multichannel mix) [http://www.nonlinear.demon.nl/listen/fiberjelly\\_loader.html](http://www.nonlinear.demon.nl/listen/fiberjelly_loader.html) <http://www.nicolascollins.com/>

- 2000 \_\_ « **Figures de l'amateur. Formes objets et pratiques de l'amour de la musique aujourd'hui** », Antoine Hennion (Hennion views music listening as a form of amateur music practice, theoretically indistinguishable from the act of making music. He writes that the emergence of the contemporary amateur is a recent phenomenon, coincident with "the exponential development of the record market and use of the media in the 1960s, 1970s and 1980s". Hennion's ethnography of music lovers indicates that "music itself is not the end result of a passion for music, but a means, like the orchestra, voice, instrumental technique and the stage, of reaching certain states" [e.g., carving out spaces for listening, the co-construction of a physical and social space for listening is of central importance in the life of the listener]. Hennion argues for the performativity of listening among audiences - wherein the work of listening co-constructs spaces of audition (which are also spaces of production). Hennion is universalizing the practice of listening, which is not relevant for many social and subcultural contexts: work songs, techno and rave, or hip hop, to mention a few examples. He's interpolating from a classical music listening paradigm to all forms of reception, which are co-constructed in sharply distinctive ways. Where in the practice of listening to classical music will we find the same forms as are found in after hours trance clubs? Or even in the solitary iPod experience during an urban commute.)

- 2000 \_\_ **Free Speech**, (KromoZone 1st prototype), SEAMUS 2000 Denton Texas, Stephan Moore, Timothy Place (Intermedia Performance System. The KromoZone Intermedia Performance System is build upon an infrastructure that relays all performance data in the system over the ethernet based LAN based on UDP/OTUDP and OSC) <http://www.electrotap.com/kz/>

- 2000 \_\_ **Freenet**, Ian Clarke (Freenet is a decentralized, censorship-resistant distributed data store originally designed by Ian Clarke. Freenet aims to provide freedom of speech through a peer-to-peer network with strong protection of anonymity. Freenet works by pooling the contributed bandwidth and storage space of member computers to allow users to anonymously publish or retrieve various kinds of information. It can be thought of as a large storage device which uses key based routing similar to a distributed hash table to locate peers' data. When a file is stored in Freenet, a key which can be used to retrieve the file is generated. The storage space is distributed among all connected nodes on Freenet. Freenet has been under continuous development since 2000; a version 1.0 has not yet been released but current builds are practically usable. The project has already seen a ground-up rewrite for version 0.7, however. Released under the GNU General Public License, Freenet is free software. The Freenet file sharing network stores documents and allows them to be retrieved later by an associated key, as is now possible with protocols such as HTTP. The network is designed to be highly survivable, with all internal processes completely anonymized and decentralized across the network. The system has no central servers and is not subject to the control of any one individual or organization. Even the designers of Freenet do not have any control over the overall system. The stored information is encrypted and replicated across participating computers around the world, which are anonymized and intended to be many and continuously-changing. It is theoretically difficult for anyone to find out which participants are hosting a given file, since the contents of each file are encrypted, and may be broken into pieces that are distributed over many different computers. Even for a participant, effort is required to learn what he/she is storing.) <http://freenetproject.org>

- 2000 \_\_ **Geocaching** (Geocaching is an outdoor treasure-hunting game in which the participants use a Global Positioning System (GPS) receiver or other navigational techniques to hide and seek containers (called "geocaches" or "caches") anywhere in the world. A typical cache is a small waterproof container containing a logbook and "treasure," usually toys or trinkets of little value. Today, well over 800,000 geocaches are registered on various websites devoted to the pastime. Geocaches are currently placed in over 100 countries around the world and on all seven continents, including Antarctica. Geocaching is similar to the 150-year-old letterboxing, which uses references to landmarks and clues embedded in stories. However, geocaching was imagined shortly after the removal of Selective Availability from GPS on May 1, 2000 because the improved accuracy of the system allowed for a small container to be specifically placed and located. The first documented placement of a GPS-located cache took place on May 3, 2000, by Dave Ulmer of Beavercreek, Oregon. The location was posted on the Usenet newsgroup sci.geo.satellite-nav. By May 6, 2000, it had been found twice and logged once (by Mike Teague of Vancouver, Washington). According to Dave Ulmer's message, the original stash was a black plastic bucket buried most of the way in the ground and contained software, videos, books, food, money, and a slingshot. The activity was originally referred to as GPS stash hunt or gpsstashing. This was changed after a discussion in the gpsstash discussion group at eGroups (now Yahoo!). On May 30, 2000, Matt Stum suggested that "stash" could have negative connotations, and suggested instead "geocaching. For the traditional geocache, a geocacher will place a waterproof container, containing a log book (with pen or pencil) and trinkets or some sort of treasures, then note the cache's coordinates. These coordinates, along with other details of the location, are posted on a website. Other geocachers obtain the coordinates from the Internet and seek out the cache using their GPS handheld receivers. The finding geocachers record their exploits in the logbook and online. Geocachers are free to take objects from the cache in exchange for leaving something of similar or higher value, so there is treasure for the next person to find.

Geocaches vary in size, difficulty, and location. Simple caches are often called "drive-bys," "park 'n' grabs" ("PNGs"), or "cache and dash." Geocaches may also be complex, involving lengthy searches or significant travel. Examples include staged multi-caches; underwater caches, 50 feet (15 m) up a tree, after long offroad drives, on high mountain peaks, on the Antarctic continent, and above the Arctic Circle. Different geocaching websites list different variations per their own policies (e.g. Geocaching.com does not list new Webcam, Virtual, Locationless, or Moving geocaches). - Webcam: Similar to a virtual cache; there is no container, log book, or trade items for this cache type. Instead, the coordinates are for a location with a public webcam. Instead of signing a log book, the finder is often required to capture their image from the webcam for verification of the find.-) See also Benchmarking ([http://en.wikipedia.org/wiki/Benchmarking\\_%28geolocating%29](http://en.wikipedia.org/wiki/Benchmarking_%28geolocating%29)), Dead Drop ([http://en.wikipedia.org/wiki/Dead\\_drop](http://en.wikipedia.org/wiki/Dead_drop)), Geodashing (<http://en.wikipedia.org/wiki/Geodashing>) Waymarking (<http://en.wikipedia.org/wiki/Waymarking>), Wherigo (<http://en.wikipedia.org/wiki/Wherigo>)) <http://en.wikipedia.org/wiki/Geocaching> <http://www.geocaching.com>

- **2000** \_\_ **Glasbead**, John Klima (glasbead is a multi-user persistent collaborative musical interface allowing players to manipulate and exchange sound sample files and create a myriad of soundscapes and rhythmic musical sequences. Current bandwidth allows as many as 20 people to play glasbead at the same time. "The entire structure can be spun by flinging the ball at the core with a click and drag motion. Each "stem" can be flung individually around this core. The "bell" or "flower" stems each have a sample sound file attached (click on a file in the list on the right, then click on a "bell" stem inside glasbead). when a hammer stem comes in contact with a bell stem, the sample plays. The volume of the sample can be set by spinning its ring (near the core, click and drag). The pitch of the sample can be set with the same ring, hold down the keyboard "Z" key. Press and hold the space bar to bring the entire structure to a stop. There are no restrictions to the type and content of samples you can submit, I ask only that you keep your samples under one megabyte. 32 individual samples can exist in glasbead at any moment, and different samples can be instantly loaded by right clicking on the bell stems.") <http://www.cityarts.com/glasbead/>

- **2000** \_\_ **Gnutella** (Gnutella is a file sharing network. It is the most popular file sharing network on the Internet with a market share of more than 40%. In June 2005, Gnutella's population was 1.81 million computers. The first client was developed by Justin Frankel and Tom Pepper of Nullsoft in early 2000, soon after the company's acquisition by AOL. On March 14, the program was made available for download on Nullsoft's servers. The event was prematurely announced on Slashdot, and thousands downloaded the program that day. The source code was to be released later, under the GNU General Public License (GPL). The next day, AOL stopped the availability of the program over legal concerns and restrained Nullsoft from doing any further work on the project. This did not stop Gnutella; after a few days, the protocol had been reverse engineered, and compatible free and open source clones began to appear. This parallel development of different clients by different groups remains the modus operandi of Gnutella development today. The Gnutella network is a fully distributed alternative to such semi-centralized systems as FastTrack (KaZaA) and the original Napster. Initial popularity of the network was spurred on by Napster's threatened legal demise in early 2001. This growing surge in popularity revealed the limits of the initial protocol's scalability. In early 2001, variations on the protocol (first implemented in proprietary and closed source clients) allowed somewhat of an improvement in scalability. Instead of treating every user as client and server, some users were now treated as "ultrapeers", routing search requests and responses for users connected to them. This allowed the network to grow in popularity. In late 2001, the Gnutella client LimeWire became free and open source. In February 2002, Morpheus, a commercial file sharing group, abandoned its FastTrack-based peer-to-peer software and released a new client based on the free and open source Gnutella client Gnucleus. The word "Gnutella" today refers not to any one project or piece of software, but to the open protocol used by the various clients. The name is a portmanteau of GNU and Nutella: supposedly, Frankel and Pepper ate a lot of Nutella working on the original project, and intended to license their finished program under the GNU General Public License. Gnutella is not associated with the GNU project; see GUNet for the GNU project's equivalent. To envision how Gnutella originally worked, imagine a large circle of users (called nodes), who each have Gnutella client software. On initial startup, the client software must bootstrap and find at least one other node. Different methods have been used for this, including a pre-existing address list of possibly working nodes shipped with the software, using updated web caches of known nodes (called GWebCaches), UDP host caches and, rarely, even IRC. Once connected, the client will request a list of working addresses. The client will try to connect to the nodes it was shipped, as well as nodes it receives from other clients, until it reaches a certain quota. It will only connect to that many nodes, locally cache the addresses it has not yet tried, and discard the addresses it tried that were invalid. When the user wants to do a search, the client sends the request to each actively connected node. Historically (version 0.4 of the protocol), the number of actively connected nodes for a client was quite small (around 5), so each node then forwarded the request to all its actively connected nodes, and they in turn forwarded the request, and so on, until the packet reached a predetermined number of "hops" from the sender (maximum 7). With the advent of version 0.6, Gnutella is a composite network made of leaf nodes and ultra nodes (also called ultrapeers). The leaf nodes are connected to a small number of ultrapeers (typically 3) whilst each ultrapeer is connected to more than 32 other ultrapeers. With this higher outdegree, the maximum number of "hops" a query can travel was lowered to 4. If a search request turns up a result, the node that has the result contacts the searcher. In the classic Gnutella protocol, response messages were sent back along the route the query came through, as the query itself did not contain identifying information of the node. This scheme was later revised, so that search results now are delivered over User Datagram Protocol (UDP) directly to the node that initiated the search, usually an ultrapeer of the node. In the current protocol, therefore, the queries carry the IP address and port number of either

node. This lowers the amount of traffic routed through the Gnutella network, making it significantly more scalable. If the user decides to download the file, they negotiate the file transfer. If the node which has the requested file is not firewalled, the querying node can connect to it directly. However, if the node is firewalled, stopping the source node from receiving incoming connections, the client wanting to download a file will send it a so called "push request" to the server for the remote client to initiate the connection instead (to "push" the file). Finally, when a user disconnects, the client software saves the list of nodes that it was actively connected to and those collected from pong packets for use the next time it attempts to connect so that it becomes independent from any kind of bootstrap services. One of the benefits of having Gnutella so decentralized is to make it very difficult to shut the network down and to make it a network in which the users are the only ones who can decide which content will be available. Unlike Napster, where the entire network relied on the central server, Gnutella cannot be shut down by shutting down any one node and it is impossible for any one company to control the contents of the network, which is also due to the many free software Gnutella clients which share the network. <http://wiki.limewire.org/index.php?title=GDF>

- **2000** \_\_ **GPS Trans**, Marc Choloniewski (live Internet composition. It combined four 3-hours blocks of 12 hours webcasting. Sixteen mobile phones transmitted sounds from different sectors of the very center of Krakow city. All of them were mixed and transformed live in a studio and sent individually through dedicated audio channel on web to be received with 14-16 seconds Internet Delay. Adding certain amount of audio feedback arranged Internet Wave) <http://globalvillagemusic.net/index.php?tag=marek-choloniewski&language=en> <http://www.gps.art.pl/>

- **2000** \_\_ **THE HOTWIRED LIVE ELECTRONIC RESISTANCE NETWORK ART PARTY PLAN**, Per Platou & Amanda Steggell & Michelle Teran (Networked event between Moss (The Pavillion, Nesparken, Moss, Norway) and Toronto ( Ryerson Polytechnic University, School of Image Arts, 112 Bond Street Sound Stage, Room #122, Toronto, Canada) in the framework o Momentum) <http://www.notam02.no/motherboard/mossfin/mom.html>

- **2000** \_\_ **HWLA (Hot Wired Live Art)**, Amanda Steggell, Per Platou, Motherboard, BEK (As a two week intensive laboratory initiated by Motherboard in collaboration with BEK and Bergen Academy of Fine Art, HWLA (Hot Wired Live Art) is a live worklab project used to devise networked environments through the process of collective experimentation and play. The HWLA network is an international and interdisciplinary group of artists, technologists and researchers with a combined range of skills and technical expertise in electronics, streaming media, sensors, physical (social) space design, wireless technology, live video and audio processing, software programming, telepresence, dance, theatre, film and video art. A number of artists (approx. 16) from Norway, Germany, Holland, Canada, England and Austria have been invited to pool their knowledge in a two-week intensive workshop which will culminate in a 2-day public presentation/live art event. Each participant has been selected on the grounds of their experience of Live Art which involves the integration of digital technologies in concept and execution of their work. By setting up the HWLA creative worklab and through the process of collective play, we research the social and artistic applications of these technologies while generating a discourse around these issues. The first Hot Wired Live Art , initiated by Amanda Steggell and Per Platou, took place in Bergen Norway in January, 2000. During the two weeks we will be beta-testing a very interesting new software named KEYSTROKE, currently under development by WAAG - Society for Old and New Media in Amsterdam by a production team headed by Sher Doruff. They also planned to utilise the whole spectrum of the existing midi/video/sound/net apps that most of the participants have some experience with, such as BigEye, Image/ine, Xpose, vidvox prophet, nato0.55, Rocketfuel (live midi jamming), Apple Speech recognition, icontext (chat/ascii-jamming), ivisit, webcam/html/java stuff etc. etc., and try trigger methods available for instance with i/cube and MAX.) <http://www.ubermatic.org/hwla/> <http://www.bek.no/hotwired/>

- **2000** \_\_ « **L'Innovation Ordinaire** », Norbert Alter (To Norbert Alter, innovation requires a collective appropriation of its nature and design. Innovation as a collective production. The birth of an invention is but an idea. That invention will transform into innovation if and only if a number of actors manage to make sense of it.) (Reprenant les éléments décrits par Joseph Schumpeter sur le déroulement des cycles d'innovation, Norbert Alter élabore une théorie originale basée sur l'idée que c'est désormais le mouvement, bien plus que la stabilité, qui caractérise les situations de travail. Cet état de fait conduit l'auteur à considérer alors l'organisation comme une trajectoire, charriant pêle-mêle des éléments hétéroclites et contradictoires, et luttant contre elle-même dans une forme de désordre permanent. Les inventions peuvent faire l'objet d'un processus d'appropriation critique par le corps social et devenir des innovations. Elles peuvent également être ignorées, ou encore être maintenues de force. Elles représentent alors des inventions dogmatiques, qui détruisent les formes de socialisation antérieures sans y substituer de nouvelles. Le processus d'appropriation critique et de création de sens qui caractérise l'innovation repose sur la déviance. Il résulte d'une multitude d'actions quotidiennes, banales, qui supposent un investissement en temps, travail et identité de la part des acteurs. Cet investissement n'est pas prescriptible et jamais acquis. L'ensemble reste soumis à des conflits de temporalité, issus de la juxtaposition de processus d'innovation morcelés et d'inventions dogmatiques. La compétence collective des innovateurs ne suffit pas à rattraper le déficit général de régulation. C'est alors, plus que l'ordre, le désordre qui caractérise le fait organisationnel. L'innovation diffère de l'invention, en le sens où elle représente la mise en œuvre de cette invention et son intégration dans un milieu social. C'est le processus selon lequel un corps social confronte les qualités théoriques de l'invention qui lui est proposée à la réalité et aux

contingences du milieu d'où il agit. S'il se l'approprie, alors l'invention devient innovation, et les effets de sa mise en œuvre sont multiples. [B. Lebeauipin] <http://www.cnam.fr/lipsor/dso/articles/fiche/alter.html> <http://www.dauphine.fr/cerso/Membres/Alter.html>

- **2000** \_\_ **Isadora**, Mark Coniglio, Troika Ranch (Created by Troika Ranch Artistic Co-Director Mark Coniglio, Isadora is a graphic programming environment that provides interactive control over digital media, with special emphasis on the real-time manipulation of digital video. An Isadora program is created by linking together graphically represented building blocks, each of which performs a specific function: playing or manipulating digital video, capturing live video, looking for MIDI input, controlling a DV camera, etc. By linking the modules together you can create complex interactive relationships. All of these effects can be controlled in real-time via MIDI, which is why we have made it the engine for visual manipulation in our live performance works. The creation of Isadora was a natural outgrowth of Interactor.) <http://www.nettime.org/Lists-Archives/nettime-1-0301/msg00123.html> <http://www.troikatronix.com/isadora.html>

- **2000** \_\_ **Japanese Whispers**, Usaman Haque (As an experiment into the way information is changed by being digitally processed and transmitted through electromagnetic space, up to 20 mobile phones were laid nose-to-toe in a circle. During the performance event, calls between the phones were initiated in a variety of patterns (neighbour to neighbour or across the circle) and the ambient sounds and voices of participants were input into the mouthpieces to be propagated through the phones and mobile phone network. The resulting feedback loop delayed and distorted the sounds through the iterative process of being digitised, transmitted, output and re-digitised, creating echoes of the room and nearby people that sounded much like chirping birds.) <http://www.haque.co.uk/japanesewhispers.php>

- **2000** \_\_ **Life Sharing**, 0100101110101101.ORG, a.k.a. Franco Birkut and Eva Mattes ("Life Sharing is a real-time digital self-portrait. Started in the year 2000 and active uninterruptedly until 2003, Life Sharing is 0100101110101101.ORG's personal computer turned into a real time sharing system. Any visitor has free and unlimited access to all contents: texts, images, software, 01's private mail. One can get lost in this huge data maze. Based on Linux, Life Sharing is a brand new concept of net architecture turning a website into a sheer personal media for complete digital transparency. Permanent infotainment pioneering the peer to peer mass diffusion. Privacy is stupid." Much as an office with its books, correspondence, and files reflects the interests and activities of its occupant, so, too, the contents of a personal computer can be seen as an intimate portrait of its owner. Because our computers contain so much personal information, we protect them from prying eyes with passwords, firewalls, and encryption software. In Life Sharing, a project commissioned by the Walker Art Center in Minneapolis, the European New Media art duo 0100101110101101.ORG, a.k.a. Franco Birkut and Eva Mattes, turned their private lives into a public art work. From 2001-2003, they made each and every file on their computer, from grant proposals to incoming e-mails, available to anyone at any time via their Web site. This daring piece, whose title is an anagrammatic play on the term "file sharing," is an exercise in transparency, an act of data exhibitionism on the part of the artists that turns viewers into voyeurs. In Life Sharing, 0100101110101101.ORG demonstrates a willingness to make themselves profoundly vulnerable (in terms of potential identity theft and other online violations) in the name of art. They use their digital identities as a medium, much as such 1970s Performance artists as Linda Montano, Vito Acconci, and Chris Burden used their physical bodies in their work. Visitors to the Life Sharing site encountered a graphical representation of a Linux directory structure? a point-and-click version of the open source operating system's text-based interface. Instead of guarding their intellectual property, the artists shared it with anyone who was interested, much as the authors of Linux software make their source code public. Life Sharing was not 0100101110101101.ORG's first radical experiment with intellectual property. In 1999, they downloaded contents of the private art Web site Hell.com and made all of it publicly available on the 0100101110101101.ORG site -- a hacktivist intervention that garnered the ire of many of the artists' peers and brings to mind earlier examples of appropriationist art such as Sherrie Levine's reproductions of Walker Evans's photographs. [Mark Tribe] <http://www.0100101110101101.org/home/portraits/essay.html> [http://www.0100101110101101.org/home/life\\_sharing/](http://www.0100101110101101.org/home/life_sharing/)

- **2000** \_\_ **Longplayer**, Jem Finer (Longplayer is a 1000 year long piece of music which started to play on the 1st January 2000 and will continue to play, without repetition, until the 31st December 2999, when it will come back to the point at which it began - and begin again. In its present and original incarnation, as a computer program, it's been playing since it began in the lighthouse at Trinity Buoy Wharf, London E14. It's also playing in the planetarium at the Bibliotheca Alexandria, Alexandria, Egypt, the Powerhouse, Brisbane, Australia and in Rufford Park, near Nottingham, England. Plans are in an advanced stage for other listening posts around the world. Longplayer can also be heard globally via a live stream on the Internet.) <http://longplayer.org/>

- **2000** \_\_ **Ménage à Trois**, Michelle Teran (A ten day site-specific and online performance and installation with the cooperation of several online performers and web artists: Amanda Steggell: Oslo, HC Gilje: Helsinki, Ellen Roed: Trondheim, Benjamin Lewis: Chicago, Daniel Aschwanden: Vienna, Michelle Kasprzak: Toronto. A human interface mediates conversations between online performers and the viewer sitting at the table. The viewer's only access to my on-line guest is through a small monitor that is attached to me on a "leash". The online performer is able to see the person who is sitting across from me, but cannot see my interface

persona. The viewer sitting across from me can see my online guest but not the text he/she is sending, nor the answers that I am inputting. By setting up a situation that simulates a one-to-one conversation one might have in a public setting, I am able to have a simultaneous three way conversation between myself, the person sitting with me and the mediated performer on the screen.) <http://www.ubermatic.org/menage/>

- **2000** \_\_ « **Moistmedia** », Roy Ascott (“Attention is now turning towards nanotechnology and the convergence of digital media and molecular technology, which I call moistmedia (dry silicon with wet molecules, or pixels and particles). I showed my MOIST MANIFESTO at Graz in 2000” (...) “THE MOIST MANIFESTO: MOIST SPACE is where dry pixels and wet molecules converge - MOIST ART is digitally dry, biologically wet, and spiritually numinous- MOIST REALITY combines Virtual Reality with Vegetal Reality- MOIST MEDIA comprises bits, atoms, neurons, and genes - MOIST TECHNOLOGY is interactive and psychoactive - MOIST LIFE embraces digital identity and biological being - MOIST MIND is technoetic multiconsciousness - MOISTWARE erodes the boundary between hardware and wetware - MOIST MANUFACTURE is tele-biotic, neuro-constructive, nano-robotic - MOIST ENGINEERING embraces ontology - MOIST DESIGN is bottom-up, seeded and emergent - MOIST COMMS are bio-telematic and psi-bernetic - MOIST ART is at the edge of the Net” (...) While the desire to enter these realms is quite strong in many artists, access to the necessary laboratories is difficult and funding virtually non-existent. It was the same thirty years ago when artists could see the potential of digital media but could not get their hands on the machines; slowly they infiltrated into computer laboratories and in to corporate systems. Much of our work at that time was due to the subvention of the commercial network I.P.Sharp in Toronto and the support of Jacques Vallee’s Infomedia Corporation in San Bruno, California. Similarly now, those artists who see the potential for their art in moistmedia - Alife, molecular biology, and nanotechnology - must cross the difficult barrier of gaining access to laboratories and biotechnology research centres. Most notably successful in this regard is Eduardo Kac (whose florescent rabbit Alba has captured many headlines world wide) and the tissue culture art of Oron Catts and Ionat Zurr, and the group SymbioticA at the Art & Science Collaborative Research Laboratory in the School of Anatomy and Human Biology at the University of Western Australia, along with such young artists such as Ken Rinaldo, Adam Zaretsky, and Amy Youngs. Catts, Zurr, Rinaldo, Zaretsky and Young were shown in what was one of the first international exhibitions of bio-art: Biofeel at the Perth Institute of Contemporary Art in Western Australia in 2002. Tissue culture art researches the use of tissue culture and tissue engineering as a medium of artistic construction. Tissue engineering can be seen as the way to produce bio-artificial organs for the body, and, if applied to the production of semi-living objects (a combination of living tissue and artificial support) can be used to create living sculpture. In 1999 Eduardo Kac produced Genesis - a transgenic artwork whose key element is an “artist’s gene,” i.e., a synthetic gene that does not exist in nature, invented by the artist. The Genesis gene was incorporated into bacteria, which were shown in the gallery. Participants on the Web could turn on an ultraviolet light in the gallery, causing real, biological mutations in the bacteria. This work, although less dramatic than the creation of his living florescent rabbit, it heralds the new pre-occupation with molecular process that in my mind will increasingly preoccupy artists over the coming years.” [Roy Ascott]) <http://www.ncca-kaliningrad.ru/biomediale/?blang=eng&author=ascott>

- **2000** \_\_ **mp3q**, Atau Tanaka (Shared on-line sound space, which streams multiple channels of mp3 audio from different servers. Users can concurrently manipulate these mp3 sources by actuating over graphical representation of the systems current behaviour by a 3D Cube. web-based piece – a sort of net.art music. The listener mixed multiple music streams using an abstract graphical text interface, and also could contribute his own sounds. Driven by participation, the piece was at its outset but an empty shell. Pierre Lévy predicted that artists would no longer make objects and instead serve as filters. Here was a contentless composition.) <http://sensorband.com/atau/papers/netmusic2-iasai2000/> <http://www.csl.sony.fr/downloads/papers/2000/Atauiamusiquereseau.pdf>

- **2000** \_\_ « **Musaic : the merging of all sound spaces** », Josephine Bosma (“The soundtracks of life are merging. Emerging technologies allow for the appropriation, on a large scale, of a soundspace which is mass medial, musical and habitat at the same time. We enter the world of musaic. Mosaic is like a tapestry, a mosaic, or an ocean of soundbites and samples ranked and ordered according to individual taste. Mosaic is the direct, involuntary product of the extensions of the world of music and sound through the internet. Sampling technologies and digital storage have radically changed the world of music about two decades ago. The internet however now adds a dimension which is not merely producing a larger sum of possibilities through especially the use of the internet as realtime long distance collaboration tool and through the net’s huge archival function, but which amplifies older, especially avantgarde musical techniques as well. (...) Live performances and existing soundworks or stored sound can be blended over large distances and the difference between realtime and recording is further from any audience’s grasp than ever. One interesting soundsource that is sensitive to tricks with time and reality is the aural version of the webcam: the webmike. Also environmental sound can travel large distances ‘realtime’, without being connected to the focussed or specific listening that is the aim of radio or television broadcasts. (...) Experiments in music like the soundwalks by the originally German artist Hildegard Westerkamp (a wonderful sound artist about whom you can find texts and information quite extensively on the web), can serve as a metaphor for the experience of being a listener to sound on the internet. Strolling through the web, sometimes with a particular goal, many times surfing at random, the listeners’ focus is the key to the final composition. (...) Listeners become musicians when the

combination of the tools they use and the playfulness they exhibit allows for distinguished, surprising or new compositions in sound, whether the final product is good or bad, interesting or kitschy. Additionally, in *musaic* an overgrowth of sampling rises to a level where older aspects of music (memory, repetition and basic experience of beauty and originality) can get lost completely in a dense sound experience. Small bits of known musical scores, repeated and/or rhythmic sound 'lines' and universally appealing sound qualities can become unrecognizable in the world of *musaic*. Everything, all sound and all sound properties, is of equal importance and equally superfluous. The personal touch of the musician (listener and musician in one), and the input and manipulation of given sound material by the user start to represent the subjective sound experience. A pleasant or otherwise full immersion into the digital networked sound experience depends on the amount of involvement in its creation or, at the opposite of it: a conscious absence of involvement. (...) When art on the internet is a specific form of communication or exchange between artist and audience, in which the audience gets a larger role in defining the artwork, yet where the artist defines the stage and the props, music on the net is a further deterioration of the horizontal, democratic model the internet implies. The digitized world, especially the world of sound, is one of endless possibilities and non hierarchical structures. (...) The difference with musical performance before the use of the internet is that within the merged soundspace of *musaic*, in which audience and musician are one and network connections could be anywhere, the role of the performer as master of the musical score is not evident upfront anymore. The stage has become the extension of the *musaic* environment, on which the performer has to prove his or her mastery. Lifting the musical performance out of the network or enscripting it into the network both create what might be called meta-music: music which is in some way distracted, condensed from the *musaic* environment. Musical practice, like art practice, has to face its innate, positive restrictedness and the meaning of its alleged limitations or boundaries. - special thanks to Sylvie Meyerson of Sandbox, Justin Bennett, Mercedes Bunz, Alexandra Hettergot, Jerome Joy and the members of the forumhub mailinglist for music in computer networks.") <http://laudanum.net/cgi-bin/media.cgi?action=display&id=971775030>

- 2000 \_\_ **The Nature of Contingency**, (KromoZone 3rd prototype), Seoul International Computer Music Festival, Stephan Moore, Timothy Place (*Intermedia Performance System. The KromoZone Intermedia Performance System is build upon an infrastructure that relays all performance data in the system over the ethernet based LAN based on UDP/OTUDP and OSC.*) <http://www.electrotap.com/kz/>

- 2000 \_\_ **Neo-luddism** (The term Luddite is a political/historical term relating to a political movement during the Industrial Revolution; it is primarily used to describe those perceived as being uncompromisingly or unnecessarily opposed to technological or scientific innovations. Neo-Luddism is a modern movement of opposition to specific or general technological development. Few people describe themselves as neo-Luddites (though it is common, certainly in the UK, for people to self-deprecatingly describe themselves as Luddites if they dislike or have difficulty using modern technology); the term "neo-Luddite" is most often deployed by advocates of technology to describe persons or organizations that resist technological advances. Unlike anarcho-primitivists, someone labelled a neo-Luddite might not consider technology itself to be evil, though they may believe that many technologies influence human nature in a way that degrades the overall quality of human existence. However, most commonly neo-Luddites oppose the rapid adoption of technology by society on the grounds that such development's negative effects on individuals, society or the planet outweigh its benefits. Neo-Luddite thinkers usually reject the popular claim that technology is essentially "value free" or "amoral", that it is merely a set of tools which can be used for either good or evil. Instead, they argue that certain technologies have an inherent tendency to reinforce or undermine particular values. In particular, they argue that some technologies foster social/class alienation, environmental degradation, and spiritual dissipation, though they are always marketed as uniformly positive by the companies that make them. Neo-Luddites claim that technology is a force that may do any or all of the following: dehumanise and alienate people; destroy traditional cultures, societies, and family structure; pollute languages; reduce the need for person-to-person contact; alter the very definition of what it means to be human; or damage the evolved life-support systems of the Earth's entire biosphere so gravely as to cause human extinction.) (References : "Why the future doesn't need us", by Bill Joy, in *Wired* 8.04, 2000 - "The Luddites are back" by Monika Bauerlein, 1996 - "Luddism, Neo-Luddites and Dystopian Views of Technology" by Martin Ryder, 2008 - "Is it ok to be a luddite ?" by Thomas Pynchon, 1984) <http://mc.net/~chwalisz/luddite.htm> [http://www.wired.com/wired/archive/8.04/joy\\_pr.html](http://www.wired.com/wired/archive/8.04/joy_pr.html) [http://carbon.cudenver.edu/~mryder/itc\\_data/luddite.html](http://carbon.cudenver.edu/~mryder/itc_data/luddite.html) <http://recollectionbooks.com/siml/library/index.html#Luddites> <http://www.neoluddism.com>

- 2000 \_\_ **net.congestion**, International Festival of Streaming Media, Amsterdam (*net congestion was a festival put on by various interesting people clustered around the radioqualia memeset, over three days in Amsterdam (...). Saturday night was streaming performance night — many performances were made, attempted, hacked or otherwise undertaken dealing with streaming and various side issues. Eric Kluitenberg, Media without an audience.*) [http://subsol.c3.hu/subsol\\_2/contributors0/kluitenbergtext.html](http://subsol.c3.hu/subsol_2/contributors0/kluitenbergtext.html)

- 2000 \_\_ **A Networked Jazz Concert** (A jazz group performed in a concert hall at McGill University in Montreal and the recording engineers mixing the 12 channels of audio during the performance were not in a booth at the back of the hall, but rather in a theatre at the University of Southern California in Los Angeles.) <http://www.cim.mcgill.ca/sre/projects/aes/>

- 2000 \_\_ « *Networking the World, 1794 - 2000* », Armand Mattelart (In his book "Networking the World, 1794-2000", Armand Mattelart characterizes communication networks as systems that facilitate the movement of persons and of materials and symbolic goods. Historically, the advent of such networks has been accompanied by utopian discourses. Mattelart asserts : "the communication network is an eternal promise symbolizing a world that is better because it is united. From road to rail to information highways, the belief has been revived with each technological generation, yet networks have never ceased to be at the center of struggles for control the world". In Mattelart's assessment, systems of communication exhibit a variety of structures: linear, radial, centripetal, and rhizomatic, and need to be interactive to qualify as networks. Thus print (the missionary press), electricity, roads, telegraph, railroad, undersea cable, radio transmission, film, television, satellites, and news services and advertising all figure as networks. [Maria Fernàndez])

- 2000 \_\_ O+E, AudioRom and Waag Society, net.congestion International Festival of Streaming Media, a connected concert between London+Amsterdam using KeyStroke (In London: Hexstatic, Landslide. In Amsterdam: Alison Isadora, Isabelle Jenniches, Mylene Van Noort, Michelle Teran, Anne Wellmer, Maria Cleary. The performance O+E consists of three worlds: O's podium in London, the underworld in Amsterdam and the transit area of the internet. O+E investigates how those different elements can influence each other. O+E investigates in the use of new technologies to tell an old story: Orpheus' mythological longing for Euridice. Orpheus' beloved Euridyce died of a snake bite. He was unconsolable and descended into the underworld to find her back.) <http://www.9nerds.com/isabelle/OE/>

- 2000 \_\_ « *Le Partage du Sensible* » (The Politics Of Aesthetics: The Distribution of the Sensible), Jacques Rancière (The Politics of Aesthetics rethinks the relation between art and politics, reclaiming "aesthetics" from its current narrow confines to reveal its significance for contemporary experience. Here, Jacques Rancière develops a critical aesthetic that goes far beyond the paradigms of modernism and modernity and their 'posts' which still haunt us. Presented as a set of inter-linked interviews, Critical Aesthetics ranges across art and politics, the uses and abuses of modernity, the role of visual technologies, the relationship between history and fiction, utopias, the avant-garde and the three aesthetic regimes which constitute the "partitions of the sensible." This term refers to a system of self-evident and common facts of sense perception, these assign parts and positions to subjects and objects alike. This rules out the relativism according to which each person's opinion or point of view is somehow primordial and equally valid since we now start with the production of these very positions. In this sense Rancière offers a Kantian aesthetics: a system of a priori forms that determines what presents itself to sense experience. This is a definition of what is to be visible, sayable, audible, thinkable or constructible within its horizons and modalities. This common space is one both aesthetic and political without this making the two realms equivalent. It instead suggests that both are formations and conditions of possible experience, whether this is political or aesthetic. Both are capable of playing a role in the distribution of sensation despite the latter apparently being fictional. This includes the former with events of creation and demands an understanding of this production prior to the established and normative political order. This includes the everyday and supposedly neutral experience of the world that cannot be divorced from these conditions. Rancière offers the example of novels in which everything presented on the page is equal. There is no restriction here to what can be visible because it has been redistributed so that a hierarchy of representation does not form a structure and the reader is faced with things that are excluded and without place in the normative order. These are able to circulate beyond the page of the fictional work. The horizons of what can be thought and experienced are changed, new modalities of being are possible in the absence of a hierarchy of things and this is infectious. Rancière attributes this to 'a random circulation of the written word', which must be distinguished from the spreading of political messages. This is possible if, for example, the suffering of the pauper or the forces of sexuality are equal to the noble and morally worthy through a redistribution of what is presented. In the undoing of previous categories we find that such affects of aesthetic practice cannot be restricted to the realm of art but blur the distinction we might wish to make between art and non-art, fiction and reality.) <http://multitudes.samizdat.net/Ranciere-Jacques.html>

- 2000 \_\_ *Project Citizens Band, Four Times Daily for 27 Mhz*, Brennan McGaffey (This project was a month long broadcast over CB radio using prerecorded sounds designed to be mood altering. Four different audio tracks corresponded to common emotions experienced at the scheduled time of day. These were transmitted for a 5-minute duration, creating a sedative or stimulating affect. There were no voice-overs or songs. The broadcast was amplified to 225 watts to increase the chance for short wave skip and reception over long distances. A container was designed and constructed to house the radio equipment and computer. A portable, 3-piece tripod tower provided support for the antenna. Produced with Whitewalls, Chicago. Sounds created with Ernst Karel.)

- 2000 \_\_ *Quintet.net*, Georg Hadju (interactive networked multimedia performance environment. It enables up to five performers to play music over the Internet under the control of a "conductor." The environment, which was programmed with the graphical programming language Max/MSP consists of four components: the Server, the Client, the Conductor and the Listener. [HAD]U G., « *Quintet.net: An Environment for Composing and Performing Music on the Internet* », LEONARDO Vol. 38, No. 1, 2005] [HAD]U G., « *Composition and improvisation on the Net* », SMC'04 Conference Proceedings. IRCAM, Paris (2004). pp. 5-8] [HAD]U G., « *Quintet.net – A Quintet on the Internet* ». Proceedings of the International Computer Music Conference. (2003). pp.

315-318]) <http://www.quintet.net/> <http://www.georghajdu.de/>

- 2000 \_\_ **Radiotopie**, Bruno Guiganti (« *La salle de cinéma ou l'espace d'exposition peuvent être définis comme un espace hétérotopique, c'est à dire un espace où l'on se rend pour être finalement renvoyé ailleurs. La radio - comme la télévision d'ailleurs - transforme à distance l'espace où l'on se trouve, qui est souvent un espace privé, en un espace hétérotopique, ou hétérophonique si l'on veut aussi; un lieu de tous les possibles. Espace d'espaces, espace gigogne de bavardages, de discours, de musiques et de bruits où se superposent en se contaminant et s'indéfinissant une multiplicité d'attitudes d'écoute et d'usages* ». Il définit aussi une autre qualité, spécifique de la radio, la radiotopie: « *Chaque station met en ondes un univers discursif cohérent, une constellation de significations et de valeurs convergeant vers une unité de forme et de ton singulière : radiotopie* » [Bruno Guiganti, Radiotopie et habillage sonore) <http://www.synesthesie.com/heterophonies/theories/guiganti-radiotopie.html>

- 2000 \_\_ **remote control lounge**, J.Rohrhuber, Institut für Telenautik (Feb. 2000 "remote control lounge" network installation by J.Rohrhuber - James Mc Cartney sends open sound control code from Austin to Hamburg and changes Pattern parameters together with local participants.) <http://telenautik.hfbk-hamburg.de/remot.htm>

- 2000 \_\_ « **Sounding out the City: Personal Stereos and the Management of Everyday** », Michael Bull (« *What is the nature and influence of the auditory in everyday life? what role does technology play in the construction of auditory experience? and what role do personal stereos play in the management of the everyday life of users? Personal-stereo users, in their daily lives, move through a variety of urban spaces, which I argue have a cognitive, aesthetic and moral significance that are all relational in so much as they inform us of the ways in which users relate to their surroundings, others and themselves. However, mainstream accounts of urban behaviour either fail to address how technology, in this instance the personal stereo, impacts upon these three concerns or ignore the specific relational nature of auditory experience in the daily lives of people. Let me go further than this; there is no contemporary account of the auditory nature of everyday experience in urban and cultural studies. By focusing upon the auditory and the technologized nature of everyday experience of personal-stereo users, I explain their attempts at creating manageable sites of habitation and I chart the multifaceted ways in which their experience is transformed and constructed through habitual use. Through a close analysis of the ethnographic material I demonstrate the ways in which personal stereos become a critical tool for users in their management of space and time, in their construction of boundaries around the self, and as the site of fantasy and memory. In doing so I propose to formulate a new moral geography of the city that places the management of contingency and the production of forms of interpersonal asymmetry at the centre of its account. Sound, the audible, is thus put back onto the cognitive map of urban experience; sound as opposed to vision becomes the site for the critical investigation of urban life, challenging the sufficiency of visually orientated explanations of urban behaviour. In doing so, I highlight the invisibility of sound in the academic literature on the city and everyday life. (...) Sound is essentially non spatial in character, or rather sound engulfs the spatial, thus making the relation between subject and object problematic. Sound inhabits the subject just as the subject might be said to inhabit sound, whereas vision, in contrast to sound, represents distance, the singular, the objectifying (Jay 1993). (...) Personal stereos have, as Gibson noted (in his book "Time Out", revolutionized the everyday experience of millions of people daily as they move through the city. They are first and foremost a very direct and powerful form of technological artifact which re-prioritizes the auditory nature of experience with an unusual directness and immediacy. Mobility is inscribed into the very design of personal stereos, enabling users to travel through any space accompanied by their own 'individualized' soundworld - The Personal Stereo: Icon of Mobile Auditory Experience".)* <http://www.questia.com/PM.qst?a=o&d=102254465>

- 2000 \_\_ **SoundMesh** (application designed to mix audio files in a live Internet2 improvisation) <http://meowing.memh.uc.edu/~mara/soundmesh/>

- 2000 \_\_ **Street (e)scape**, Andrew Garton (Commerce descends Lygon, Brunswick and Smith Streets, Melbourne, Victoria, Australia. A 24 hour audio documentary by Andrew Garton, netcast over 24 hours on 21 March 2000 for GATEways. The netcast included interviews with Polyester Books, Lamamas Theatre and sounds from Tiamo's Cafe, Mama Vitoria's Cafe and incidental street-scapes.) <http://www.toysatellite.org/streetscape/>

- 2000 \_\_ **Tat Fat Size Temple (TFST 2)**, Andrew Garton (We were interested in the notion of an interface that had a strong conceptual background that was subtle, delicate, informative and satisfying to use. We applied for a Stuff-Art grant through the Australian Film Commission. The application was successful, giving us the opportunity to explore these ideas.. TFST was essentially an attempt to create an informative and interactive, sound-based web site of a culture in transition, one that endures both the urbanisation and economic imperatives that are alien to it. This was identified by the contrasts provided in TFST by the images of Smith Street, the main commercial artery running through the former working class suburbs of Fitzroy and Collingwood, Melbourne. Landmarked by government housing apartments, these suburbs have been common destinations for migrants in particular Vietnamese, Chinese, Greek, Italian and to a lesser extent, middle eastern communities. In the past two decades these areas have become synonymous with significant increases in residential and commercial property values. Despite the fact that inhabitants

of government housing live in frugal conditions, up-market commerce has rekindled these suburbs, bringing with it expectations of a higher standard of living at the expense of low-income residents. The conditions in this urban environment informed the parallels that could be drawn between urbanisation of indigenous Sarawak society and the homogenisation of urban life in Australia. Soundscapes evolved out of recordings made in June 1999 during the Gawai Antu festival at Rumah Sauh and Rumah Jeli, Iban longhouse communities, Sarawak, Malaysia. TFST was and still is dedicated to these remarkable and resilient people. Some had asked why we took the Temple to Stuff-Art, something so technically challenging, time consuming and personally challenging to produce? A very good question... Perhaps we like doing it tough? It was tough, but there were good reasons for applying for Stuff-Art. Not only did Stuff-Art provide challenging constraints for net artists, it reached an audience that would otherwise remain ignorant of the potential for new media to provide not only works of entertainment value, but inspiring, evocative and personal experiences, experiences that usually relegate art works to the often austere environment of the gallery. The Temple is an art piece; there is no doubt about that. Whether it has entertainment value or not, does not particularly concern me. I feel projects like Stuff-Art expand the notion of entertainment by show-casing what is termed as "the best compact Interactive work from around Australia" via the Internet. We are fast maturing an online culture where onsite and online can be merged into a public, more diverse, less net focused experience. I know I am not alone these questions, ideals and pursuits. Nor is it an original idea to challenge the presumptions of entertainment. At the end of a long, caffeinated day I am simply someone who is compelled to make things happen despite the constraints we often have to work. After all, this is Australia, not Mozambique. We have resources! When producing Tat Fat Size Temple we also wanted to use tools that are generally marketed to the producers of more mainstream applications. We wanted to point towards, as technically exacting as it was, the production of content that is not necessarily born of commerce, e-commerce and that which has become the hallmarks of today's Internet. Maybe we wanted to take the "enter" out of entertainment and replace it with a single "a" ... to "attain" knowledge not simply to be entertained by it. I used to fear the mainstream, but it is a mainstream audience that votes and buys shares in Telstra. There is power there. But the medium of the mainstream can sting, and it too can bite... I guess some of us, and I include some of my other Stuff-Art colleagues in this if I may, some of us want to inject a potent venom into the relationship between the medium and its audience. But like all good medicines, they take time and a great deal of patience to do their work. Tat Fat Size Temple may not have been all things to all people, it was simply a humble offering from people moved to create.) <http://www.toysatellite.org/tfst/>

- **2000 \_\_ Telemusic #1**, a collaborative intermedia work by Randall Packer, Steve Bradley, John P. Young (combined live performers with live public participation via the Web. During the event, visitors to the site navigated through a virtual interface, and while manipulating elements, projected their actions in the form of triggered sounds into the physical space. Simultaneously, the live audio performance was streamed back out to the Internet participants.) <http://www.netmuse.org/jpy-webmusic01.pdf> <http://crossings.tcd.ie/issues/3.1/Tanzi/>

- **2000 \_\_ Telephony**, Alison Craighead, Jon Thomson (Gallery visitors are invited to dial a wall based grid of 42 Siemens mobile telephones, which in turn begin to call each other and create a piece of music. Each phone has been individually programmed with a different ringtone, which played en-masse, create various harmonic layers all of which are based in some way on the popular and prevalent NokiaTune. The more people who dial into the work (whether inside or beyond the gallery walls) the more complex and layered the audio becomes. A piece of anodyne 'elevator' music also plays into the space as a kind of background layer, and is also an improvisation on Nokiatune.) <http://thomson-craighead.net/docs/teleph.html>

- **2000 \_\_ Two Cities, One Concert** ("The concert will be taking place between the two sites, using Internet 2 technology," explains Richard Karpen, UW professor of music and director of CARTAH (Center for the Advancement of Research Technology in the Arts and Humanities), which is co-sponsoring the event. "The speed of Internet 2 opens up possibilities we wouldn't have considered a few years ago." On each stage there will be a Disklavier—a grand piano that can be played traditionally or by computer. Other instruments, such as trombones and violins, will be connected to computers in both cities via microphones. We can have pianists in the two cities perform a piece composed for four hands that is typically played on one piano," says Karpen. "Or we can have a trombonist play into a microphone in one city, leading the Disklavier to play in the other city. Or we can program a computer in one city to respond to what the trombone is doing in the other. We envision many different kinds of interaction happening between the two locations." Performers on each stage will be projected in the other venue using digital high definition television. The plan is to overlay the images, so the musicians appear to be playing on the same stage. (logistical problems led the UW to postpone the two-location event until next year.) <http://www.artsci.washington.edu/news/Winter00/Karpen.htm>

- **2000 \_\_ Young Farmers Claim Future**, Guy Van Belle, Brussels 2000 (Young Farmers Claim Future had done between Amsterdam and Ghent, during Brussels 2000 and thanks to Dirk de Wit, at one moment we were talking about this project with Halli Kalli (Haraldur Karlsson) from Iceland, and some people from Helsinki. Haraldur had made a proposal that would bring together these control data in a kind of a concept that would let several people collaborate? We would share a couple of resources like movies and sounds and work out several synthesis algorithms to go along with it. The nice thing was that we could work together in Prague for a week, and then we continued to work on-line. So we sent around the patches that we each were developing. For instance

*Haraldur would start something, I would change it, Johannis from helsinki would again change it. On Saturdays we would each build up a completely different setting around that and then we would use the satellite connection to integrate it all. But the real thing was happening on the net of course. The whole performance had a very localized and performative flavor, despite the fact that there was a network activity running in the background. Actually, I think this is a nice point as to an audience it was not always apparent that there was a network involved, but actually you don't care as long as the performance was ok. And we could not have made these performances without the net-connections at all. Though we have changed a lot in the things we do, most of us kept up contact, and we were involved in several other international performances and setups) <http://okno.be/?id=670>*

- **2000 \_\_ Wiencouwer**, ORF Kunstradio Vienna, Western Front Vancouver (« *Wiencouwer 2000* » continues into the present – the “devolve into” projects are a part of this production context for networked contributions from different media, different times, and different spaces. In 2000, « *Wiencouwer 2000* » was conducted as a “Project for the Millennium”, a production by Kunstradio, Vienna, Firstfloor, Vancouver, and Western Front, Vancouver) <http://projects.front.bc.ca/2002/devolve2/online/rb-english.html> <http://front.bc.ca/research> <http://kunstradio.at/WIENCOUWER/>

- **2000 \_\_ World's First Remote Barbershop Quartet**, Internet2 Initiative (“4 Men, 5 Cities, 1 Moment of History” features a delightful recap of the world’s first remote barbershop quartet, presented at the Fall 2000 Internet2 Member Meeting in Atlanta. This article, written by Brian Lynch and featured in the July/August edition of *Harmonizer* magazine, describes how Bob Dixon used videoconferencing to bring together these live performers: Brent Gerber from North Dakota State University, Jo Knox from the University of Alaska Fairbanks, Kent Bradshaw from Syracuse University, and Greg Economides from Texas A&M University. Quartet rehearsed via web - each of the 4 singers in different cities, conductor in 5th - audience in 5th city along with mixer - network delay variances prevented the singers from seeing or hearing each other and from seeing Dixon conducting - technical means needed to deal with the network delays. Pieces played: “Beer Barrel Polka,” “In The Good Old Summertime,” “The Internet2 song”. Participants: Tenor: Brent Gerber, at North Dakota State University, Lead: Jo Knox, at the University of Alaska Fairbanks, Bari: Kent Bradshaw, at Syracuse University, Bass: Greg Economides, at Texas A&M University, Conductor: Bob Dixon, at Ohio State University [culled from Jeremy Cooperstock]) <http://www.internet2.edu/arts/member-performances.html>

## 2001

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- **2001 \_\_ Internet** (Some 461 million people world-wide are connected to the Internet (Carlson 2001). The Internet comprises 125.8 M hosts (in fact, over 125,888,000 hosts) (Internet Software Consortium 2001). — (“The Internet is at once a world-wide broadcasting capability, a mechanism for information dissemination, and medium for collaboration and interaction between individuals and their computers without regard for geographical location” [Quote - [www.isoc.org/internet/history](http://www.isoc.org/internet/history) (2001)])

- **2001 \_\_ The Internet Archive** (The Internet Archive ([www.archive.org](http://www.archive.org)) keeps on file about 4 bln archived copies of the WWW sites from the mid 1996 onwards. The collection is about 43 terabytes strong (Internet Archive 2001).)

- **2001 \_\_ Acoustic Space Lab symposium** (The pilot project - Acoustic Space Lab symposium took place from August 4 - 12, 2001 in the forests of western Latvia in Irbene at the site of Soviet-era d=32 meter dish antenna. Formerly used to spy on satellite transmissions between Europe and North-America by the KGB, the antenna was abandoned and nearly destroyed when the Russian Army departed in 1994. The dish was successfully repaired by VIRAC (Ventspils International Radio Astronomy Center) radio astronomers. Over the days of the symposium international team of 30 sound artists, net and community radio activists and radio amateurs in co-operation with VIRAC scientists were exploring the possibilities of antenna. The participants made recordings of the sounds and data from planets’ observations, communication satellites and surrounding environment. It was a great chance for artists to access and work with this big antenna. But most important was that this “old and heavy” technology - big dish - because of its’ secret past, specific location in so far remote place, and its’ never unexploited potential for civilian use, succeeded to facilitate new context for collaborative exploring, experimenting and data processing. Acoustic.Space.Re-search.Lab is long-term co-operation between several international artists’ groups and individuals from the Xchange network: RIXC/E-LAB (Riga/LV), Derek Holzer (Amsterdam/NL/USA), RadioQualia (London/UK/Adelaide/AU), Projekt Atol (Ljubljana/SI) and L’audible (Sydney/AU.) <http://acoustic.space.re-lab.net/> <http://radioqualia.va.com.au/documentation/spacelab/>

- **2001 \_\_ Adrift - A multiple-location performance spectacle**, Helen Thorington, Jesse Gilbert, Marek Walczak, Hal Eager & Martin Wattenberg (Also like exploring a very mobile art gallery is Helen Thorington’s spectacular *Adrift* (2001), an evolving multi-location Internet performance event that combines movement through 3D space, multiple narratives, and richly textured sound streaming between virtual and real geographies. Making use of three vrml cameras, images are received by three

computers and projected onto a semicircular screen. According to Thorington, the work focuses on "multiple journeys through a harbor and through virtual space." <http://new-radio.org/helen/writing/adrift.html> <http://turbulence.org/adrift/>

- **2001 \_\_ AFK**, a series of onsite/online performances by Michelle Terran & Isabelle Jenniches (AFK stands for 'Away from Keyboard'. These and many other abbreviations are commonly used in online chatrooms and on mobile phones to send SMS/ text messages. In the series AFK each performance involves sending a message coded in this way in front of public webcams monitoring urban and non-urban landscapes. The short messages capture moments of mobility and presence.) <http://www.9nerds.com/isabelle/AFK/>

- **2001 \_\_ Albert Einstein's quotation** ("The wireless telegraph is not difficult to understand. The ordinary telegraph is like a very long cat. You pull the tail in New York, and it meows in Los Angeles. The wireless is the same, only without the cat." (Source: Scientific American magazine, September 2002 issue, "Einstein's Hot Time", by Steve Mirsky. Source: Science Master April 2001 newsletter) <http://www.sciam.com/article.cfm?articleID=0001AA08-864C-1D49-90FB809EC5880000> [http://www.sciencemaster.com/activity/newsletter/april\\_news.html](http://www.sciencemaster.com/activity/newsletter/april_news.html)

- **2001 \_\_ Bedlam**, Simon Penny (Bedlam explores the dislocation and permutation of subjectivity by computation and telematics. Bedlam is a telematic and teleoperative art installation comprising telerobotics, multicamera machine vision, spatialised interactive sound, video, wide bandwidth multimodal networking and web. Unlike most network experiments, Bedlam links, not just computers and virtual environments, but real spatial locations containing physically active people. This commitment to embodiment is a critical experimental intervention in the development of wide bandwidth multimodal networking. Unlike projects which utilise preexisting media genres and technological channels, in the case of Bedlam, we see the separation of 'content' and 'technology' as artificial. The embodied experience of the users, interacting remotely via a heterogeneous and non-standard array of computer mediation is the content and the experience. Bedlam is an interdisciplinary project which models a novel cultural environment from a complex of emerging technologies including pneumatics and robotics, digital video systems, digital sound and network communication. Bedlam is equal parts play, critique, creative and technological R+D. It offers a critique of academic and popular discourses of cybernetics, artificial intelligence, robotics, 'virtual reality' and 'artificial life'. It also constitutes experimental research in human computer interaction. Bedlam proposes a model of telematic interaction which actively critiques paradigms of computer-human interaction and of VR. We emphasize full-body interaction in which the user, unencumbered by hardware, training or highly symbolic interaction protocols, can drive remote and local systems by the ongoing behavior of their entire body.) <http://ace.uci.edu/penny/works/bedlam.html>

- **2001 \_\_ BookCrossing** (BookCrossing (also: BC, BCing or BXing) is defined as "the practice of leaving a book in a public place to be picked up and read by others, who then do likewise". The term is derived from bookcrossing.com, a free online book club which began and encouraged the practice and aims to "make the whole world a library". The 'crossing' or exchanging of books may take any of a number of forms, including wild releasing books in public, direct swaps with other members of the websites, or "book rings" in which books travel in a set order to participants who want to read a certain book. The community aspect of BookCrossing.com has grown and expanded in ways that were not expected at the outset. In addition to forum discussions, mailing lists and annual conventions throughout the world. Ron Hornbaker conceived the idea for what is now known as BookCrossing in March 2001.) <http://www.bookcrossing.com>

- **2001 \_\_ Can you see me now ?**, Blast Theory (Can You See Me Now? is a game that happens simultaneously online and on the streets. Players from anywhere in the world can play online in a virtual city against members of Blast Theory. Tracked by satellites, Blast Theory's runners appear online next to your player on a map of the city. On the streets, handheld computers showing the positions of online players guide the runners in tracking you down. With up to 20 people playing online at a time, players can exchange tactics and send messages to Blast Theory. An audio stream from Blast Theory's walkie talkies allowed you to eavesdrop on your pursuers: getting lost, cold and out of breath on the streets of the city.) [http://www.blasttheory.co.uk/bt/work\\_cysmn.html](http://www.blasttheory.co.uk/bt/work_cysmn.html)

- **2001 \_\_ CarPhone**, Jonah Brucker-Cohen (Carphone allows people to call up a motorized car and drive it around using their cell phone or any phone. They can speak or press buttons into the receiver and the car will drive around accordingly. The idea behind Carphone is that all physical objects should be able to be remotely controlled from any location. I was working on Musical/Devices and I realized that the next step should be to bring the phone interaction into the real world by attaching physical objects to the output. A motorized car only scratches the surface of the possibilities one has with phone control over a network. One could use the phone to automate their house, feed their pets, or control other physical objects in remote locations without being tethered to a computer. The system uses VoiceXML (a subset of XML) through TellMe and speech recognition to decipher user input in the form of voice or DTMF tones. Once the user connects, they are prompted to say directions (forward, reverse, stop, right, left) or push the appropriate DTMF tones for each movement. This input is collected, sent to a cgi script which relays the information back to a host

computer which talks serially - via wireless serial modules - to the remote car. Surprisingly, there is little delay between messages sent.) <http://www.coin-operated.com/projects/>

- **2001 \_\_ CloudStream/Bellwethers**, Chris Brown (A network music piece with five players using SuperCollider2) <http://www.cbmuse.com/>

- **2001 \_\_ Cuidado Project**, IRCAM (The CUIDADO Project (Content-based Unified Interfaces and Descriptors for Audio/music Databases available Online) aims at developing a new chain of applications through the use of audio/music content descriptors, in the spirit of the MPEG-7 standard. The project includes the design of appropriate description structures, the development of extractors for deriving high-level information from audio signals, and the design and implementation of two applications: the Sound Palette and the Music Browser. These applications include new features, which systematically exploit high-level descriptors and provide users with content-based access to large catalogues of audio/music material. The Sound Palette focuses on audio samples and targets professional users, whereas the Music Browser addresses a broader user target through the management of Popular music titles. After a presentation of the project objectives and methodology, we describe the original features of the two applications based on the systematic use of descriptors and the technical architecture framework on which they rely.) <http://ismir2002.ismir.net/proceedings%5C02-FP06-3.pdf> <http://www.ircam.fr>

- **2001 \_\_ Curated By**, ORF Kunstradio (In May 2001 Kunstradio has started to declare four to six of its weekly on air-on line broadcasts as spaces for exhibitions of international radio-art. Radio-artists with differing artistic and theoretical backgrounds are commissioned to develop the concept and design of each of these exhibitions. In their projects, each of the curators, together with the artists chosen by her, attempts to highlight aspects of contemporary radio-art, which they deem important and interesting. Kunstradio thus delegates its own curatorial functions - with the calculated risk of definitions of radio-art entering which may be foreign to the producer/editors as well as to some of the artists, who have been over lengthy periods of time instrumental in defining some of Kunstradio's own definitions of radio-art. After the - yet undetermined - end of the project, all the exhibitions should be part of Kunstradio on line's archive, each of them containing the original works and a small catalogue. With this project, Kunstradio hopes to contribute to an on-going debate on the role the institutions of public radio and those of the art-system have played and still play in the definition of radio-art. Series : Radio Roadmovie, Matt Smith - Social Music, Brandon LaBelle - The future of all radio is silence, Resonance FM - Soundcard, Aleksandar Vasiljevic - ISOL, r a d i o q u a l i a - Literatur als Radiokunst, Christiane Zintzen - FREQUENCitY, Steve Bates - Reception Is Interception, Anna Friz - Acoustic Space Set, Rasa Smite and Raitis Smits - The Frequency Post, Andrew Garton - ran., Johannes Auer - HOMO SONORUS, Dimitri Bulatov - Garrett Phelan) [http://kunstradio.at/PROJECTS/CURATED\\_BY/index.html](http://kunstradio.at/PROJECTS/CURATED_BY/index.html)

- **2001 \_\_ Daisy Chain**, Peter Sinclair, GH Hovagimyan, Guillaume Stagnaro, Fabrice Gallis, François Parra, and al. (collaborative networked event via remote CU-See Me to an Art Center in Marseille, France. In DaisyChain a group of artists create an interface/ installation that uses both an intranet and internet. The conversations, video and audio, were sampled and distributed throughout the networked installation in a variety of ways. Thus became a very funny game of remote CU See-Me hide and seek between New York City and Marseille via the internet. The initial structure was an artist group building a site specific interactive networked art environment. Each of the artists contributed various interfaces that the public could manipulate. As the public played with the interfaces they became part of the art work. The interfaces were all created on the spot for the specific social situation. The networked artists created and passed along data to the other servers on the daisyChain. As the accessors moved through the media space created they left their imprint. For instance, A ping pong table had an audio sensor connected to a computer animation of two ping pong players. Each time the ball hit it triggered the shadow animation, A toy train with a video camera was controlled by accessors in the space via a computer. The video camera grabbed still images chosen by the controller. These were then printed out in hard copy and also distributed along the daisy chain. A person playing a piano controlled the way a surveillance video was displayed showing people entering the space and so on.) <http://nujus.net/peterhomepage/html/DaisyChain.html> <http://cmarziou.free.fr/daisychain/> <http://artnetweb.com/gh/network.html>

- **2001 \_\_ Dialtones (A Telesymphony)**, Golan Levin, Gregory Shakar, Scott Gibbons, Yasmin Sohrawardy, Joris Gruber, Erich Semlak, Gunther Schmidl, Joerg Lehner (large-scale concert performance whose sounds are wholly produced through the carefully choreographed ringing of the audience's own mobile phones. Before the concert, participants register their mobile phone numbers at a series of web terminals; in exchange, new ringtone melodies are automatically transmitted to their phones, and their seating assignment tickets are generated. During the concert, the audience's phones are dialed up by live performers, using custom software which permits as many as 60 phones to ring simultaneously) <http://www.flong.com/projects/telesymphony/> <http://www.fondation-langlois.org/html/e/page.php?NumPage=229>

- **2001 \_\_ Digital Commons** (In its original meaning, the term "commons" refers to land or a public area that is open to common use, the group of the commoners or their parliamentary representatives. In 2001, the founders of the Sarai New Media Initiative in

Delhi published a reader on the public domain and introduced the term “Digital Commons.” The idea of the digital or networked commons obviously requires a reconsideration of traditional definitions: the public space here is not a shared territory but a non-locality consisting of global communication systems that, while subject to protocols and regulations, largely exist outside of a single nation’s or state’s jurisdiction; the “commoners” also can not be defined strictly in terms of physical location but often are communities of interest that share ideas and knowledge and are dispersed around the world. The concept of the (networked) commons is also inextricably interconnected with the notion of the public domain, which — as a social and cultural space — can be understood as a shared site of ideas in the broadest sense. In 1998, the Society for Old and New Media (De Waag, at <http://www.waag.org/>) in Amsterdam started a research project titled “Public Domain 2.0,” which was an attempt to reassert public agency in the information age and “address the conditions of the unfolding era of global information and communication systems.” (Boeschoten, al., 2004) The goal of the project is to design future public spaces in digital media environments that are monopolized by neither commercial interests nor a state and driven by active public participation. The narrower, juridical and computing definitions of the public domain are rooted in notions of property right and copyright and point to the complex legal issues raised by digital technologies and networks and their inherent capabilities for appropriation and sharing. In “Constructing the Digital Commons,” Eric Kluitenberg (2003) refers to writer and policy strategist David Bollier’s argument that the concept of the public domain and the commons should be differentiated from each other. Bollier distinguishes between the public domain as a passive open space that can be shared by anyone and everyone, implies no boundaries and ownership and therefore does not require responsibility for resources. He sees the commons as a space of shared resources (land, means of production, information) that is collectively owned by a more or less well-defined community and therefore implies boundaries: “There are rules and mechanism of access, and limitations on use that are defined by the shared values of the community sharing these resources.” (Bollier, n.d.) While Bollier’s distinction is helpful and makes an important point, the boundaries between the public domain and digital commons can still be fluid. When it comes to art in the public space of networks, concepts such as passive vs. active space (agency), collective owner- and authorship, as well as rules and mechanisms of access are a complex interplay between technologies, software, authors, and users. [Christiane Paul] [http://www.firstmonday.org/ISSUES/special11\\_9/paul/index.html](http://www.firstmonday.org/ISSUES/special11_9/paul/index.html)

- **2001 \_\_ Distance Duo**, Christopher Dobrian (for two computer pianos in remote locations connected via internet - for Yamaha Disklavier (computer controlled piano) and interactive computer improviser; premiered by Kei Akagi simultaneously in Winifred Smith Hall, Irvine, California and (playing a Disklavier remotely) in the Center for Research in Computing and the Arts (CRCA), La Jolla, California) <http://music.arts.uci.edu/dobrian/>

- **2001 \_\_ Dust Theories**, Kim Cascone (‘Dust Theories’ was commissioned as a visual complement to an audio installation entitled ‘Residualism’ by sound designer and composer Kim Cascone. Cascone defines residualism as “the process of removing a signal until all that’s left is its ghost-signal or the artifacts thrown off by the original signal”. The ‘Dust Theories’ visuals utilised low-memory components within re-combinant works to create pages which loaded quickly and dynamically using a minimum of server-side memory. By combining client-side JavaScript programming with small, single colour animated GIFs - most weighing no greater than a few hundred bytes - the visuals created a rich experience which rewarded exploration and play. Fewer than 100 lines of JavaScript were used to create the visuals included which, by using pseudo-random configurations, appeared more code heavy than they truly were. Utilising a JavaScript/Frames enabled web browser and an LCD projector the four-frame visuals accompanied an audio piece comprising four CDs mixed live by Cascone for the opening of his exhibition ‘Dust Theories’ showing at Chicago’s DeadTech Gallery.) (Kim Cascone, défenseur et théoricien de la musique “laptop” et “post-digital”, un autre type de régulation pour ses DUST THEORIES : un programme crée avec le populaire Max/MSP choisit aléatoirement dans une collection d’échantillons des éléments sur lesquels vont être appliqué divers traitements. Ce sont les paramètres de ces traitements qui seront manipulés lors des performances. [Yannick Dauby] (Musicworks n°82, 2002)) <http://www.fallt.com/dust> <http://www.anechoicmedia.com>

- **2001\_\_ « Earworms, Surgery and Musical hallucinations - : The Cognitive Itch Theory »**, James Kellaris (“I hear singing and there’s no one there, I smell blossoms and the trees are bare. . . .” From ‘Call Me Madam’ Irving Berlin 1953. “The term ‘cognitive itch’ was first used by James Kellaris of the University of California to describe the experience of music that gets stuck in your head and you just can’t get rid of it. This same phenomenon can result from watching commercials, Web-videos and even full-featured multimedia websites. An earworm is a song, tune, or commercial jingle that gets “stuck” in one’s head, such that it seems to repeat itself involuntarily. Earworms are often described as “catchy” music that becomes annoying. An earworm is not actually heard, but rather rehearsed mentally. The term “earworm” is a literal translation of a common German word (ohrwurm). In English, the earworm phenomenon is also referred to as a “stuck song syndrome,” “repetunitis,” “tune cooties,” “audio virus,” “melodymania,” and a variety of other expressions. Contrary to reports in the popular press, Dr. James Kellaris of the University of Cincinnati did not coin the term, nor has he ever claimed to have invented the term. Perhaps he can be credited with popularizing the term in English; however, it was in use (among German-English bilinguals) before Kellaris began researching the phenomenon. “A cognitive itch is a kind of metaphor that explains how these songs get stuck in our head,” Professor Kellaris told BBC World Service’s Outlook programme. “Certain songs have properties that are analogous to histamines that make our brain itch. The only way to scratch a cognitive itch is to repeat the offending melody in our minds.” 97% of us have the capacity to trigger simple audio

hallucinations; For instance the sentence “brown girl in the rain” will for most of you cause an involuntarily re-occurring audio hallucination which can only be stopped by the words “Do you know the way to San Jose”. Commonly called ‘Earworms’, this disorder is thought to be the result of specific musical properties of a song that trigger the brain to uncontrollably repeat the song in an attempt to resolve some logical musical anomaly. The most successful Earworm songs have a repetitive rhythm, bright catchy melody but importantly some unusual, unexpected musical aspect. For instance the BaHaMen’s “who let the dogs out” has an offbeat repetitive “Who,Who” chorus making it ripe for repetitive neural analysis and keeping it high in the Earworm top ten: 1. Kylie Minogue “Can’t Get You Out of My Head” / 2. James Blunt “You’re Beautiful” / 3. Baha Men “Who Let the Dogs Out” / 4. Mission Impossible theme / 5. Village People “YMCA” / 6. Happy Days theme / 7. Corinne Bailey Rae “Put Your Records On” / 8. Suzanne Vega “Tom’s Diner” / 9. Tight Fit “The Lion Sleeps Tonight” / 10. Tiffany “I Think We’re Alone Now” (James J.Kellaris, PhD, presentation to Society for Consumer Psychology, Feb. 22, 2003.). Exposure to new technology brings new and unexpected behaviour; ‘Ringxiety’ is the neologism coined to describe the anxious state caused by the phantom ringing of a mobile phone. Bells were rung to attract attention over long distances in times of crisis. In history this sound was associated with emergencies - fire, war, attack - and was rarely experienced. The invention of the the telephone brought this sound to into the home and the mobile phone, removed from a location context, now creates a state of constant vigilance; we’re waiting for the phone to ring anywhere, at any time. [Simon Crab] <http://crab.wordpress.com/2008/09/18/earworms-surgery-and-musical-hallucinations/#more-244> <http://nornsnotebook.blogspot.com/2008/12/music-on-brain.html> <http://www.uc.edu/news/kellaris.htm> <http://www.mrpwebmedia.com/articles/cognitiveitch.html> <http://www.earwormsresearch.org>

- 2001 \_\_ **Enchain me @**, Tamara Lai (“It’s a chain whose principle is the following : You receive a simple object - word, image, sound - that you transform with your own way. This made, you return me the latter object, and send it to some person(s) of your choice (please, do not forget to join this text). These last make in the same way, and so on. Each object will be placed on a Web page, in a moving and random sequence. Of course, all participants will be mentioned. Caution! Each element of this work is under copyleft : free to be redistributed and / or to be modified according to terms of the Free Licence Art. Mer 31 jan 2001 18:46”) <http://www.tell-a-mouse.be/EnchMe/EnchMe.htm>

- 2001 \_\_ **The Exchange**, Giles Perring (“The Exchange” combines live performance with the potential of mobile phones. It is about chance, communication, technology and emotion. In the piece, which is a strictly timed musical improvisation, one live performer on stage interacts with telephone calls from other performers and artists who can be anywhere on the planet. They call at specific moments with specific contributions. Meanwhile, other artists send images of these performers and their performances, as they happen, by phone. “This is certainly a performance which engages modern telecommunications, and at first it might seem to be an aspect of digital culture or net art. Perring is certainly aware of the potential linkages, but when it was suggested that the Web might be a good way to broadcast the work (multiple remote audio sources on the phone network, played (with) and mixed live, with the mix simultaneous rebroadcast to the Web), he was resistant. It sounds like a good idea, but somehow it signals a very different set of relationships when you compare the active performances of Perring’s collective, generating real sound in real contexts with the passive terminal consumption of millions of ‘end users,’ however synchronous and otherwise unobtainable the experience. The Exchange is not a work which creates or augments a virtual reality, it is technological and musical tour de force which enhances and enriches the real.” [John Cayley]) <http://www.exchangeart.co.uk/>

- 2001 \_\_ **Ex Post Factum**, Tamara Lai (IN BETWEEN is a part of EX POST FACTUM (<http://www.expostfactum.be.tff/>), an international virtual made art work in progress : “a Transcreative project, since it exemplifies an attitude and a human, ethical dimension which lies “through and beyond” artistic creation, while retaining necessary tensions and contradictions of art: form and non-form, aesthetic and non-aesthetic parts; technical expertise and improvisation, etc. Ex Post Factum is, thus, Transcreative in its \*intent\* to make visible the mutual respect and friendship between the participants woven into its structure.” [Joe Brenner]. Music : Fast Forward, Tom Hamilton, Bruce Gremo, Emanuel DM Pimenta, Peter Zummo. Texts : Joe Brenner, Loiez Daniel, Tamara Lai, Emanuel DM Pimenta. Images and Web : Tamara Lai) <http://www.tell-a-mouse.be/EPF/EPF.htm>

- 2001 \_\_ **Extended Radio**, August Black, Manfred Soellner (fon), Derek Holzer, ORF Kunstradio Vienna, Acoustic Space Lab Riga (Between Aug 6th and Aug 12th 2001, telephone-reports from and on line contributions to Acoustic.Space.Lab were broadcast in different formats on shortwave, mediumwave and again on the Internet. From the Kunstradio office in Vienna, August Black and Manfred Soellner contributed live on line to the final streaming-event of the Acoustic.Space.Lab symposium) <http://www.kunstradio.at/SPECIAL/XR/>

- 2001 \_\_ **Gas Chamber**, Dmitry Gelfand and Euelina Domnitch (Sound waves moving through three dimensional space are microphonically converted into voltage and emitted via multiple electrodes within a transparent vacuum filled with a noble gas. The voltage imprints of the sound waves cause the gas to luminesce in simultaneous accordance with the nodal and spatial properties of the oscillating waveforms. The chamber and its multichannel sound source are triggered by means of an interactive musical composition) <http://www.portablepalace.com/gchamber.html>

- **2001** \_\_ « **Hacker Ethic** », Pekka Himanen (Currently, Himanen works as a Principal Scientist at the Helsinki Institute for Information Technology, where he leads a research project on global network society. He is also a Professor of Creative Economy at the University of Art and Design Helsinki, and has been a Visiting Professor at the Oxford Internet Institute (based at Oxford University) from September 2005 to July 2006. In *Hacker Ethic*, Himanen is trying to understand the core of informationalism, the post-industrialist paradigm, extending the ideas of Manuel Castells' Information Age. As an alternative to the industrial-capitalist protestant work ethic he proposes a hacker ethic as something like a cyber communitarianism. The structure of the information society is a web, which in contemporary business world manifests itself, for instance, in dynamic outsourcing and even cooperation with one's competitors. The "knots" of such a web get activated according to the needs and opportunities. According to Himanen, the three main features of hacker ethic are: 1/ enthusiastic, passionate attitude to the work that is enjoyed, 2/ creativity, wish to realize oneself and one's ability, often in teams that are formed spontaneously (project orientation), 3/ wish to share one's skills with a community having common goals, along with the need to acquire recognition from one's "tribe"; one is motivated by inner zeal rather than external awards: the fruits of one's work are donated to everybody for their advances and further developments. Manuel Castells thinks that the innovations produced by hackers are the foundations of the development of the whole culture. According to Himanen, the social hackerism begins from such things as vegetarianism, whereas the opposite of it is represented by Microsoft and the licensing of computer programs. Himanen thinks that in the information society we need a radical lack of prejudice, such as he has met in philosophy lessons to children. A critical challenge of the Internet era is the ability to meet the other human being.) <http://www.pekkahimananen.org>

- **2001** \_\_ **Handywolke**, Peter Hrubesch, Dirk Scherkowski (10 October 2001: Museum für Kommunikation Berlin. A "cloud" of 1200 Siemens mobile telephones were suspended under the glass dome in the Berlin Communication Museum. The phones react sonically to the movements and dialings of the crowd below. [Golan Levin] <http://www.museumsstiftung.de/stiftung/detail.asp?site=berlin&id=644&kat=2001>

- **2001** \_\_ **HWLA 2 - AIRWAVES**, Banff Center (In september 2001, HWLA 2 - AIRWAVES, initiated by Michelle Teran, took most of the HWLA participants to Banff, Canada. Completely surrounded by mountains, we re-tuned in for a new collaborative experience. 1) Core Platforms: there have been two core platforms, one conceptual and one software that have functioned to organise the types of projects and approaches to practice we have taken during this laboratory. A) The 'prototype' which has been an organising principle and methodology we have been testing here; and B) The multiuser, cross media synthesizing software, Keystroke has been the primary software platform. 2) Screen Escape: getting away from the keyboard and screen. Reflected in the range of materials, wearable and wireless devices... and how these can be linked through and to the Keystroke software. 3) Collective Processes/ Products: Keystroke is designed to enable collaborative, collective multiuser experience, but this experience can be dominated by the single user kinesphere (hunched over mouse/ keyboard/ screen). The emphasis for us on 'getting away from the screen' has meant not simply stepping away from this kinesphere, but asking questions about issues related to collective spaces such as location, social context, communication and materiality. 4) Free Networks: we are undertaking these activities within a framework that might suggest a manifesto related to the evolving concepts of the network, always on, always accessible and always free. We know these terms should be problematized, but as networks are such a severely contested as a public space and there are such issues around access -- we are here in support of that public space.) <http://www.ubermatic.org/hwla/>

- **2001** \_\_ « **The Imaginary of Internet** », Patrice Flichy (The social organization of the Internet therefore has the following four characteristics: 1/ Interaction and cooperation is first and foremost between specialists. These specialists do not necessarily meet in their laboratory or university. They are distance colleagues who constitute an "invisible college", publish in the same journals, meet at the same conferences, and sometimes travel from laboratory to laboratory. This invisible college, which initially included some industrial laboratories such as Bell laboratories or Xerox Park, was to design the Internet along the same lines and thus to meet their own needs. Pioneers such as Licklider (C.R. Licklider & R. Taylor, *The Computer as a Communication Device*, 1968) were to call this social organization a community of interests; others such as Turoff (S.R. Stilz & M. Turoff, *The Network Nation*, 1978) spoke of a network nation. 2/ It is a community of equals where the status of each member is based essentially on merit, evaluated by peers. But unlike the classic university tradition, this evaluation is not only by legitimate authorities (commissions, journals, etc.) but also by ordinary colleagues who test, comment on and improve proposals. The debate is therefore wide open and cannot be closed by any authoritative argument. Information flows freely. Arpanet Requests for Comments and newsgroups are the manifestation of this adhocracy. 3/ Cooperation is an essential element, at the core of this scientific activity. Computer software is something too complex to be created by a single individual; it requires teamwork. This collaboration is more intense when the aim is to network computers deliberately designed to differ. Corbato and Fano (*Time-sharing on Computers*, 1966) had already observed the existence of such cooperation in time-sharing computing, and Richtie (1984), one of the creators of Unix, also noted this principle of cooperative work. Turoff (R. Amara, J. Smith, M. Turoff, J. Vallée et al., *Computerized Conferencing - a new medium*, 1976) and Lederberg (J. Lederberg, *Digital Communications and the Conduct of Science*, 1978) showed the effectiveness of Arpanaute communities. The fast flow of information allowed for a high level of transparency, which in turn facilitated cooperation. Yet as Lynn Conway (L. Conway,

*The Multi Project Chip Adventures, 1981) notes, transparency also helped to intensify competition between teams. 4/ It is a world apart, separate from the rest of society. The campus is a world on its own, a pathway for students between adolescence and the adult world, between school and the professional world; a place of innovation and experimentation for academics, where computer technology was to reign. Richard Cyert, chancellor of Carnegie Mellon university, commented in 1984: "the great university of the future will be that with a great computer system" (Wall Street Journal, 30 nov 1984). Backed by IBM, he embarked on the construction of a network of 7,500 terminals (Roszak, The Cult of Information, 1986: 58). [Patrice Flichy] ) [http://www.infoamerica.org/documentos\\_pdf/flichy4.pdf](http://www.infoamerica.org/documentos_pdf/flichy4.pdf)*

- **2001 \_\_ Integer**, audio installation for live radio and internet by Michael Iber (*INTEGER - INTERNET GENERATED RADIO audio installation for live radio and Internet - connects the high resoled audio transmission of radio broadcast with the interactive controlling facilities of the internet to generate a new piece of music.*) <http://www.michael-iber.de/projects/integer/english/english.html> <http://crossings.tcd.ie/issues/3.1/Tanzi/>

- **2001 \_\_ Interaxis**, Jesse Gilbert, Mark Trayle (*A two-site (LA and NYC) musical performance/improvisation. Interaxis is an investigation into the possibilities of improvisation, form, and presentation in multi-site, network-based performance. A group of accomplished composer-improvisers and technologists coming together to create a dynamic, structured, experimental sonic exploration on the web and in real space*) <http://turbulence.org/Works/interaxis/>

- **2001 \_\_ International Funkaustellung Opening Ceremony** (25 August 2001: International Funkaustellung, Berlin, Germany Seven computer-synchronized phones performed a one-minute composition on a televised promotional event [Golan Levin].) [http://www.flong.com/texts/lists/mobile\\_phone/](http://www.flong.com/texts/lists/mobile_phone/)

- **2001 \_\_ [I/O] Distant Place**, Maebayashi Akitsugu, NTT ICC Tokyo (*When our consciousness perceives an event, we record it by relating its space and time. If we can preserve and replay the event accurately, would it not be possible to make that very space a media through which to communicate the experience? Based on this concept, MAEBAYASHI Akitsugu has unveiled <<[I/O] distant place>>, the third and final of his series of works following <<[I/O] warehouse>> (media select 2000) and <<[I/O] white room>> (Studio of Museum of Contemporary Art, Tokyo). In this work, MAEBAYASHI experiments for the first time with an anechoic room. He takes advantage of the unique feature of the space, having no characteristic pertaining to the <<place>> such as echoes, etc. The work is realized under the assumption that there exists no substantial space that can be superimposed on or reproduced by the work. Each of the locations that MAEBAYASHI has visited is reproduced in an anechoic room through binaural recording. Visitors can simulate the locations that the artist has visited solely through auditory sensation.*) [http://www.ntticc.or.jp/Archive/2001/IO\\_distant/](http://www.ntticc.or.jp/Archive/2001/IO_distant/)

- **2001 \_\_ Keystroke**, Waag Labs (*Keystroke combines multi-user with dynamic cross-media synthesis, providing the tools for extensible forms of telecommunication and collaboration. Keystroke's ability to dynamically synthesize media from up to 5 users in a common workspace, makes it a powerful live and/or performance tool for interactive and interdisciplinary work.*) <http://www.keyworx.org/>

- **2001 \_\_ Kick Baby Kick - Baby Play**, Shu Lea Cheang, NTT ICC Tokyo (*"Baby Play" interlinks a large-scale football field ("Baby Play" is derived from the French name for football, "baby foot") with the Net as a ME-motion(memory-emotion) playing field. "Baby Play" is installation 1.0 of Cheang's "Locker Baby" project (2001-2002), which features three Net installations based on a fictional scenario set in the year 2030. Produced by the Dolly Polly Transgency (DPT) with genes extracted from deep sea pearls, the clone generation of Locker Babies are born out of Tokyo coin lockers and entrusted to retrieve our collective deposits of ME-motion data on the Net. "Baby Play" is comprised of an immense football playing field (15m x 7.5m), 22 inflatable designer locker babies (140cm in height), 8 playing rods (5m in length), a large-scale projection and a "Baby Play" website. As local gallery participants engage in a game of football, the image of the ball bouncing in the actual playing field is sent to the ME-motion virtual field on the Net. The movement of the ball in the actual playing field is tracked by 36 touch sensors and sent to the "Baby Play" website where the virtual moving ball retrieves sound and text files as ME-motion data. The public is invited to utilize the 36 virtual lockers for data deposit and to play ball on the Net.*) [http://www.ntticc.or.jp/Archive/2001/BABY\\_PLAY/](http://www.ntticc.or.jp/Archive/2001/BABY_PLAY/)

- **2001 \_\_ KromoZone**, Stephan Moore, Timothy Place (*Intermedia Performance System. The KromoZone Intermedia Performance System is build upon an infrastructure that relays all performance data in the system over the ethernet based LAN based on UDP/OTUDP and OSC*) <http://www.electrotap.com/kz/> <http://kromo-zone.tripod.com/krome-music.pdf>

- **2001 \_\_ Listen**, IRCAM (*In the framework of the European project LISTEN, Ircam's Acoustics team developed a tool for conception of 3D sound scenes (ListenSpace) for a reproduction system on headphone. The sound information received by the visitor changes according to his own movements and orientation, for example in a museum.*) <http://www.ircam.fr>

- **2001** \_\_ *Looking forward, see you soon!*, Keystroke event, Landmark, Bergen (From Nov. 24 - Des. 6, BEK is hosting a Keystroke-event at Landmark, Landmark is a combined cafe/bar and space for New Media Art in Bergen. "During the event-period we want to set up a combination of continuous ambient surroundings and live events all based on Keystroke. We want to build on the experiences from Banff, and hotwire the place with anything that can be used as in/output to Keystroke. So far we're thinking of webcams/QT streams, sound, I-cube sensors, SMS and wireless devices. 1. To set up collaborative live events between selected combinations of local/remote participants. 2. Set up an initial ambience patch and then let everybody in turn have a day to work on the patch building on what's already there as a continuous process.) <http://www.bek.no/%7Elmark/lfsys/>

- **2001** \_\_ **MobilSynfoni**, Tobias Trier (In a concert and sound installation, twenty mobile phones were suspended from a ceiling. These were caused to ring by a live performer, who dialed them up using another four phones below. [Golan Levin]) <http://www.tobias trier.dk/tobias trier>

- **2001** \_\_ **Musical / Devices**, Jonah Brucker-Cohen ( *Musical/Devices* allows you to collaborate in a musical composition with other people using any telephone. The project allows for multiple users to participate in one experience through a mobile device. Users call up and connect to the program and can select a high or low pitch note. Once they choose a tone, the tone is released into the main screen and when the bouncing ball collides with it, it produces the appropriate high or low pitch sound. The system uses VoiceXML (a subset of XML) through TellMe and speech recognition to decipher user input in the form of voice or DTMF tones. Once the user connects, they are prompted to say "high" to generate a high pitch sound or to say "low" to generate a low pitch sound. Once the VXML gets an answer it recognizes it writes to a cgi script and relays that message to the movie.) <http://www.coin-operated.com/projects/>

- **2001** \_\_ **Network Musical Performance**, John Lazzaro, John Wawrzynek (UC Berkeley, May 9, 2001. A Network Musical Performance (NMP) occurs when musicians in different locations interact over the Internet, to perform as they would if located in the same room. An NMP system unavoidably introduces time delays between the musicians, due to the network latency of the links connecting the players and the local latency at each host. The total latency must be kept reasonably short for the NMP system to be usable. However, some latency is always present in conventional musical performance -- the acoustic latency due to the speed of sound. One way to think about NMP is to consider the physical separation between network hosts that would yield the equivalent acoustic latency between players in a room. For example, Internet data packets travel 40 miles from the Stanford University campus to the UC Berkeley campus in the time it takes for sound to travel 2.4 feet. However, the quality of NMP depends on the total system latency: network delays plus the local latency at each host. If we take host audio and network latency into account, we find a total delay between Berkeley and Stanford that corresponds to a musician separation of about 7 feet, a typical distance between two players in rehearsal. Each host should execute identical audio signal processing algorithms to generate the sounds of the instruments played in the session, under the control of local and network gestural data. Gestural data sent across the network should be tagged with timestamps and sequence numbers, and should include contextual information about recently sent gestures, so that late and lost packets can be detected and concealed. Using our software synthesizer sfront as a platform, we have implemented a system for network musical performance based on gestural coding. In this system, the musicians play electronic instruments that produce MIDI control data. MIDI data is sent to the remote players, using a resilient coding to protect against packet loss. Sfront clients running on each host turn both local and remote MIDI data into sound, and use knowledge about the gestural coding to handle late and late packets gracefully. Our system is based on the RTP and SIP networking standards from Internet Engineering Task Force, and the Structured Audio standard from MPEG 4.) [http://www.mstation.org/sfront\\_network.php](http://www.mstation.org/sfront_network.php)

- **2001** \_\_ « **Networked Art** », Craig J. Saper (The experimental art and poetry of the last half of the twentieth century offers a glimpse of the emerging networked culture that electronic devices will make omnipresent. Craig J. Saper demarcates this new genre of networked art, which uses the trappings of bureaucratic systems-money, logos, corporate names, stamps-to create intimate situations among the participants. In Saper's analysis, the pleasures that these aesthetic situations afford include shared special knowledge or new language among small groups of participants. Functioning as artworks in themselves, these temporary institutional structures-networks, publications, and collective works-give rise to a gift-exchange community as an alternative economy and social system. Saper explains how this genre developed from post-World War II conceptual art, including periodicals as artworks in themselves; lettrist, concrete, and process poetry; Bauhaus versus COBRA; Fluxus publications, kits, and machines; mail art and on-sendings. The encyclopedic scope of the book includes discussions of artists from J. Beuys to J. S. G. Boggs, and Bauhaus's Max Bill to Anna Freud Banana. Networked Art is an essential guide to the digital artists and networks of the emerging future. « Situation machine: The computer, first and foremost, represents itself and its workings. it does not have a singular mechanical process; rather, it depends on a series of translations from one code to the next in order to work. likewise, the Internet is a situation-making machine rather than a thing. » « When aesthetic and poetic decisions embodied in artworks lead to a heightened or changed social situation, one needs to describe these forms as sociopoetic rather than as artworks within particular social contexts. The social situation is part of a sociopoetic experiment » [Saper, Craig, J. Networked Art]) <http://pegasus.cc.ucf.edu/~csaper/index.htm>

- **2001 \_\_ Nomusic**, Laboiteblanche & Carl Young (streaming festival. ((NOMUSIC))) started on June 2001, according to the principle that a diffusion site on Internet should correspond to the representation of the singular performances of a new generation of artistes, musicians, performers and other actors of the electronic scene. The creation of this open diffusion site proved to be necessary because of today's difficulty to perform disembodied concerts of electronic music on stage, in a classical frontal (actor/audience) representation space. Nowadays, these emerging new multimedia performances allow everybody to approach music in a more singular way, with a different listening practice and on a more sharing scene. Every year since 2001, ((NOMUSIC))) offers one or more festivals which programming is geographically variable and which function is to relay in a coordinated way a 24 hours earth revolution of no-musicians @ home. This virtual earth revolution materializes a world wide sound cover of 24 time zones according to the universal time [GMT 0]. This gives to participants who are scattered all over the world the opportunity to take part in the festival. The participation is free of charge and the recruitment is made exclusively on Internet through diffusion lists. The selection is not made according to practices and genres criterion but rather according to the approaches and artistic positions which should echo the logic of the festival. ((NOMUSIC))) platform offers two types of live. In its classical form, the participant plays alone at home for one hour. He can also play in dual. Dual is a live in which two geographical sites are linked via Internet and mixed together in stereo (participant 1 on the left channel and participant 2 on the right one). ((NOMUSIC))) wishes to generate improbable duals and gatherings between two participants during one hour time in a web audio performance. We make no storage because we think that Internet is a huge database which conveys already a great amount of dead informations and we don't want to pollute it further. We are thus in favour of instant access to a selective event. The mechanism of the programming is not automated; it is relayed manually for 24 hours without any interruption by laboiteblanche and Carl.Y, two real human routers who are at the service of continuous audio stream and who endure technical difficulties and give rapid formation on the technologies of streaming to all the participants... No-music stands between musical negation and anti-bruitism, in a non-silent interstice of audio manifestation. It allows the composer-performer to be his own auditor, in a place where nothing should be heard but just felt as a new entity to observe. Statistics : 5 years and 10 festivals, 274 participants during 236 hours, More than 9000 listeners from 28 countries. FESTIVAL X : [Total : 48 Participants / 24 hours] 13/12/2006 : NOMUSIC Festival X / - ARENA II : [Total : 24 Participants / 24 hours] 12/10/2005 : NOMUSIC Arena II / - ROYAL BATTLE : [Total : 24 Participants / 24 hours] 06/04/2005 : NOMUSIC Royal Battle / - ARENA : [Total : 39 Participants / 24 hours] 13/10/2004 : NOMUSIC Arena / - BATTLE : [Total : 36 Participants / 24 hours] 16/12/2003 : NOMUSIC Final Battle / - TOURNAMENT : [Total : 106 Participants / 106 hours] 15/04/2003 : NOMUSIC Tournament V / 10/12/2002 : NOMUSIC Tournament IV / 10/09/2002 : NOMUSIC Tournament III / 10/04/2002 : NOMUSIC Tournament II / 18/12/2001 : NOMUSIC Tournament I ) <http://nomusic.org/>

- **2001 \_\_ On-Line Sound Palette – CUIDADO**, IRCAM Paris (Content-based Unified Interfaces and Descriptors for Audio/music Databases available On line) <http://recherche.ircam.fr/projects/cuidado/wg/>

- **2001 \_\_ Owl Project**, Simon Blackmore, Antony Hall, Steve Symons (A potent mix of wood, low-tech computer and personal stereo iLog is the latest 'must-have' consumer gadget from Manchester-based artist group Owl Project, combining computation, sonic artistry and ... woodwork. Featuring computer circuits lovingly encased in a wooden log, originally devised as an eco-alternative to using laptops during live audio performances. Owl Project make sculpture, music and sound art, notably the Log1K, Sound Lathe, Sound Chair and iLog. Drawing on influences such as woodworking, hobby style electronics and open source software to create music-making machines, they take a craft-based approach to designing their own interfaces and objects. The result is a distinctive range of musical and sculptural instruments that critique human interaction with computer interfaces and our increasing appetite for new and often disposable technologies. In 2001 Owl Project developed 2 Log1ks which they have performed with nationally and internationally, including Garage Festival (Stralsund, Germany), with Matmos (Scala, London, UK) and at Emergences Festival (Paris, France). During 2005 they developed a work called Sound Lathe. First shown at the Gathering Moss exhibition at Q Arts (Derby, UK), Sound Lathe combines a traditional pole lathe with custom built software, lo-fi sensors and switches to generate electronic music and an unique wooden artefact at the end of each performance. The Sound Lathe has been performed at Cornerhouse (Manchester), Ultrasound Festival (Huddersfield), Homefires Festival (London) and as headline act at the Sonic Arts Network EXPO 2006 event in Manchester. The iLog series is a reflection on our relationship with consumer technology. The design of each iLog strongly echoes contemporary products such as iPods and advanced mobile phones. These extremely developed complex products, with their plastic techno-packaging, seem modern and beguiling, but also appear craft-less and encourage a disturbing disposability. By choosing wood as the main material for the iLog, Owl Project have extracted modern design principles but deflected it back to a traditional sensibility. This immediately raises questions about modern desire for disposable technology and nostalgia surrounding traditional crafts. Other instruments are: iLog Photo-synthesizer, iLog Rustle, iLog signal, iLog 001, Sound Lathe. The log1k was originally designed and constructed as a complete alternative to using laptops during live audio performances. However as time has moved by so has the need for compatibility and perfect speed control. At the heart of each log1k lies a micro controlled step motor. This allows many log1ks to run in sync with each other, as well as other software packages and Owl Projects own Soundlathe. log1k also comes fitted with a series of micro and reed switches which trigger samples and control audio circuits. Now running interchangeable solid oak, beech and cherry disks, the sounds produced are generated by the natural

rhythms of these forms. Down-to-earth ease of use. Out-of-this-world performance and looks. log1k is great for the home or the forest.) <http://owlproject.com>

- **2001 \_\_ PacJap – Dsystem**, NTT ICC Tokyo, ISEA Nagoya, Kenji Ito, Jérôme Joy, Kyoko, Yuko Nexus6, Peter Sinclair, Kojima Takashi, Colette Tron, Renaud Vercey, Suguru Yamaguchi, Tadahiko Yokogawa (2000-2003) *(A french-japanese band involved in relationships between music and new communication tools. Creation of the D-System : During a game, several players are ready to play together. The activity of playing is depending on what the precedent player made and what you expect the next player will do. This is a kind of pacifical and interactive strategy. All along the game, the players are following and interacting with the conductor-player's play. And his/her action will determine next activities in the game. Each one has the same involvement and responsibility (play with, interact, modify, ...). First based on KromoZone and after with a specific OSC application (OSC-Reflector developed by Guillaume Stagnaro), D-System is a multi-users game built to play music and to open audio projects. The project is to focus on a reality or an activity and to give another reality, so the user must learn each time or use his/her environment in a different manner than in 'normal life'. PacJap was an improbable music band. In creating the D-System, the band aimed to play network music based on local and on-stage inter-connected configurations. Between ironical (they played some non-recognizable covers of well-known musical hits) and completely experimental (improvisations without concertations), its music was based on 'songs' : each one was organized on simple principles of data exchanges -via MIDI- produced by systems played by a conductor and which controls all the other players : photo-electric cells on a DJ-turnstile and live treatments of its sound output, new orchestration of a midifile of a musical hit, text-based chat between the players, video tracking of sushis 'turnstile' in a japanese restaurant, brain sensors, and so on. This collective was really a music band, with works assigned to play on stage. One of their sessions was entirely on-line with networked plays between members. The networked and on-stage situation was always an incitement for players to get round the defined rules and to throw a spanner of the other players, that always created improvised and very surprising concerts. They released a cd on Tiramizu label and took part in ISEA in Osaka, and in MIMI Festival in Marseilles.)* <http://ami.lafriche.org/pacjap/>  
<http://jeromejoy.org/>

- **2001 \_\_ phonography.org** *(Like the word "photography", phonography refers just as much to the contents of a medium (the traces of an event) as of a discipline (a realm of knowledge) or of a practice (a realm of experimentation). To phonograph an environment, which is to say to attempt to capture defines a sonic landscape, imposed by the sound recordist. Based on his own decisions, the manner in which he implements his project, and the various constraints that he faces, the obtained results will give rise in all cases to very specific listenings. The initial intention of phonography is to draw attention to a sonic phenomenon. In this sense we could draw a parallel between phonography and the documentary genre. The idea of "sonic reporting" would be to confront the onforseeable in a reality, a terrain, and to return with certain documents, certain tangibile (audible) and "truthful" traces. This idea is precisely the opposite of what Michel Chion calls "tournage sonore", where the sonic elements destined for capture are prepared, or the sound sources have been arranged in a certain way. An analogy could be made to studio photographie, where one might meticulously arrange the lighting, or the framing. I want to make a distinction between field recording, a term that has been very popular these last several years, and phonography. The first term evokes an idea of a collection of raw materials, devoid of intervention by the sound recordist as opposed to phonography, in which the sound recordist will meticulously re-listen, sort, and select an extract from his material (the "rushes"). The phonography he ends up with is a specific choice of a specific length that will be offered up for listening. Phonography is a practice, a position in relation to the sounds which surround us, while "field recording" is nothing more than the result of a meeting between a terrain (that of naturalists as much as that of ethnographers) and a technical device. Phonography is the art of making the portraits of sounds. (...) The practitioners of phonography are searching for a favorable moment in a favorable space, ideal and unique. Sometimes they call themselves "sound hunters", individuals decked out with microphones and recorders: the approach, tracking, capture, and proud exhibition. The undeniable technical quality of the sound recording is quickly forgotten: it is the ephemeral in these phonographic situations that brings such a high value to these recordings. Thanks to his capacity for foresight, the sound recordist knows how to choose the opportune moment. And this is the greatest quality of phonography: to convey the infinite rarity of everyday moments. (...) Phonography can also be described as the practice of recording the sounds of the environment. Ambiguous by its objectivity (the documentary approach) and subjectivity (the "frame" imposed by the recordist who choose the moment, the place and the technique used for the recording), it is nowadays developed by artists focusing on recorded sounds but also by scientists such as ecologists interested in noise pollution, biologists studying animal communication, architects interested into the sonic identity of the cities or even oceanographers listening to underwater acoustic events, but also by composers. This may propose another definition for composing music : instead of only focusing on the making of the sounds themselves it can be also to propose a listening frame. A composer is someone that may create the condition for the audience to listen [Yannick Dauby]. Ce que nous appelons phonographie est l'activité de captation et de fixation des phénomènes sonores. (...) C'est Charles Cros (l'inventeur du phonographe) qui imagina le terme de phonographie en référence au portrait photographique. Il imaginait que l'on pouvait ainsi fixer les voix des parents proches, et les conserver pour la postérité. (...) A propos de l'une de ses pièces de musique pour bande Quatre phonographies de l'eau (Regmin, Ianassa, Proteus, Spêïô) (1980), François-Bernard Mâche a employé le terme de phonographie comme l'équivalent d'une monographie sonore. [Yannick Dauby, Paysages*

Sonores Partagés, p.18-19) [http://kalerne.net/joomla/index.php?option=com\\_content&task=view&id=159&Itemid=48](http://kalerne.net/joomla/index.php?option=com_content&task=view&id=159&Itemid=48)  
<http://phonography.org>

- **2001 \_\_ Ping**, Chris Chafe (*Ping is a sonic adaptation of a network tool commonly used for timing data transmission over the Internet. As installed in the outdoor atrium of SFMOMA, Ping functions as a sonar-like detector whose echoes sound out the paths traversed by data flowing on the Internet*) <http://crossfade.walkerart.org/ping/> <http://www-ccrma.stanford.edu/~cc/sfmoma/topLevel.html> <http://ccrma.stanford.edu/~cc/index06.html>

- **2001 \_\_ Planet CCRMA** (Karma) (*Realized and maintained by Rafael Lopez-Lezcano, Planet CCRMA at Home (CCRMA is pronounced ``karma'') is a collection of rpm packages (RPM stands for RPM Package Manager) that you can add to a computer running Fedora 6, 7 or 8, or CentOS 5 (not all applications are built on the 64 bit version) to transform it into an audio workstation with a low-latency kernel, current audio drivers and a nice set of music, midi and audio applications. It replicates most of the Linux environment we have been using for years here at CCRMA for our daily work in audio and computer music production and research. Planet CCRMA is easy to install and maintain, it can be installed and upgraded over the network from the Planet CCRMA repositories or its mirrors.*) <http://ccrma.stanford.edu/planetccrma/software/>

- **2001 \_\_ Radiocicleta** (maybe launched on 1991) (*On Monday, September 13th 2004 the Nasa indigenous people of Colombia launched a big three-day march. Included in the march is a low-power FM radio station, broadcast from a radiocicleta (an adapted bicycle equipped with a radio transmitter and antenna that will accompany the march). The signal will be picked up along the route by different indigenous community radio stations and then streamed on the internet. It is likely no coincidence that on Friday September 4, the indigenous community station Radio Nasa was shut down by the government of Colombian president Alvaro Uribe. The indigenous groups, composing tens of thousands of people are marching to protest against the war, neoliberalism, the FTAA, and constitutional counterreforms planned by the government. The Colombian Indymedia has ongoing coverage of the event. There's a special bicycle moving around Belén de los Andaquíes in Caquetá, Colombia. It seats two and carries with it a complete radio broadcasting system, able to send out Wi-max signals and be heard not only through the Andaquí Community Radio, but live through Internet as well. This Radiocicleta (a portmanteau formed by the word radio and bicycle in Spanish) is part of a 10 year long community communication project meant to unite the diverse population of Belén de los Andaquíes which is composed largely by families running away from violence in their hometowns and neighboring regions, who stopped once they reached this safer haven they could call home." [Juliana Rincon, blog rising.globalvoicesonline.org 2007]) (*La radiocicleta nació en Belén de los Andaquíes, Caquetá, Colombia. Esta unidad móvil de radio que se desplaza sobre una bicicleta salió por primera vez a la calle el 8 de diciembre de 2001 con varias ventajas: tiene muy bajos costos de mantenimiento y ayuda a cuidar el medio ambiente porque no utiliza combustibles ni emana gases tóxicos. Sus creadores, integrantes de Radio Andaquí, destacan su capacidad para adaptarse a cualquier tipo de requerimiento: acompañar una manifestación indígena, estar en el parque cuando hay una tertulia o llegar rápidamente para cubrir una noticia. (...) "Con la radiocicleta nos unimos a la gente que estaba en el parque y empezamos a transmitir lo que decían: ni una consigna a favor o en contra de nadie, sólo mensajes de paz. Acordamos dar una vuelta con la radiocicleta por el pueblo, con la gente que estaba en las calles. Se fueron uniendo cada vez más y los equipos de sonido amplificaban las voces de esa marcha improvisada. Esa noche la discoteca prestó su amplificador para que la misa se hiciera en el parque. Después de la misa se armó el baile. Y la guerrilla se fue." [Clemencia Rodríguez]) <http://www.worldchanging.com/archives/001270.html> <http://www.agenciapulsar.org/caraysennal/0.php?cys=8&s=4&n=1&rec=1> <http://www.agenciapulsar.org/caraysennal/0.php?cys=8&s=4&n=1> <http://voceroscomunitarios.wordpress.com/la-radiocicleta/>**

- **2001 \_\_ RadioMatic - Streaps**, The Thing, Jérôme Joy, Ralf Homann, Justus Wunschik, Hans Wastlhuber, Jan-Hendrik Brueggemeier, Daniel Fischer, Oliver Thuns, Harv Stanic, Guillaume Stagnaro, Olaf Matthes, radiostudio.org Weimar Bauhaus University, ENSA Villa Arson Nice (*Experimental sound collective radio workspace. RadioMatic is a non-stop audio streaming platform as an open space for modular and generative audio practices and as a no-wall studio. It's an open channel 24h/24h without archives. The project consists of the construction of an automatic permanent on-line streaming configuration, playable with the specific multiplex interface to mix listenings : Streaps. Basically this means that anyone with the free Streaps client on their machine can connect up to the server and mix what they are playing live with what other people are playing and thus possibly create a whole new global harmony. This project was developed from a Joy's workshop in Bauhaus University in 2001. The first idea was to develop a streaming multiplexer with 8 inputs (each one receiving a stream) and a playing interface in order to mix streaming inputs. The development of the software were realized by students in Weimar and became the Streaps software. An add feature allowed to share mix configurations between clients and thus to share listening situations. Because Streaps had only 8 inputs, a simple rule was proposed : each new stream sent to the server replaces one of the existing one if all inputs are occupied. The continuous process, such as a radio, permanently proposed evolutive sound 'program' built from distant sources sent via streaming by volunteers. No aesthetics or sound curating was authorized. It was only a machine to feed. The interface was a blue star with 8 branches representing 8 sound inputs (streams), each one owned a slide to control the volume of each stream. The sound format used*

was OGG vorbis (with the development by Olaf Matthes of the oggamp and oggcast objects for Pd.) <http://radiostudio.org/2.0/publics/projects.php> <http://streaps.org/a/streaps.org/streaps/Software> <http://jeromejoy.org/>

- **2001 \_\_ Shakespeare Cuisinart**, Jason Freeman (Telephone Etude #1: Shakespeare Cuisinart is an interactive musical work accessible by telephone. Callers are asked to say their favorite quotation from a Shakespeare play or poem. Moments later, they hear a short piece of music generated from slicing, dicing, and layering their voice. Callers may also later visit the Shakespeare Cuisinart web site to download their musical creations to disk or e-mail them to friends. Computer software generates a 60-90 second piece of music based entirely on the caller's voice, using a hierarchy of random decisions. The caller's voice is not subjected to any digital signal processing; it is only spliced and layered in a manner similar to classic musique concrete of the 1950s) <http://music.columbia.edu/~jason/sandvox/catalog/music technology/shakespeare cuisinart/>

- **2001 \_\_ Silophone**, The User, Montréal harbour (Emmanuel Madan, Thomas McIntosh) (Silophone makes use of the incredible acoustics of Silo #5 by introducing sounds, collected from around the world using various communication technologies, into a physical space to create an instrument which blurs the boundaries between music, architecture and net art. Sounds arrive inside Silo #5 by telephone or internet. They are then broadcast into the vast concrete grain storage chambers inside the Silo. They are transformed, reverberated, and coloured by the remarkable acoustics of the structure, yielding a stunningly beautiful echo. This sound is captured by microphones and rebroadcast back to its sender, to other listeners and to a sound installation outside the building. Anyone may contribute material of their own, filling the instrument with increasingly varied sounds. This project takes cues from transformations of similarly imposing industrial sites in Europe such as La Fonderie in Brussels, Belgium and Emscher Park in Germany's Ruhr, both of which reactivate abandoned sites by appropriating the mandates of existing cultural programs in their surrounding communities. The Silophone project aims to raise popular awareness of the building and to catalyse activity that will eventually result in the discovery of an appropriate new function for the abandoned elevator. Musicians have created pieces for the Silo, but in this event, an exciting element that makes this even more unique is the fact that anyone who is at the Silophone website can contribute to the concert, either by playing recorded content provided by the websites users, or by phoning or uploading individual sounds. Whenever anyone is playing the Silophone over the telephone, the web, or the sonic observatory, you can hear the results by tuning into our live RealAudio stream. To call the Silophone from North America: 1.514.844.5555 From the rest of the world: 001.514.844. 5555. Wait until the second ring, then start talking.) <http://www.silophone.net/> <http://www.fondation-langlois.org/html/f/page.php?NumPage=201> <http://www.theuser.org/> <http://www.deplacement.qc.ca/en/user.html>

- **2001 \_\_ Soinu Mapa**, Audiolab Arteleku (Open collaborative project. Based on "phonography" or the art of recording environmental sounds, our aim is to show, share and exchange field recordings made in the Basque Country. Here, you will find more than 100 sound recordings, that tell us a little bit more about the different sound realities of the Basque country. Soinu Mapa started thanks to a collection of recordings made by Luz Maria Sanchez in 2001. During a residence at Arteleku, this mexican sound artist did dozens of field recordings on different geographical locations of the basque country, from south to north, east to west. This collection was archived on Arteleku mediateque, ready to be used by any artist, as Luz Maria wrote on the documentation. Three years later, Audiolab created SOINU MAPA, in order to present in public all this collection and create a even bigger archive based on the same philosophy.) [http://www.soinumapa.net/index\\_en.php](http://www.soinumapa.net/index_en.php)

- **2001 \_\_ Spring Cellphony** (1 June 2001: Bloomfield Science Museum, Jerusalem, Israel. A traditional symphony orchestra performed a 10-minute medley of classical tunes. Amplified recordings of ringtone melodies were used to start off the first few bars of each section of the concerto. A national obsession entered Israeli high culture Friday when an orchestra performed a cell phone "symphony." Each section of the 10-minute medley, titled "Spring Cellphony," began with a cell phone ring to the tune of a classical music piece, and the orchestra carried on from there. The medley was performed before hundreds of phone-toting Israelis at the opening of a technology exhibition in Jerusalem. Israelis have fallen hard for the mobile phone in the last decade. More than two-thirds of all Israelis have cellular service, and wireless accounts now exceed land lines by 50 percent. It is not uncommon for people to carry two phones. After all, always being on the phone means you are impossible to reach. The average Israeli subscriber talks for 314 minutes per month, more than 2.5 times longer than the average in Europe. In a nation full of news junkies, cell phones are just another way to feel plugged in. "It's a disease," said Isaacs Michael of Jerusalem, who attended Friday's performance at the Bloomfield Science Museum. A large symphony orchestra featuring violins, cellos, flutes and trombones was accompanied by recorded sounds. The piece opened with the digital hum of the "William Tell Overture," and included five-second cellular samples from Bach and Mozart. As Friday's performance wound down, a cell phone rang loudly. The conductor stopped, pivoted and shot a dirty look at the audience. It was part of the performance, of course--a joke about the extent to which technology has invaded all parts of Israeli life.)

- **2001 \_\_ Sound Jewelry**, Takuya Yamauchi, Toru Iwatake (Sound installation work supported by spatial sensing system with a Personal Area Network (PAN), which may be applicable for such areas as dance performances and mobile music. The term "Sound Jewelry" was coined by Iwatake, one of the authors of this paper. The original idea is to create interactive musical objects which are

worn like necklaces by people. Each of the "Sound Jewelry" then automatically generates "melody" and according to the distance between the persons wearing it the sounds of "melodies" may be changed or exchanged. On the other hand, Yamauchi, the first author, has been researching into real-time localization systems for multiple agents in a PAN. So it was only natural for the 2 ideas come together. There are two "listeners" on the wall and eight "senders" to be held by the participants. The "senders" transmit supersonic waves to the "listeners" and the master server which is connected to the "listeners" measures the locations of the "senders" based on the distance estimation subroutine in the middleware. The results are sent using OSC protocols to the sound generating application, whose outputs are heard from 4 surrounding speakers in the environment. The actual "Sound Jewelry" turned out to be an environment that consists of two layers of sounds. In the foreground, "melodies" are dynamically generated by measuring the distances between the participants. In the background, ambient sounds are automatically generated using the distance data. When many people move in a 4-by-6 m space, the sound only changes based on the nearest relative distance. However, as the number of people increases, the sound changes become more complex. Sound complexity was used as part of the installation. Users recognized sound changes as they moved in real time in the space. The system, PAN - a real-time location system for multiple agents - is composed of a location system that estimates the location of the "listener" on the wall in an indoor environment, the positions of users with "senders," and a sound system that feeds back into the speakers. In the case that the user enters a zone of the location system, the user's "sender" transmits supersonic waves to the "listeners" on the wall, and the master server measures the position based on the distance estimation subroutine in the middleware layer. After the master server has calculated the position of the users in the location system zone, the results are sent using OSC protocols to the media application located on the application layer.) <http://web.sfc.keio.ac.jp/~yamauchi/sj/>

- 2001 \_\_ **Studies for Radio Transceiver: Study 1.0 (FM)**, Matthew Burtner (Writes Burtner, "Transmit a silent signal. Receive the signal and feed the line outputs of the receiver back into the transmitter. A loop is created in which the listener hears the compounding of the inherent noise generated in the process of transference. The growth of the systemic noise move from the periphery of the music, a byproduct of the media, to the central focus of the musical material. We hear the resonance of the FM band grow form noise, the intoning of the medium.")

- 2001 \_\_ **The Technophobe and the Madman** (Internet2 distributed musical performance collaborations between NYU and Rensselaer Polytechnic Institute. The stages at RPI in Troy, New York and NYU in New York City were connected with six channels of full quality video and twelve channels of CD-quality audio. This allowed performers on both stages to be seen and heard by the audiences at both sites. Each stage had three large video projection screens serving as backdrops, and presenting the performers at the far site as they interacted with the performers on stage. Nick Didkovsky, music & interactivity - Tyrone Henderson, writer & performer - Quimetta Perle, writer - Don Ritter, video imagery & configuration - Neil Rolnick, music & co-producer - Robert Rowe, music & co-producer - Valeria Vasilevski, director. February 20, 2001 marked another milestone in the use of advanced networking when artists at New York University in Manhattan and Rensselaer Polytechnic Institute (RPI) in Troy, New York performed on the same stage. The 60 minute presentation of *The Technophobe & The Madman* took advantage of OC-3 local loops and NYSERNet's OC-12 network to span the 160 mile distance between Troy and Manhattan. The event seamlessly linked actors and musicians at both universities into single musical presentation while audiences at both sites were able to see and hear the performance as a single show. The project was developed to demonstrate the possibilities of performance on Internet2 networks. Preparation for the event required the collaborative efforts of technical staff at both campuses along with assistance from NYSERNet to ensure this successful debut. The artists and directors also worked over a period of six months staging numerous rehearsals where the artists were in two places at once allowing the producers and collaborators to explore new and meaningful ways in which to uniquely use this new medium. This work was commissioned by Harvestworks with funds from the New York State Council on the Arts. [Internet2]) <http://www.academy.rpi.edu/projects/technophobe>

- 2001 \_\_ **TextFm**, Mongrel (TextFm is a piece of software that broadcasts text messages. Anyone with access to a mobile phone can send a message to a specified number. A computer receives the message and reads it out using a text-to-speech program. This speech is broadcast by a radio transmitter. It is a way of creating a simple, lightweight, open media system. TextFm was installed by groups in a number of cities over the end of 2001 and beginning of 2002. Each installation is a variant on the software. Languages other than English are being added. The program is also available for download and use for any other non-commercial purpose, pirate radio, community radio, or other localised broadcast system.) <http://www.scotoma.org/cgi-bin/textfm/textfm.pl?Req=ABOUT> <http://www.mongrel.org.uk/textfm>

- 2001 \_\_ **Thinking Sounds, What is the Sound of Naked Men?**, Miya Masaoka (Thinking Sounds is an interactive composition for pre-recorded brainwaves, live brainwaves of an audience member, computer and eight musicians. The SF Sound Ensemble premiered Thinking Sounds at Yerba Buena Gardens with additional performances at the ODC Theater in San Francisco. Versions of this piece have also been performed at "Beyond Music," an electronic music series at the Schindler House in Santa Monica, CA. Thinking Sounds, employs various musical and interpretive strategies to translate the data of brain wave activity into sound. These include: 1/ A volunteer from the audience wears the EEG brain helmet. The actual voltage output of the brain is made audible with

amplification. This electrical activity is then heard in real time by the audience in a pure unadulterated state, and also processed in a computer. 2/ A graphic representation of pre-recorded brainwaves is superimposed upon a musical grand staff to create the pitch relationships and generate a written score. The musicians then "perform" the brainwaves and the expressive, gestural relationships that the waves imply. 3/ The brain wave activity is interpreted via midi and mapped to a synthesizer where the waves are expressed in pitch, time and timbral relationships. The musicians then improvise with the midi output of the synthesizer. 4/ In the final section, players perform an orchestrated rendition of the differentiated data of beta, theta, alpha, delta and eye movement.) [http://www.miyamasaoka.com/interdisciplinary/brainwaves\\_plants/thinking\\_sounds.html](http://www.miyamasaoka.com/interdisciplinary/brainwaves_plants/thinking_sounds.html)

- **2001 \_\_ Tonos** - online musician's network. TC8 - Music Collaboration Tool ( "With the launch of our new platform, we are enabling hobbyists and career minded musicians to record their own creations or collaborate with other musicians around the world. (...) The Tonos TC8, along with the new services on the site underscore our commitment to connecting music makers from all walks of life with other music makers, major industry "Hitmakers" and to the tools they need to easily create music, showcase their talents, and further their careers." The Tonos TC8 features an 8-track digital recorder and mixer allowing musicians to record up to 8 separate tracks and insert additional effects such as reverb, compression, distortion and equalization. Musicians can use it to create original projects alone, or easily connect with other musicians to embark on projects together. After downloading the TC8, music makers are invited to enter the "Collaboratory," that serves as a one-of-a kind online music studio. Musicians can use the Collaboratory to start original projects they want others to collaborate on or join existing projects looking for their specific skills. Using the "Tonofinder," Tonos' searchable multimedia database of musicians and projects, anyone working in the Collaboratory can connect with the people they need to complete their music.) <http://www.tonos.com/>

- **2001 \_\_ Virgin Mobile Inc. Promotional Event** (05 September 2001: Leicester Square, London, England. Several hundred people gathered at a public square in an attempt to set a world record for the most phones ringing at the same time [Golan Levin].) [http://www.flong.com/texts/lists/mobile\\_phone/](http://www.flong.com/texts/lists/mobile_phone/)

- **2001 \_\_ Worldbeat/GlobeMusic**, Ars Electronica Linz (offline/online interaction with other musicians, WorldBeat: NetMusic.) <http://mtg.upf.edu/publications/LMJ13-abarbosa.pdf> <http://hci.rwth-aachen.de/materials/publications/muehlhaeuser2001a.pdf>

## 2002

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- **2002 \_\_ Internet** (Internet2 now has 200 university, 60 corporate, and 40 affiliate members (Zakon 2003).) — (The WWW gets consolidated. The number of servers world-wide drops from the all high of 38,807,788 in June 2002 to 35,543,105 in December 2002 (Zakon 2003).)

- **2002 \_\_ 2.4 Interference Interaction**, Michelle Teran (A wireless, networked play space is constructed from cameras, bikes and public monitors in stores, banks and cafes. The movement and flow of an urban environment is captured and transmitted by wireless cameras connected to Michelle Teran's bicycles. The interaction and interference of flow when travelling through the city is visualized and broadcasted from television sets at local businesses, blurring the boundaries between interior and exterior spaces. The cameras transmit wirelessly on the same frequency and interfere with each other. This collision of radio waves translates into distorted and volatile real-time editing of video and audio viewable on a monitor within range. Interaction is defined by interference. Either entering as a cyclist or non-cyclist, the public becomes engaged with a network where negotiations between people and hardware, cross signals culminates in a continuous spatial-temporal state of change.) <http://www.ubermatic.org/2.4/>

- **2002 \_\_ AGNULA**, IRCAM (The goal of the AGNULA project is to create an entirely Free Software GNU/Linux distribution for professional audio users. The AGNULA project's main feature was the development of two complete distributions (GNU/Linux operating system, applications, etc.) completely based on Free Software (GNU/GPL or similar) and dedicated to audio and multimedia. One distribution is Debian-based (DeMuDi) and the other is Red Hat-based (ReHMuDi). Both are available on the network for download and on CD.) <http://www.fsfeurope.org/projects/agnula/> <http://fr.wikipedia.org/wiki/Agnula>

- **2002 \_\_ Amsterdam RealTime**, Esther Polak, Waag Society (Every inhabitant of Amsterdam has an invisible map of the city in his head. The way he moves about the city and the choices made in this process are determined by this mental map. Amsterdam RealTime attempts to visualize these mental maps through examining the mobile behaviour of the city's users. During two months (3 Oct to 1 Dec 2002) all of Amsterdam's residents are invited to be equipped with a tracer-unit. This is a portable device developed by Waag Society which is equipped with GPS: Global Positioning System. Using satellite data the tracer calculates its geographical position.

These tracers' data are sent in realtime to a central point. By visualizing this data against a black background traces, lines, appear. From these lines a (partial) map of Amsterdam constructs itself. This map does not register streets or blocks of houses, but consists of the sheer movements of real people. When the different types of users draw their lines, it becomes clear to the viewer just how individual the map of Amsterdam can be. A cyclist will produce completely different favourite routes than someone driving a car. The means of transport, the location of home, work or other activities together with the mental map of the particular person determine the traces he leaves. This way an everchanging, very recent, and very subjective map of Amsterdam will come about.) <http://realtime.waag.org/>

- **2002 \_ Art's Birthday 2002** (24 hours of network radio art connecting The Western Front Grande Lux, CITR-FM 102 in Vancouver, Kunstradio ORF and .. devolve into II .. (streams from Australia, Taiwan, Canada, U.K., Austria, and Italy). CITR-FM presents 24 hours of non-stop live radio art. All three production studios will be taken over by local audio artists and DJs. The Western Front will present web-cast performances by Steve Heimbecker, Sutrisno Haratana and Heri Dono, followed by a lavish dinner with performative interruptions. Kunstradio ORF will present a web-cast and radio broadcast by Austrian artists satellite footprintshop.) <http://projects.front.bc.ca/2002/artsbirthday/> [http://kunstradio.at/SPECIAL/ARTSBDAY\\_02/index.html](http://kunstradio.at/SPECIAL/ARTSBDAY_02/index.html)

- **2002 \_\_ « Art Contextuel »** (Contextual Art), Paul Ardenne (Paul Ardenne, the art historian, invented the pleasing expression "contextual art" to define artistic projects which feed on the situations with which they are confronted. As well as writing, production and rehearsals, streetart more than any other discipline must come face to face with the town, and more specifically the public who are often directly involved in the work of art. Paul Ardenne approaches from a theoretical/critical point of view the latest contemporary art practices, within which the artist is converted into an implicated social actor and the work of art acquires a completely novel and critical content. and the existing ways of sensorial experimentation. "contextual art": "all forms of artistic expression which differ from those considered as traditional works of art, such as: participative art, subversive and activist art, art developed in urban public spaces or natural settings, participative expression in the media, economy and show-business." This movement has its roots in the 60's, with the 'Situationist International' and the 'Fluxus' movements. According to art historian Paul Ardenne, the most interesting aspects of contextual art are "those which introduce an element of indiscipline into the mechanisms of control". The prevailing idea was to distance themselves from academic institutions and official exhibitions. Their work became more and more personal and difficult to categorise. The Modern artists, from the 19th century onwards, demanded new institutions to show off their work. The first museums of modern art were founded by the artists themselves (Lodz, the MoMA in New York...). This quest for autonomy, successful in its own right, had its downside: Modern art became more isolated from the general public, became more and more obscure and distanced itself from popular culture. Between 1910 and 1920, and again in the 60s a number of progressive artists rebelled against this "return to museums" and sought to exhibit their work in the real world, "in situ". This marked the birth of contextual art in its most recent incarnation, subversive, politically engaged (Buren, the G.R.A.V, UNTEL, Group Material, Gran Fury etc) promoting one-off ephemeral creative events. The boundaries of contemporary creativity are continually being expanded in terms of genre, media, cultural references and relationship with the audience. This 'eclecticism' is however, nothing new. Its roots are to be found at the beginnings of modernism (Richard Wagner, Piscator in Berlin in the 20s, and Dadaism in Zurich between 1916 and 1919...). More particularly in terms of 'street' art, there is some ambiguity as to the physical location of the performance. With the advent of 'street' festivals, the urban setting becomes one enormous theatre complex, where a multitude of shows take place and what we call the 'street' becomes in reality an enlarged stage. What constitutes 'art' is the decision of the artist and not the institution, which has commissioned the work. A street happening takes on 'artistic value', when it includes a specific poetic element or even more so, when it perturbs the audience in some way. Intrinsically, anything, including Flash Mobs, can be considered to be 'art', no matter what form it takes. Obviously the term 'art' is extremely difficult to define in its scope and heterogeneity. In societies where everything is regulated and the consensus stifles creativity, the most interesting forms of 'art' are those, which introduce an element of indiscipline into the mechanisms of control. Poetry has to include a transformative element. If this is not the case, it will change in production. From this point of view, 'public' art and 'street' art is not necessarily poetic or creative. It can also be considered as entertainment. What we regard as 'public' spaces, are not always where we might imagine them to be. Today, it is no longer realistic to say that the 'street' is the most important element of our public spaces. Our great social debates, for example, no longer take place in the street but rather on TV, in cyberspace, by instant messaging or in Internet forums. The traditional Agora has changed its topos, both its physical and symbolic location, permanently. It is time we stopped using obsolete criteria when speaking of 'public' spaces: over the past few decades the spaces in which social fabric is consolidated have seen their geography irreversibly re-defined. The term 'public space' has become fictive and most of the time it serves simply as a pretext. One of the more interesting phenomena over the past two decades, in terms of individually and collectively reclaiming public spaces, has been the TAZ or temporary autonomous zone, functioning as an excellent laboratory for experimentation in creative social interaction and as Jacques Rancière notes, for developing "shared sensibilities". TAZ is a term originally coined by Hakim Bey, the New York counter culture guru of the electronic age, who is also an advocate of what he delicately describes as "poetic anarchy" – tagging, sampling, computer piracy and hacking: anything which destabilizes institutionalised aesthetics and systems, while creating new tensions and new dynamics in the concrete world, even if the methods used are illegal... The Techno travellers of the 90s, and

*rave culture of the 2000s are powerful examples of how TAZ can work and their social productivity... there is no question of waiting for a public space to be allocated, it is simply appropriated.)*

- **2002 \_\_ Atmospherics / Weather Works**, Andrea Polli (*Atmospherics/Weather Works is a performance, installation, and distributed software project for the sonification of storms (cyclones, for example) and other meteorological events generated directly from data produced by a highly detailed and physically accurate simulation of the weather. Two historic storms that devastated the New York/Long Island area were re-created first through data, then through sound. The resulting turbulent and evocative compositions allowed listeners to experience geographically scaled events on a human scale and gain a deeper understanding of some of the more unpredictable complex rhythms and melodies of nature. These two storms were selected for sonification because one is a strong midlatitude cyclone (Presidents Day Snowstorm) and the other is a strong Hurricane (Bob) that passed through the same coastal region. The sonifications of these two strong storms (that have a very different physical structure) yield insight into the nature of these two different types of storms.*) <http://www.andreapolli.com/studio/atmospherics/>

- **2002 \_\_ Auto Mobile**, the Center for Knowledge Societies, FutureSonic04 (*A 5 min film that tracks changes in the use of mobile phones by autorickshaw drivers within the urban culture of Bangalore. While this group has often been represented as a traffic menace, cheat, and environmental polluter, their increasing use of mobile telephony appears to be changing the ways in which they relate to - and serve - their urban clients.*)

- **2002 \_\_ ChuckK**, Strongly-timed, Concurrent, and On-the-fly Audio Programming Language, Ge Wang and Perry Cook (*ChuckK is a new (and developing) audio programming language for real-time synthesis, composition, performance, and now, analysis - fully supported on MacOS X, Windows, and Linux. ChuckK presents a new time-based, concurrent programming model that's highly precise and expressive (we call this strongly-timed), as well as dynamic control rates, and the ability to add and modify code on-the-fly. In addition, ChuckK supports MIDI, OSC, HID device, and multi-channel audio. It's fun and easy to learn, and offers composers, researchers, and performers a powerful programming tool for building and experimenting with complex audio synthesis/analysis programs, and real-time interactive control.*) <http://chuck.cs.princeton.edu>

- **2002 \_\_ com\_muni\_port**, neuroTransmitter (*com\_muni\_port is a portable radio broadcast unit created for short range pedestrian broadcasting. com\_muni\_port models itself after historical military, scientific, and media-related mobile communication devices. Yet, to distinguish it from its predecessors, com\_muni\_port activates the local, and functions as a tool for information dissemination and public participation. com\_muni\_port is a self-contained backpack transmitter unit used for broadcasting 'on the fly'. While itinerant, its transmission range is determined and limited by the plateaus and canyons of urban space - its dispatch is an invisible membrane of suspended audio whose radius moves with the user. com\_muni\_port consists of an FM transmitter, CD player, microphone, headphones and multi-channel mixer, all powered by a battery pack. Its portability renders its use within political rallies and marches, by mapping audio frequency within a city, and spontaneous interviewing and broadcasting. com\_muni\_port has myriad communicatory and interventionary functions, all in one unit.*) <http://www.neurotransmitter.fm/cmp.html>

- **2002 \_\_ Cosy Corner**, Anne Roquigny (*"Cosy Corner" is a series of network performances with artists, performing simultaneously together from different cities.*) <http://www.cosycorner.org>

- **2002 \_\_ ...Devolve into II ...**, ORF Kunstradio Vienna, Western Front Vancouver, Peter Courtemanche & Lori Weidenhammer (Vancouver), Roberto Paci Dalò (Rimini), Kim Dawn and Scott Russell (Vancouver), Maex Decker and Ushi Reiter (Linz), Andrew Garton (Melbourne), Ken Gregory (Winnipeg), Emilia Telese and Tim Mark Didymus (Brighton), Wolfgang Temmel (Wies, Steiermark), Fujui Wang (Taipei) (*international network streaming project : web-cams, audio streams, radio broadcasts, publications, objects, mail-art, installation, and performance. The work is interdisciplinary, informed by many regional and global artistic traditions and practices that use sound, video, sculpture, movement, the page, physical interventions, and social gatherings*) <http://projects.front.bc.ca/2002/devolve2/online/>

- **2002 \_\_ Distance Made Good**, Jen Southern (*"Distance made good" is a navigation term meaning distance from your last position to your present position. In making the preliminary GPS line trajectories for "Distance Made Good", we walked along a planned route, on the same day, in two separate cities sharing the same name. The way points along each route were chosen in advance, according to how we thought each city was represented through tourist landmarks. The mirrored way-pointed sites served to "twin" the two separate locations (both have a River Avon (including resident swans), a Shakespeare theatre; a public gallery (coincidentally sharing the same name); a train station and a foundational museum). The practice of naming a place after a "home land" town, as Stratford Ontario is named after Stratford-upon-Avon, suggests that the new place will in some way reflect, or even be like the home, original town. But here, it becomes confusing which place "in essence" is the original. This confusion is particularly pronounced because Stratford-upon-Avon relies economically on its 'birthplace' status through the re-creation and simulation of specific sites. Tourism in Stratford Canada is based in a much more straightforward way, on Shakespeare's plays, and any simulation*

there, in terms of tourist value happens principally through the act of naming. The waypoints we used in our route for the installation and in its research, represent loose concepts of what these two cities are for the tourist, and reveal a set of symbolic values shared by both locations. Combining the paths taken in the two cities together, the representation in a gallery creates a third space as an "interstitial hybrid" and uses metaphors that encompass the potential of "twinning," and the differentiation of the "tourist" spectacles.) <http://www.theportable.tv/dmg/>

- 2002 \_\_ **DM-nomusic**, laboiteblanche (Audio 3D environnement mixed on web) <http://grandhoteldeparis.com/unreal/>

- 2003 \_\_ **The Earth's Original 4.5 Billion Year Old Electronic Music Composition** (A Work in Progress), Robin McGinley (If human beings had radio antennae instead of ears, they would perceive an entirely different sonic universe to that which we presently inhabit. Radio signals, created by the planet itself, surround us at all times, wherever we are. At parts of the frequency range far below that of most man-made radio transmissions, these phenomena can be thought of as a level of sonic reality beyond (although surrounding) our daily sound experience. For although radio waves are generated by vibrations in electro-magnetic materials rather than air particles (as is the case with sound waves) we nonetheless tend to think of radio as a purely sonic medium. These naturally occurring emissions, although undetectable to the naked ear, are the sonic consequences of a number of natural atmospheric activities, and indeed, with further research, scientists believe that they have potentially much to tell us about our planet, the structure of its atmosphere, and its circadian operations. The interactive sound installation entitled *The Earth's Original 4 1/2 Billion Year Old Electronic Music Composition (A Work in Progress)* explores an artistic approach to these natural phenomena. At any one moment there are several thousand electrical storms in progress around the planet. The installation takes as its starting point, and explores, the interception of impulsive electro-magnetic signals generated by lightning. A considerable proportion of radio atmospheric is due to the direct and indirect effects of electrical storms on the upper layers of the atmosphere. The installation allows us the opportunity to hear the Earth's own natural electro-acoustic composition, which is as old as the planet itself, and is continuously unfolding around us. At any one moment there are several electrical storms in progress around the planet. This installation takes, as it's starting point, and explores, the interception of impulsive electro-magnetic signals generated by lightning. A considerable proportion of radio atmospheric is due to the direct and indirect effects of electrical storms on the upper layers of the atmosphere. Through a network of inputs and outputs, utilising both antique valve-based short wave radio equipment, and a multi-triggered gallery environment, the installation allows us the opportunity to hear the Earth's own natural electro-acoustic composition, which is as old as the planet itself, and is continuously unfolding around us. The input channels of the system, which are derived from a combination of real-time reception of short-wave atmospheric emissions and digital recordings of various types of Sferics (short for VLF (Very Low Frequency) atmospheric), and natural thunder, are fed via a network of triggers into the audio system. Some of the digital recordings have been treated with DSP effects to further transform the natural material. The triggers, which are located within the steel space frame, operate each input channel, enabling the channel for set periods of time before fading out. The installation thus creates a time-sampling matrix giving a large number of temporal variations, and like the natural composition itself, is unlikely ever to repeat itself. This work also allows the audience an unusual proxy control over the manifestation of an elemental force of nature.) <http://www.interactive-agents.com/paper1.html>

- 2002 \_\_ **Remote Elevator Music**, Julian Rohrer (An elevator is a tool that creates a characteristic situation for its users. The distance between the persons is less than usual and it is uncertain where and when a person will enter or leave this space. This allows the elevator to provide defined circumstances for artistic intervention. In the main elevator of the Hochschule für bildende Kunst Hamburg two sound installations took place for the year exhibitions 2000 and 200. "The King Has Just Left The Building" : The disused paternoster was restored by indirect lighting and some cleaning of its beautiful woodworks. Two loudspeakers were installed above and below the rectangular hole that allowed the public to look into the chamber from just slightly above floor level. Setting the general atmosphere, the faint sound of elvis midi files is to be heard and as one knocks on the wall one sends a trigger signal to a room where different sound sources are sent back to the elevator. The current TV-program or synthetic virtual vehicles, or the echo of the knocking drive past from top to bottom in considerable speed. The title of this installation was inspired by a remark by Frank Hesse that the announcer would say "The King Has Just Left The Building" in order to render the crowds quiet after Elvis Presley's concerts. "Remote Elevator Music" this year the paternoster was displaced by a sleek modern beautiful steel elevator. Together with Tilo Kremer a small amplifier was installed underneath the lighting system and connected an antenna with it that allowed to send sound into the elevator in any position. A software was used to generate algorithmic soft jazz music whose parameters could be accessed over the internet, so that independant of place one could influence the atmosphere in the elevator.) <http://swiki.hfbk-hamburg.de:8888/MusicTechnology/198>

- 2002 \_\_ « **Esthétique Relationnelle** » (Relational Aesthetics), Nicolas Bourriaud (Aesthetic theory consisting in judging artworks on the basis of the inter-human relations which they represent, produce or prompt. Where does our current obsession for interactivity stem from? After the consumer society and the communication era, does art still contribute to the emergence of a rational society? Nicolas Bourriaud attempts to renew our approach towards contemporary art by getting as close as possible to the artists' works, and by revealing the principles that structure their thoughts: an aesthetic of the inter-human, of the encounter; of

proximity, of resisting social formatting. The aim of his essay is to produce the tools to enable us to understand the evolution of today's art. We meet Felix Gonzalez-Torres, Louis Althusser, Rirkrit Tiravanija or Félix Guattari, along with most of today's practising creative personalities. Relational Art : A set of artistic practices which take as their theoretical and practical point of departure the whole of human relations and their social context, rather than an independent and private space. Co-existence criterion : All works of art produce a model of sociability, which transposes reality or might be conveyed in it. So there is a question we are entitled to ask in front of any aesthetic production: 'Does this work permit me to enter into dialogue [ Could I exist, and how, in the space it defines?]' A form is more or less democratic. May I simply remind you, for the record, that the forms produced by the art of totalitarian regimes are preemptory and closed in on themselves (particularly through their stress on symmetry). Otherwise put, they do not give the viewer a chance to complement them.) <http://www.gairspace.org.uk/html/bourr.htm>

- **2002 \_\_ Eternal Network Music**, Chris Brown, John Bischoff (An internet network music piece/site. The link connects you to a site where you can login and play with other quartets of players on the net. The program uses the Transjam and JSyn software for music networking and synthesis) <http://www.cbmuse.com/> <http://www.transjam.com/eternal/>

- **2002 \_\_ « Free Culture »**, Lawrence Lessig (Lawrence Lessig could be called a cultural environmentalist. One of America's most original and influential public intellectuals, his focus is the social dimension of creativity: how creative work builds on the past and how society encourages or inhibits that building with laws and technologies. In his two previous books, CODE and THE FUTURE OF IDEAS, Lessig concentrated on the destruction of much of the original promise of the Internet. Now, in FREE CULTURE, he widens his focus to consider the diminishment of the larger public domain of ideas. In this powerful wake-up call he shows how short-sighted interests blind to the long-term damage they're inflicting are poisoning the ecosystem that fosters innovation. All creative works—books, movies, records, software, and so on—are a compromise between what can be imagined and what is possible—technologically and legally. For more than two hundred years, laws in America have sought a balance between rewarding creativity and allowing the borrowing from which new creativity springs. The original term of copyright set by the First Congress in 1790 was 14 years, renewable once. Now it is closer to two hundred. Thomas Jefferson considered protecting the public against overly long monopolies on creative works an essential government role. What did he know that we've forgotten? Lawrence Lessig shows us that while new technologies always lead to new laws, never before have the big cultural monopolists used the fear created by new technologies, specifically the Internet, to shrink the public domain of ideas, even as the same corporations use the same technologies to control more and more what we can and can't do with culture. As more and more culture becomes digitized, more and more becomes controllable, even as laws are being toughened at the behest of the big media groups. What's at stake is our freedom—freedom to create, freedom to build, and ultimately, freedom to imagine.) <http://www.lessig.org> <http://randomfoo.net/oscon/2002/lessig/>

- **2002 \_\_ GOO**, Apo33 (GOO means "Grand Orchestre d'Ordinateurs" (or Grand Computer Orchestra) and a lengthy essay on orchestras and computers. GOO is the performance creature of APO33, a French artists collective that may feature Sophie Gosselin, Luc Kerléo, Jean-François Rolez, Jean-Philippe Roux, Julien Ottavi and Emmanuel Leduc (the last two being also members of labelmate Formanex), plus guests. The group works as a collective unit exchanging sound files over the Internet in an attempt to reach a unified (group) sound. What it boils down to is a musical approach similar to electro-acoustic improv (space over density, active listening over volume), but solely involving computers and relying on the sharing of source material, in addition to the process of action/interaction. The result is a peculiar sound form, specific to the digital device and to the net, playing on the variation of repetitions in various parts of the collective space. The Goo is more than an orchestra because its finality is not pre-determined. It is an open laboratory that evolves with each event ; each event is a new situation where new forms are experimented with (like when some external, far away artists produce sounds that are collected and transformed by the GOO members). The GOO experiments at the two ends of sound production : net-working and sound broadcasting. This poses two questions : how can we create a space that would be open, accessible to the public who do not participate in sound production on the net ? How can we recover and reshape, with the broadcasting device, the spaces which we choose to work in ? These questions have a common answer : the Goo is a multiheaded instrument and a multiheaded broadcasting device. The diversity of the broadcasting systems (i.e. of the listening options) implies a diversity of spaces of intervention and of modes of sound formation in space : sound reveals and reshapes the space.) [http://www.apo33.org/cia/doku.php?id=read\\_txt\\_on\\_the\\_goo\\_in\\_english](http://www.apo33.org/cia/doku.php?id=read_txt_on_the_goo_in_english)

- **2002 \_\_ Instant Places**, Maciej Wisniewski (Instant Places is a software fiction. It creates a network formed ad hoc to connect dispersed data places. These data places can stretch over multiple computers and multiple networks. They are not bound by geography, time and space. The installation at the ZKM consisted of two computers connected to the network. The installation can be easily extended by installing the Instant Places-software on any computer connected to the internet. Instant Places is inhabited by predators (hawks) and prey (mice) which communicate with one another over the internet. Their sensory exploitations such as recognition, motion detection, resolving distance and shape information are done by way of real-time messaging. Predators and their prey can move freely between different data places (different computers connected to the network) in the ever unfolding story of their coexistence. At times, when things appear rather peaceful suddenly something upsets the balance and they change their behaviour

either in surveying, attacking or fleeing.) [http://www.nticc.or.jp/Archive/2003/Future\\_Cinema/Works/instantplaces.html](http://www.nticc.or.jp/Archive/2003/Future_Cinema/Works/instantplaces.html) [http://www.zkm.de/futurecinema/wisniewski\\_werk\\_e.html](http://www.zkm.de/futurecinema/wisniewski_werk_e.html)

- **2002 \_\_ Interplay #1 - Collaborations in 4 Cities** (AGF (orthlorng musork) + Kaffe Matthews, Frank Bretschneider (raster noton) + Tonne (Bip\_Hop), Barbara Morgenstern (monika enterprise) + Ipatche61 (daisyworld/Japan), Robert Lippok (to rococo rot / tarwater) + BitTonic (sprawl), Marc Weiser (Rechenzentrum) + Si-cut.db (sprawl), Jan Jelinek (farben / gramm) + BEFLIX (visual autopsies) <http://www.sprawl.org.uk/INTERframe.html>

- **2002 \_\_ Invisible Cities**, fallt.com (*Intimate series of portraits of the world's cities painted with sound : Through the interface of a gallery wall, each city, represented by an audio work of five minutes duration, is accessible through headphones*) <http://www.fallt.com/invisiblecities>

- **2002 \_\_ Jam-O-Drum**, Tina Blaine (*A colorful multiplayer game that encourages team building and collaboration. Players work together to collect all of the game pieces in the middle of the circular maze. A popular installation for international visitors primarily due to the social engagement afforded by the collaborative game experience*) <http://www.jamodrum.net/>

- **2002 \_\_ J.S.B. is walking in the stone garden**, Shinji Kanki (*or unsuccessful arrival and loss of QuickTime streaming packets. The custom made QuickTime player mentioned above for the net audience would receive the live stream of Prelude XXIV, h-moll and Fuga XXIV from J.S.Bach's well tempered clavier book I. This typical linear music composition, a tradition of entire western music, might change it's musicality to something else, that is caused by the network noise, digital error, the reality of Internet presence.*) <http://silakka.fi/> [http://silakka.fi/net\\_composition/doc/hist/report\\_to\\_ZKM\\_2001.doc](http://silakka.fi/net_composition/doc/hist/report_to_ZKM_2001.doc)

- **2002 \_\_ Leinster**, Yannick Dauby, Julien Ottavi (*Nous avons pu mettre en place un projet qui est une sorte de mise à jour (au sens informatique du terme) de ce type d'activité. Au cours du festival ACCES-S en 2002, le Collège Invisible, collectif dont nous faisons alors partie, avait été invité à participer avec des projets basés sur le principe des webcams. Ces caméras légères et peu coûteuses, sont d'ordinaire braquées sur les internautes soucieux de communiquer leur image à leurs correspondants sur les messageries instantanées. Mais certaines proposent des vues panoramiques d'autoroute, des paysages maritimes ou urbains, voire une vue sur le plateau de Calern. Nous avons repris ce principe, tout comme l'avaient fait Toy Bizarre et John Hudak auparavant ou en même temps, pour véhiculer les sons d'un environnement à travers le réseau. Si le Webcam de Toy Bizarre était pointé sur la fenêtre de son domicile, le nôtre était installé dans un bar-librairie de la ville de Pau. Le système était constitué de divers capteurs disposés dans différents points du lieu (au centre de la salle principale, au comptoir, près de la sortie, et à la fenêtre du premier étage). L'ensemble était relié à un "sélecteur de sons", à savoir un petit dispositif informatique, programmé pour choisir les différentes sources en fonction du moment de la journée (le pic d'activités sonores n'avait pas lieu le matin, pour des raisons que l'on comprend) et en fonction du jour de la semaine (le lundi, seule la rue était animée). Sur des principes d'alternance, le lieu était mis sur écoute, et diffusé en public via le réseau. Nous avons mené une autre expérience de ce type, dans le cadre du programme de recherche AGGLO. A la demande du labo AudioLib (Jérôme Joy, Silvia Argüello), invité pour les événements du Media Space Invaders à Barcelone (2003), nous avons contacté différents volontaires pour mettre en place des flux audio, provenant de la captation de leurs lieux de vie et de travail (par exemple : un couloir dans une école des beaux-arts, une rue passante dans une ville de province). L'essentiel de ces flux était accessible à travers la publication d'une liste d'url (Uniform Resource Locator - méthode d'accès à un document distant), clés d'accès à l'écoute de quelques lieux. Il n'est pas possible d'évaluer comment s'est organisée l'écoute autour de ces flux. Peut-être a-t-elle été limitée en nombre du fait de la faible bande-passante de laquelle disposait les internautes. Mais la principale critique que nous formulons à l'encontre de cette initiative repose sur l'absence d'une interface d'accès. En effet, ces flux, mis à disposition, ne présentaient pas d'intérêt autre que l'écoute de lieux d'une apparente banalité. Ils prenaient alors valeur d'icône, de représentant d'un certain objet d'écoute. Donc d'une part, les points d'écoute n'étaient peut-être pas judicieusement choisis, la compression imposée par les technologies de streaming réduisant du coup l'intérêt de l'écoute, et d'autre part ces flux ne s'articulaient pas entre eux. Une simple interface visuelle, telle une cartographie physique ou imaginaire, aurait pu recréer un espace fictionnel, une navigation intuitive entre ces flux. Une autre possibilité aurait été la programmation d'une interface logicielle d'écoute de ces flux. Un algorithme aurait pu prévoir un comportement automatique, qui aurait passé de l'un à l'autre de ces flux, de manière brutale, une sorte de "zapping", ou sous forme de transitions fluides, un mixage progressif, sorte de fondu-enchaîné, de ces paysages sonores. La mise en place de ce type de situations d'écoute nous semble tout à fait approprié par rapport au technologies de streaming : un ordinateur doté d'une carte son et une connexion internet permettent une diffusion sur des distances considérables. La transmission en direct d'un paysage sonore permet la possibilité d'un point d'écoute délocalisé et pourtant partagé. [Yannick Dauby, "Partages Sonores Partagés"]*)

- **2002 \_\_ Listen!, Sound Bum**, Earth Lounge, National Museum of Emerging Science and Innovation, Odaiba, Tokyo 2002, Yoshihiro Kawasaki, Haruo Okada, Yoshiaki Miyata, Yoshiaki Nishimura (« A sound exhibit built with the Sound Bum Project, creating a garden-like space resonating with sounds from 24 locations around the world under the big globe at the National

Museum of Emerging Science and Innovation ») <http://www.livingworld.net/works/listen/> <http://soundbum.org/>

- **2002 \_\_ Musical/Devices**, Jonah Brucker-Cohen (*"Musical/Devices allows you to collaborate in a musical composition with other people using any telephone. The project allows for multiple users to participate in one experience through a mobile device. Users call up and connect to the program and can select a high or low pitch note. Once they choose a tone, the tone is released into the main screen and when the bouncing ball collides with it, it produces the appropriate high or low pitch sound. The system uses VoiceXML (a subset of XML) through TellMe and speech recognition to decipher user input in the form of voice or DTMF tones. Once the user connects, they are prompted to say "high" to generate a high pitch sound or to say "low" to generate a low pitch sound. Once the VXML gets an answer it recognizes it writes to a CGI script and relays that message to the movie."*) <http://www.mee.tcd.ie/~bruckerj/projects/musicaldevices.html>

- **2002 \_ Multiplace Festival**, Slavo Krekovič, Bratislava (Multiplace is network-in-movement of people and organisations interested in interaction between media, technologies, art, culture and society. Network activities culminate every year into the festival, that is happening parallelly at several locations in the world. Its program is open to workshops, installations, discussions, concerts, performances, exhibitions, presentations, screenings and especially new forms of creativity. Original focus on the new media culture has been evolving since 2002 and besides the technological aspect of digital media in art, the focus shifted also to questions related to its aesthetical, social, cultural, legal and political issues. The aim of the festival-network Multiplace is to create the fertile ground for media art, to support the creativity in an open and collaborative environment and to encourage critical reflection on the life in the culture shaped by technologies. Multiplace emphasizes the experimentation with the possibilities of collaboration and networking among particular nodes in the network, but also with new ways of audience participation and involvement.) <http://multiplace.sk>

- **2002 \_ New Journey For Four**, Scot Gresham-Lancaster (*"New Journey for Four," at CSUH used a live audio and video connection with the iEAR Studios at Rensselaer Polytechnic Institute in Troy, New York. Performing in this piece were: Pauline Oliveros (Accordion), June Watanabe (Dancer), Jay Rizzetto (Trumpet), and Scot Gresham-Lancaster (electronics).*) <http://www.o-art.org/Scot/Chronology.html>

- **2002 \_\_ Octophonic system, Michael's Youth, Donnerstag aus Licht**, Karlheinz Stockhausen (When Stockhausen was in Berlin on March 9th and 10th 2002 to attend the première of the new staging of MICHAEL'S YOUTH, he briefly met with Prof. Bornemann and together they tried to find a solution for the loudspeaker placement in the Volksbuehne for the concerts this fall. Although Bornemann – as a result of his experience planning the spherical auditorium with Stockhausen – included numerous hanging points for loudspeakers in the auditoriums of both the Volksbuehne and the Deutsche Oper (although they are unfortunately seldom used) the Volksbuehne has a balcony, which means that the rear loudspeakers have to be doubled for the upper and lower levels, and the octophonic (cubical) set-up required for the ORCHESTRA FINALISTS is especially problematic. Bornemann suggested placing the loudspeakers beneath the floor of the Volksbuehne, but this is however not really comparable in efficiency, because there is not enough space surrounding the loudspeakers and thus their projection would be inhibited. In MONDAY from LIGHT Stockhausen placed "at least" 16 small loudspeakers underneath some of the seats in the stalls to make the sound scenes especially present, but the signal was mono and served only to softly support the eight-track signals coming from the larger speakers in the hall. Nevertheless, Prof. Bornemann did show Stockhausen's technician where he would allow additional hanging point plugs to be drilled below the balcony (for the loudspeaker doubling). Later, André Hebbelinck, who is responsible for the organisation of the concerts in the fall (Berlin Festival) informed me that this was a minor miracle because the entire building is classified as a historical monument and therefore Prof. Bornemann usually does not allow it to be altered in any way. This discussion took place on location just before the première of the new staging of MICHAEL'S JUGEND began. After they had solved (almost) all of the problems for the loudspeaker set-up for the fall concerts, Prof. Bornemann asked Stockhausen about the measurements of the mixing console used in Osaka and, for the Paris model, proposed lowering the grid for the audience by 5 metres. Stockhausen said this was not a good idea because that would mean that the audience would be too close to the lowest ring of loudspeakers and to the sub-woofers, and said that the model should correspond exactly to the Osaka auditorium in which the audience was seated just below the equator, though even that did not exactly correspond to Stockhausen's original wish that the audience be seated exactly at the equator of the spherical auditorium. Who knows – once the model is built, maybe someone will have the bright idea to build the auditorium again. When the EXPO 70 was over, Bornemann had proposed to Berlin that they bring it back to Berlin and Stockhausen had proposed to Cologne that they bring it back to Cologne, but no one was willing to pay the 200,000 DM it would have costed at the time. Of course, the reason for the negative decision were the long-term maintenance costs and not the purchase price or even the transportation costs. But when one considers the construction and maintenance costs of the conventional concert halls being built these days, and that most of them (like the Volksbuehne) are completely inappropriate for concerts of electro-acoustical music or for works of new music in which the audience and musicians are not seated in the conventional way, then the short-sightedness of smashing the spherical Osaka auditorium (including loudspeakers, mixing console and everything else it housed) soon after EXPO 70 was over – Stockhausen saw

it happen – , probably did not save much money in the long run.) [http://www.stockhausen.org/suzee\\_4\\_02.html](http://www.stockhausen.org/suzee_4_02.html) <http://www.stockhausen.org/octo.html>

- **2002 \_\_ PeerCast** (PeerCast is an open source streaming media multicast tool. PeerCast uses peer to peer technology to minimize the necessary upload bandwidth for the original multicaster. Peercast can be used to multicast streaming audio (Ogg Vorbis, MP3, WMA) and/or video (Ogg Theora, Nullsoft Streaming Video, or WMV), or any other stream of data, over the internet. Peercast uses a distributed bandwidth technique to lighten the load of the broadcaster's upstream bandwidth where each listener/viewer will relay the stream they download to one or more additional listeners. Users may choose how many relays to allow, and if a listener sets their relays to '0', then they will essentially not contribute back to the stream at all. The benefits of using PeerCast is that it allows any multcasters, particularly small or independent ones, to distribute their streams without need for much bandwidth, saving them costs. It also allows, theoretically, an infinite number of listeners as long as there are enough relays. Similar projects : IceShare, FreeCast, MediaBlog.) <http://www.peercast.org>

- **2002 \_\_ Pegasus/Improvisession II**, Yoichi Nagashima (SUAC/ASL) (PEGASUS project : Performing Environment of Granulation, Automata, Succession, and Unified-Synchronism. Performing/composing system for improvisational sessions with networks and GDS – Global Delayed Session - music) <http://nagasm.suac.net/ASL/iwec2002/>

- **2002 \_\_ Piano-e-Competition** (Winners of the first International Piano-e-Competition, the first such event to use a remote judge, Yefim Bronfman -- who heard a final round of the competition from a studio in Japan on a Yamaha Disklavier Pro concert grand piano -- were announced on June 16. First prize, which includes a \$25,000 award, was given to American pianist Mei-Ting Sun, 21. Victoria Korchiinskaya-Kogan, 24, from Canada, took second place. The performances were recorded on the Disklavier, sent over the Internet to Japan, downloaded onto another Disklavier and reproduced for M. Bronfman, who didn't have to take time off his busy schedule to travel to Minneapolis !)

- **2002 \_\_ picNIC**, Festival Résonances Nantes, Jérôme Joy (Formanex : Julien Ottavi, Emmanuel Leduc, Christophe Havard, Anthony Taillard) (« picNIC » is an instrument for a quartet (commissioned by the improvisation electronic quartet Formanex in Nantes), acting on the sound selections and diffusion through a programmed system with a lot of features such as behaviors and inputs analysis and following, an internal memory, the surimposition of different layers and speeds, the controls of the sound spatialization, in order to obtain a composition of listening. The first intention of this project were the inversion of the common situation composer -> players -> audience, by this new one : players -> composer -> audience. The composer thus becomes an "operator" among the others, last relay of transmission and relation to the public, whereas its traditional place was until now rather upstream of the representation (concert). PicNIC is a networked blackbox like a fifth member of the band, with some "cybernetics" behaviors. It's got inputs and outputs. The Formanex players usually use electronic and computer instruments in an improvisational manner. By interrupting their outputs, that thus became inputs of the picNIC box and fed this box which plays with the ensemble and selects into their plays, More than an effect pedal, it was a 5th player and at the same time an intelligent mixtable, sound organization system and spatialization instrument. It decided the beginning and the end of the concert. For instance, during the premiere, the public was in the concert hall (specially prepared with tables, seats, food and drinks), the players began to play, but all was silent. After five or six minutes of silence, even if the public saw the players really playing, the picNIC box decided to begin the performance and the music began to spread all the concert space. The concert lasted more than two hours, and after the players had left the concert place, the public was able to continue to listen to the box, that goes on to play with its own memory, and articulations of its choice decisions. In fact, during a performance, the box continuously compares data at its inputs (number strings, inputs' analyzes, ...), and its proper memory which stores all the data from the concert and from former concerts. PicNIC must be considered as an attempt of cybernetic programming in music : a program plays and composes with inputs feed by musicians, based on continuous analysis of the sound inputs according to programmed behaviors. PicNIC system is very complex and owns a lot of layers of analysis and of articulations of analysis in order to make decisions. The program was realized with Max/MSP - we preview a next version in Pd -, with an internal memory for analysis comparisons with former performances, and with the feature to create live its own patches - on-the-fly - in order to create new 'behaviours' and musical decisions.) <http://jeromejoy.org/> <http://picnic.tk>

- **2002 \_\_ Planet CCRMA at Home** (is a collection of packages that you can add to a computer running RedHat 9 or Fedora Core 1,2 or 3 to transform it into an audio workstation with a low latency kernel, current ALSA audio drivers and a nice set of music, midi, audio and video applications. (CCRMA is pronounced ``karma'') <http://ccrma.stanford.edu/planetccrma/software/>

- **2002 \_\_ Prométhée Numérique / Frankenstein's Netz**, Atau Tanaka (Hörspiel combining web-based participation and live radio broadcast, vehicled by a machine performer. Prométhée Numérique is a musical composition for network and radio infrastructures. The piece explores the propos of the internet as a shared environment and participatory space. Fundamental network principles such as information exchange become the root of musical process. Prométhée Numérique is a participatory acoustic media art work for broadcast. Sounds submitted by internet- and mobilephone-users form generative materials of anonymous origin. Media

streamed into the performance from scheduled artists in different locations contribute to the codes and structures of the entity. This participatory internet activity creates an living data-organism that constitutes the continuing evolving component of the project) [http://nujus.net/~locusonus/dropbox/coordination/txts\\_docs/atau\\_tanaka\\_txt/](http://nujus.net/~locusonus/dropbox/coordination/txts_docs/atau_tanaka_txt/) [http://www.swr.de/swr2/audiodhyperspace/engl\\_version/the\\_beast/index.html](http://www.swr.de/swr2/audiodhyperspace/engl_version/the_beast/index.html)

- 2002 \_\_ **Public Radio**, neuroTransmitter (The Newspaper Dispenser offers up text and image for public consumption. When transformed into a radio tuner, the dispenser extends a different form of dispersal – a sound-byte or series of sounds to be layered atop those of the urban landscape. THE RADIO maps, conducts, and transmits aural space. Sound forms, like objects, transform and travel with the individual body. PUBLIC\_RADIO connects the newspaper dispenser with the airwaves altering public expectation and engagement with the dispensing object. From July 20-21, 2002 as part of the Dispensing with Formalities series, a live radio transmission was performed and broadcasted in the vicinity of public\_radio.) <http://www.neurotransmitter.fm/public.html>

- 2002 \_\_ **Radiotopia** - Kunstradio: The Long Night of Radio Art, Anna Friz (CAN), Ashwell Adriaan (ZA), Honor Harger/Adam Hyde (radioqualia) (NZ), Thomas Mulcaire (ZA), Hans Groiss (A), Markus Hammer (A), Jeanette Pacher (A), Tetsuo Kogawa (JP), etc. (networked collaboration of international artists on site in Linz and at other locations around the globe. Acting as one of the live nodes in a bigger network, the LONG NIGHT will be accessible on FM, Shortwave, AM as well as on line.) <http://www.kunstradio.at/RADIOTOPIA/> <http://www.translocal.jp/streaming/radiotopia.html>

- 2002 \_\_ **Satellite Cabaret Grenoble / Salvador de Bahia**, Luc Martinez, Festival 38èmes Rugissants (Au cours de ce " Satellite Cabaret ", le Théâtre de l'Alliance Française et le Cabaret Matisss' de l'Ancien Musée de Grenoble seront reliés par une régie son et vidéo et recevront en temps réel par liaisons haut-débit, les images et les sons de chacune des scènes. Les artistes et le public des deux pays seront connectés en temps réel, pour une même soirée musicale. Le programme, conçu en commun par les partenaires, alternera improvisations, compositions, performances de musiciens, danseurs, artistes de chaque pays, représentatifs des tendances actuelles de la création musicale. Mais surtout, la liaison entre la France et le Brésil rendra possible des créations et performances communes et simultanées " en direct et à distance " d'artistes présents à Grenoble et à Salvador de Bahia : Neela Bhagwat, Aldo Brizzi, Galliano, Luc Martinez, Carlo Rizzo, DJ Rom, etc. (Grenoble), Lampironicos, Marlui Miranda, Virginia Rodriguez, Smetack, Marco Suzano, etc. (Bahia)) <http://www.38rugissants.com/anglais/archives/2002/nuit.html>

- 2002 \_\_ **SIM-phone-ya (New Ring Cycle)**, Simon Turner, Marcus Moore (Owners of 30 phones, onstage, triggered ringtones from their phones according to a pre-composed composition. "A composer is planning to première an interactive symphony written for the ring tones of 30 mobile phones at a summer music festival. Composer Simon Turner and writer Marcus Moore are due to give the piece, entitled New Ring Cycle, its world première at the Cheltenham Music Festival in July. The pair plan to invite 30 phone owners to play the ring tones in the piece, which has yet to be written. The 30 participants will be known collectively as the Cheltenham SIM-phone-ya. Turner is planning a work of three movements, the first exploring the history of the mobile phone and the second featuring audience participation. The third is described by Turner and Moore as "a celebratory finale". "These mobile phones are like little Bontempi organs, and we thought we could use them together, just like an orchestra." The BBC Symphony Orchestra is scheduled to perform, with chief conductor Leonard Slatkin and soloist Melvyn Tan, at the festival) <http://news.bbc.co.uk/2/hi/entertainment/1943823.stm>

- 2002 \_\_ **Sleep-Less-Net**, Anne Roquigny ("sleep-less-Net" during 24h not stop, artists installed in different hotel rooms of the Tremoil Hotel were guiding the audience through online creations.)

- 2002 \_\_ **Sound Travels - Global Internet Exchange** (Vancouver, New York, San Diego, Toulouse, Melbourne, Vienna), ORF Kunstradio Vienna, Mia Zabelka (webcast project with instrumentalists : Paul Plimley, Mei Han, Mia Zabelka, Ellory Eskelin, Anthony Pateras, Jason Robinson, Le Quan Ninh, Akikazu Nakamura. Vancouver pianist Paul Plimley and zheng virtuoso Mei Han join improvising musicians in Melbourne, Tokyo, Vienna, New York, Toulouse and San Diego via the internet to explore how music can break the sound barrier. Set against the planetarium's backdrop of stars, the players will connect through live audio streams that mix music and metaphor.) <http://www.kunstradio.at/SPECIAL/LIVE/TRAVELS/>

- 2002 \_\_ « **Smart Mobs - The Next Social Revolution** », Howard Rheingold (Smart mobs emerge when communication and computing technologies amplify human talents for cooperation. The impacts of smart mob technology already appear to be both beneficial and destructive, used by some of its earliest adopters to support democracy and by others to coordinate terrorist attacks. The technologies that are beginning to make smart mobs possible are mobile communication devices and pervasive computing - inexpensive microprocessors embedded in everyday objects and environments. Already, governments have fallen, youth subcultures have blossomed from Asia to Scandinavia, new industries have been born and older industries have launched furious counterattacks. Street demonstrators in the 1999 anti-WTO protests used dynamically updated websites, cell-phones, and "swarming" tactics in the "battle of Seattle." A million Filipinos toppled President Estrada through public demonstrations organized through salvos of text

messages. The pieces of the puzzle are all around us now, but haven't joined together yet. The radio chips designed to replace barcodes on manufactured objects are part of it. Wireless Internet nodes in cafes, hotels, and neighborhoods are part of it. Millions of people who lend their computers to the search for extraterrestrial intelligence are part of it. The way buyers and sellers rate each other on Internet auction site eBay is part of it. Research by biologists, sociologists, and economists into the nature of cooperation offer explanatory frameworks. At least one key global business question is part of it - why is the Japanese company DoCoMo profiting from enhanced wireless Internet services while US and European mobile telephony operators struggle to avoid failure? The people who make up smart mobs cooperate in ways never before possible because they carry devices that possess both communication and computing capabilities. Their mobile devices connect them with other information devices in the environment as well as with other people's telephones. Dirt-cheap microprocessors embedded in everything from box tops to shoes are beginning to permeate furniture, buildings, neighborhoods, products with invisible intercommunicating smartifacts. When they connect the tangible objects and places of our daily lives with the Internet, handheld communication media mutate into wearable remote control devices for the physical world. Media cartels and government agencies are seeking to reimpose the regime of the broadcast era in which the customers of technology will be deprived of the power to create and left only with the power to consume. That power struggle is what the battles over file-sharing, copy-protection, regulation of the radio spectrum are about. Are the populations of tomorrow going to be users, like the PC owners and website creators who turned technology to widespread innovation? Or will they be consumers, constrained from innovation and locked into the technology and business models of the most powerful entrenched interests?) <http://www.smartmobs.com/book/>

- **2002** \_\_ **SpeakerPhone**, Jonah Brucker-Cohen ( *SpeakerPhone* is a sequence of individually addressable speakers that enable sound to be targeted instantly to a precise location and to travel along a path. The project enables a range of presence applications including the creation of highly customized spatial soundscapes and the transmission and layering of sound information across multiple locations in space or time. What is the path of data traveling through telephone lines, networks, electrical outlets and other concealed means? How do we bring this information out of the wires and into our environment? *SpeakerPhone* attempts to free information from these hidden pathways by liberating the data itself and releasing it into our surroundings. The original idea was that when someone speaks into the microphone, their voice is recorded and broadcast along the array of speakers with a time delay for each speaker in the sequence starting from the first speaker in the chain. The result is a tidal wave of sound that moves quickly from the beginning speaker through the intermediary speakers until it reaches the final speaker. The project consists of 24 speakers arranged in a rounded rectangle on the ceiling of the room. Each speaker has a specific number (1-24) which determines its role in the flow of information. Sound is recorded on the computer and sent out the audio card into a main bus where a microcontroller controls an array of relays that address each individual speaker. There is a 16 to 1 multiplexor chip that controls the relays. Scenarios for the use of *SpeakerPhone* include networked soundscapes, data spatialization, interactive narrative environments, and customizable sound landscapes. Below are a few specific examples of possible applications of the system. 1. Data Visualization/Spatialization: *Speakerphone* uses sound as a means of exposing data moving through physical spaces. *SpeakerPhone* attempts to free information from the hidden pathways of wires. The movement of sound becomes an audible illustration of the information overload infiltrating our daily connected lives. 2. Networked Audio Mapping: When various necessities dictate our being separated from our friends, family, and colleagues, the need to maintain some kind of contact becomes more urgent. By creating a continuous two-way ambient auditory link between a pair of similar spaces through accurate sound layering, we can create a hybrid "connected" space. Such a scenario would require mirror arrays of microphones and sophisticated echo-cancellation technology. 3. Narrative Audio Targeting: Escaping the passive audience model, *SpeakerPhone* enables dynamic narrative sound applications and allows for a mobile relationship between audience and content in a story, presentation, or performance. The audience can help drive the narrative because their investment in the narrative becomes both physical and mental. 4. Smart Speakers: Like the Audio Spotlight, *SpeakerPhone* can focus audio on specific locations in a space and transform the audio landscape based on sensor feedback of various kinds. With further enhancement to the technology, individual speakers in the array could be made to sense their surroundings and create dynamic soundscapes based on their proximity to each other or other objects. 5. Telematic Audio Control: Remote networked control of audio placement would allow for collaborative audio environments created across distance by multiple performers or participants. 6. Pathways of Data: *SpeakerPhone's* node-based architecture enables users of the system not only to dictate the final location of audio but also the path it travels to a specific destination. In this way, the system suggests the ability to customize the routes taken by other kinds of data in communications networks.) <http://www.coin-operated.com/projects/>

- **2002** \_\_ **Streaming - Libsquare**, AGGLO, Lib\_, Leinster, Streamlab (Jérôme Joy, Silvia Argüello, Yannick Dauby, Julien Ottavi, Thomas Lucas) (*Libsquare*, seminar *Media Space Invaders* [Platoniq.net](http://Platoniq.net), Barcelona May 2003 – a streaming experience between Nantes, Nice and Barcelona. *Lib\_* was a lab on collective aspects of net-based art projects, it led a survey of three-years long and released a book in 2005 : *LOGS, micro-fondements pour une émancipation sociale et artistique*. The *Lib\_* website offers various databases on this topic. Its book is freely downloadable on <http://www.editions-ere.net/projet55> with texts by Patrick Bernier, Olivier Blondeau, Bureau d'Études, Jean-Paul Fourmentraux, Bernard Guelton, Jérôme Joy, Jean-Michel Smith et al., Bernard Stiegler, Philippe Aigrain, Dominique Boullier, Michel Callon, Bernard Conein, Godefroy Dang-Nguyen, Jo Link-Pezet, Jean-Max Noyer, Thierry Pénard, Philippe Zarifian, Jean Zin) <http://agglo.info/audiolib/> <http://jeromejoy.org/> <http://www.streamlab.info>

- **2002** \_\_ **Stream Yourself**, laboiteblanche, Carl Young (*Workshop on the techniques of audio and video streaming in Art schools.*) <http://www.streamyourself.org>

- **2002** \_\_ **Streetscape**, Iori Nakai, FutureSonic04 (*Streetscape by Iori Nakai is an interface that enables the user to trace a journey in sound through the city. Experience the noises of Tokyo's bustling streets from within the glass walls of Urbis. Navigate the city by moving a stylus along the streets represented on a 3D architect's model and hear sounds recorded at that location. As you trace a journey around the streets you will hear conversations, noises of passing traffic, and all the ambient sounds that give the city its character. When you trace the streets on the base map with the pen tablet provided, you will hear the sounds of each city in the headset you are wearing. These are the sounds you would actually hear in those places on the map. As you move the pen along the street, the sound changes as if you were walking down the street. By tracing both of the base maps on display, you will discover the differences in the sounds of different places. And this difference suggests that recording a place in the form of sound helps us to remember the place with a sensation that is different from the sensation that imagery provokes. The sounds you hear from these base maps were recorded by the artist as he walked around the cities. One map shows the Hatsudai area where the ICC is located. The other map is of an area that will be changed several times during the exhibition period. By comparing the sounds of different streets and cities, you can reflect on our living environment, in which we are surrounded by various sounds, and the differences.*) [http://www.ntticc.or.jp/Archive/2007/Openspace2007/art\\_technology/streetscape.html](http://www.ntticc.or.jp/Archive/2007/Openspace2007/art_technology/streetscape.html)

- **2002** \_\_ **Telemusic #2**, a collaborative intermedia work by Randall Packer, Steve Bradley, John P. Young (*combined live performers with live public participation via the Web. During the event, visitors to the site. With Telemusic #2, there is the possibility of tracking the flow of cyberspace's digital data through their sonorous representation, so that the real-time data derived from internet traffic and web interactions can be 'interpreted, reconfigured and modulated as sound texture based on densities, velocities, movement, and the subtlety of its dynamic change. In Telemusic #2, the viewer enters this electronic sphere, sonically defined by a live stream of telematic source material – television, radio and net broadcasting – processed in real time and fed into a 6-channel sound system. The viewer is immersed in the constant fluctuations of the network, its numerical impulses transformed from the virtual to as a sensory experience. No longer abstracted, the network's activity is rendered as physical sensation, tangible, embodied, audible*) <http://www.netmuse.org/jpy-webmusic01.pdf> <http://crossings.tcd.ie/issues/3.1/Tanzi/>

- **2002** \_\_ **Transmission Naranja**, Chris Brown, Guillermo Galindo (*Chris Brown and Guillermo Galindo recently collaborated on two audience participation performances entitled Transmission Naranja and Transmission Temescal where they broadcast their live electronic audio on 4 low-wattage radio transmitters set to different frequencies. The audience members were asked to bring portable radios, tune to the frequencies, and walk around the performance area as a way of spatializing, mixing, and experiencing the music. ["Blue" Gene Tyranny]*)

- **2002** \_\_ **Two Pieces**, Scot Gresham-Lancaster (*Two pieces were presented at CSUH to inaugurate the newly-formed interdisciplinary Center for Immersive Media (iCIM) and CSUH's presence on Internet2. The first, Exposition: Calpurnia's Dream Obscured by Movement, was a part of Internet2's Fall Member Meeting at the USC's Bing Theatre. The evening at USC consisted of a number of performances, all using features of Internet2.*) <http://www.o-art.org/Scot/Chronology.html> <http://www.mcs.csuhayward.edu/~tebo/icim/i2performance/>

- **2002** \_\_ **URBANGS**, Tamara Laï (*Call for participation for the online collaborative project (around 40 participants) "URBANGS" : URBANGS fear in town. This is a non-linear narration : no beginning no end nor chronology. Turn the pages one after one, or open several windows at the same time, according to the capacities of your machine. Play with, associate the ideas freely, the history builds itself, never the same... Please send your files : .doc .jpg, .gif, .swf, .dcr, .mp3, .mov, .rm, 1Mb max.*) <http://tell-a-mouse.be/URBANGS/urbangs.htm>

- **2002** \_\_ **Viral Synthesia**, Steve Symons (*A 4 screen outdoor interactive/generative installation. Sounds sampled from the Manchester Central Library are edited and mixed in real-time by the neuralMix engine and spilled out to echo around this key location in the heart of Manchester. The four projections alternated between human and machine. The human being represented by the neuralMix neural network and the machine by Conway's Game of Life. Each projection talks to and listens to its neighbor (end ones wrap round). Thus the human and machine elements morph into a single entity.*) <http://stevesymons.net>

- **2002** \_\_ **Vopos**, 0100101110101101.ORG, a.k.a. Franco Birkut and Eva Mattes (*A project in which the artists wore Global Positioning System (GPS) transmitters to track their whereabouts, mapping their location on their Web site in real time. For an entire year they have been wearing a GPS transmitter, sending their co-ordinates to their website. A software drew their exact position on a digital geographic map, establishing a path that traced all the movements of the nomadic couple. The artists also patched their mobile phone conversations through their server so anyone could listen in. A recording of their conversations was then*

remixed by Negativland, an art collective whose sound collages have led to multiple law suits for copyright infringement (The result is the pop-song What's this noise?). Vopos and Life Sharing were elements of a larger project dubbed Glasnost, a reference to Mikhail Gorbachev's policies of openness that led, albeit indirectly, to the collapse of the Soviet Union. According to the artists, in Glasnost "0100101110101101.ORG is trying to give an account of how vast amounts of personal information are moving into corporate hands, where it can be developed into electronic profiles of individuals and groups that are potentially far more detailed and intrusive than the files built up in the past by state police and security agencies." In response to this Orwellian specter of corporate data collection, 0100101110101101.ORG turned their Web site into a virtual glass house, applying the principles of open source software to open their lives to the public eye. [Mark Tribe] <http://www.0100101110101101.org/home/vopos/>

- **2002** \_\_ **YIMA**, Integrated Media Systems Center USC Southern California (end-to-end architecture for realtime storage and playback of high-quality multichannel audio and video streams over IP – remote Media Immersion Project -.YIMA successfully broadcasted (16 channels of 24 bit 48kHz per second and MPEG-2 video at 45Mb/s) a concert by the New World Symphony in Arlington Virginia to Los Angeles) <http://imsc.usc.edu/rmi/>

## 2003

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- **2003** \_\_ **Internet** (The WWW continues to expand. The number of servers world-wide rises to 45,980,112 in December 2003 (Zakon 2004).)

- **2003** \_\_ **AB\_TIME**, Scot Gresham-Lancaster (Coordinated Live Internet Performance with the Montevideo Center in Marseilles and the Center for Immersive Technology (iCIM) at California State University, Hayward. Using iChat and recursive video projections on both ends had the camera pointing at the screen. A "house of mirror" effect that included the internet time delay on each new frame. The dancers image flipped left to right from the center on each return from the distant site. The choreographers worked with this unique environment) <http://www.mcs.csuhayward.edu/~tebo/icim/marseilles2003/>

- **2003** \_\_ **AGRM-NG**, Abstract Generative Radio Mix New Generation, Antoine Schmitt, Vincent Epply (Abstract Generative Radio Mix New Generation (AGRM-NG) is a generator of radio mix for the Web. It is an applet which, each time it is listened to, generates a specific radio mix. Each mix is different, but all stems from a single matrix.) (Plus surprenant, est le choix de l'interface de l'œuvre en ligne AGRM-NG, d'Antoine Schmitt et Vincent Epply, construite à la manière de l'infiniteCD, qui reprend l'apparence d'un lecteur de fichiers mp3 ou de stream, alors que ce travail est basé sur des principes totalement différents (téléchargement d'un matériau, et réinterprétation permanente). L'idée de cette approche est de rassurer le spectateur en le confrontant à un accès ou un protocole qu'il a déjà assimilé (telle la réception radiophonique), au risque de masquer une partie des enjeux du travail. [Yannick Dauby]) <http://www.gratin.org/as/agrmng/>

- **2003** \_\_ **Amodal Suspension**, Rafael Lozano-Hemmer (Amodal Suspension, a large-scale interactive installation developed for the opening of the Yamaguchi Center for Arts and Media (YCAM) in Japan in 2003. Using a cell phone or Web interface, people could send short text messages to each other, which were encoded as unique sequences of flashes by 20 robotically controlled searchlights, which created a giant communication switchboard in the sky around the YCAM Center and transformed the materiality of text messaging. Messages were removed from the sky if someone would "catch" them with a cell phone or the 3D Web interface. [Christiane Paul]) <http://www.amodal.net> <http://www.amodal.net>

- **2003** \_\_ **Art's Birthday 2003**, voices and audio art from the eternal network, radio - performance - netcast - telephone - messages (Audio art broadcasts on radio and the Internet: a performance of "Doves are grey" by Sergej Mohntau at Kunstradio (Vienna); voices and telephone art at Western Front (Vancouver); the very first transmission from Radio Kinesonus (Tokyo); web-radio from PING FM (Weimar, Germany); 24-hours of Radio Art at CiTR FM 102 (Vancouver). "doves are grey" by Sergej Mohntau is animal music within the associative field of a mechanical music process. Here, the fauna becomes a tool for artistic expression and, at the same time, is the object of aesthetic interpretation. The doves, driven by hunger, achieve a musical performance and are accompanied with electronic music machines. Man operates these. The world of animals andtechnics are in direct opposition.) <http://projects.front.bc.ca/2003/artsbirthday/index.html> <http://kunstradio.at/SPECIAL/DOVES/about.html>

- **2003** \_\_ **Art+Communication, Media Architecture** (Physically located in Latvia in Riga, as well as in Karosta, Liepaja and at the VIRAC Radiotelescope in Irbene. Discussions included: how lessons from the social dynamic of 'virtual 'networks, can be applied to the creation of open, public physical spaces; designs for process-based architecture, and hybrid spaces; and how mapping/positioning and wireless networking impact on notions of space time and social organization (Ewen Chardronnet gives a lecture on

psychogeography: A brief history of unitary urbanism and psychogeography at the turn of the sixties + Exemples and comments of contemporary psychogeography). Taking place in a central, but derelict section of Old Riga the theme of 'transformation of place' through networking (both physical and virtual) manifested in the conferences various facilities through installations, include evening programmes of media synesthesia (visible sound/audible light), as well as by the official initiation of an ambitious engineering project for the creation of Media Space - a new headquarters for RIXC. Finally, for the closing section of the festival, participants was brought to the Irbene Ratio Telescope, a former Soviet military satellite dish (d=32m) where participants from the 2001 Acoustic Space Lab symposium will present their interpretations of data they gathered from scanning the planets, communication satellites and surrounding environment with this powerful telescope.) <http://rixc.lv/03/info.html>

- **2003 \_\_ Audio Nomad**, Nick Mariette (Audio Nomad is a three-year art / science research collaboration on the creative and technological potentials of location-sensitive, mobile spatial audio. The first Audio Nomad productions were two versions of Syren – a ship-based multi-speaker installation using the ship's position from a GPS receiver to render a two dimensional soundscape. New work including Virtual Wall (Berlin) will create a personal location-sensitive spatial soundscape on headphones using a portable computer, GPS receiver and digital compass. The technological intent is to enable the artist to augment real world objects and spaces with sounds perceived to emanate from them. It is important to know the maximum perceivable accuracy of the intended augmented reality effect, given human and technology limitations, even if soundscape design doesn't always require maximum precision.) <http://audionomad.com/>

- **2003 \_\_ AudioBored**, Jonah Brucker-Cohen (AudioBored is a public online audio messaging board that allows for anyone to call in, record a message, and post it to the server. Simply dial the free 1-800 number from the website and record your note. Visitors to the board can click on the sound clips and listen to all the recordings collected. Like an online bulletin board, AudioBored allows for candid opinions, thoughts, ideas, exclamations, etc... to be posted live in a shared online space as recorded audio through a phone interface. The AudioBored Machine allows people in a physical space to access all the messages left on the AudioBored. It is dynamic and networked, grabbing all call information as new calls are logged into the server. The machine is a physical version of a traditional online bulletin board allowing you to navigate through threads of messages (topics) as well as the messages themselves.) <http://www.coin-operated.com/projects/>

- **2003 \_\_ AudioTrace**, NoMusic (LBB & Carl Y) (AUDIOTRACE - Auto audio world Scanner - est un processus de diffusion de sources sonores disponibles sur Internet en temps réel et issues principalement de type radios de polices, pompiers, signaux de fréquences, C.B. ou radars d'écoute spatiale. Les flux utilisés sont accessibles grâce à une communauté d'amateurs répartis dans le monde qui stream en direct sur Internet ces fréquences captées à l'aide de récepteurs de fréquence. L'accumulation de sources aux contenus improbables est rediffusée en direct sur différents serveurs de streaming géo-distants, créant une boucle entropique sonore utilisant le réseau comme chambre d'écho.) (Audiotrace (Auto audio world Scanner) is a system of aleatory and real time scan of available sound source on the network. Sources are principally corporate organizations, such as police radios, firemen, frequency signals, C.B., etc. In a simultaneous superposition, a strange aggregate of incessant and omnipresent sound streams emerge, and a sound easthetic in its whole of a moving world. Our ear randomly retains key words giving an approximative idea of an intelligible content and one takes slowly then the role of a surveillance program, overflowed by the quantity of information to collect and analyze.) <http://www.nomusic.org/audiotrace/> <http://www.nomusic.org/audiotrace/aaws/> <http://audiotrace.tk>

- **2003 \_\_ The Bio-Kinetic Sonosphere Interrogator**, Robin McGinley (The Sonosphere is defined as the region around the Earth that contains all sound whether man-made, natural or mediated by telecommunications. This theoretical construct offers a means of conceptualising sonic activity at a global level. Acoustic sound is ultimately bounded by the upper layers of the atmosphere where decreasing density presents an increasing impedance to propagation. However, the reach of mediated sound is theoretically boundless, with the Earth representing a beacon of electromagnetic activity (although insignificant at a galactic level). The installation takes the form of a human-powered low frequency signal generator that derives low frequency signals from human impact against a controlled mass of air. A pulse rate integrator processes the pseudo-random pulse stream from the generator and this creates a control signal whose amplitude is proportional to the activity occurring on the trigger device. The control signal is fed to a multiple threshold detector, which will progressively activate the output of a number of electromagnetic receivers that are set to a combination of different frequencies and atmospheric bands. The outputs of the receivers are mixed together and fed through a sound distribution rig, which disperses the sound around the installation toward the instigators of the activity.) <http://www.interactive-agents.com/paper2.html>

- **2003 \_\_ Camping Sonore** (Sound Camping), Apo33 (Le camping sonore - tournée d'artistes d'Apo33 pour des actions sonores brut - (actions en plein air, dans des lieux précis, écoute de musiques expérimental, initiation, discussion...) dans les villages et les villes que nous trouvons sur notre chemin. Le premier camping sonore à eu lieu du 28 juillet au 1er août : départ de Nantes → Secondigny → Pons → Marseille → Gréoux-Les-Bains → Grenoble → Nantes. Plusieurs étapes ont marqué notre voyage : aires d'autoroute, villages, gorges et bien sûr les campings lieux familiales, de loisirs et de vacances.) <http://www.apo33.org/cia/>

[doku.php?id=camping:action\\_camping](http://www.apo33.org/cia/doku.php?id=camping) <http://www.apo33.org/cia/doku.php?id=cia>

- **2003** \_\_ « **Composing the now** » - notes for a lecture - on engagement with sonic time through sensors, electronica, loudspeakers and ears, Michel Waisvisz (*For the occasion of 40 years IPEM symposium in Gent, october 2003. "Later when technology allowed for faster sound synthesis and processing we started calling the previous approach non-real-time. Today we start to forget what is real-time; because we do not experience most computer processes as non-real-time anymore. We think that we think and act in the now. This lecture reflects on composing the now' in today's electronic music practice. Similar to many of the electronic music performances nowadays the lecture itself will be composed in the now at the time of the delivery. So instead of writing this paper as a reflection of the thoughts at the time of writing I feel it is more appropriate to publish a list of selected and prepared thought bits, being a non-chronological collection of the cue sentences that will feed my thoughts during the lecture. Some thoughts published here will possibly not be part of the lecture. While others, not published here, might pop up during the lecture instead. Traditional notes for lectures usually consist of a plan to organize linear time. This cue list contains material that allows jump-connections in variable directions and allow for new alliances and flows during the lecture performance. Recombine, grow, connect, mutate, explore, discover, intertwine, mate, feed, connect, grow more, decay, die, decay, feed, become food for new thought, compost, re-compose, compost. As a reflection on composing electronic music 40 years ago and today: this is what composing is now. "Composing electronic music beyond the illusion of control. Composing electronic music on stage in the now, with prepared computers that contain sounds, algorithms hooked up with sensors and the presence of a dedicated audience. Involved performative composing of music with new integrated composition and performance instruments. Illusion of control versus rules of engagement. Algorithmic machine composing nudged and steered by the performing composer. Sound communication instead of sonification of communication. Composing by ear. Composing is meta steering of performance actions. Preparing a performance is not the same as composing, neither is it studying the piece and/or rehearsing; rather it is designing behavior and providing sounds and sound processing tool set ups; it is like preparing an operation; a lot will be known in advance but most of it can be different at the theatre. We will see composers who re-compose their work every time they perform and some who try repeat their performance every time. We will see new performers that act and engage fully bionically merged with their instruments. This is not unlike traditional music instrument practice in a metaphorical sense."*) [<http://crackle.org/composingthenow.htm>]

- **2003** \_ **DRM**, Apo33, Forum Social Européen (*Le Dispositif Radiophonique Mobile (DRM) est un instrument d'intervention fonctionnant comme une prothèse qui viendrait se greffer sur un lieu. C'est une prothèse technique qui a pour but de digérer du son récupéré sur le lieu de son installation. Elle combine un dispositif numérique (le poulphe : ordinateurs en réseau via l'internet) et des dispositifs mécaniques, hertziens et d'électroniques analogiques. Le Dispositif Radiophonique Mobile se déploie dans un lieu et temps donné à travers des extensions physiques modulables de sculptures sonores, de résonateurs, de dispositifs de diffusions, d'interfaces interactives et d'interfaces de contrôle (jouant avec les gestes, la lumière, la température, le mouvement...) prenant la forme de bornes informatiques ou à travers de simples hauts-parleurs qui rediffusent le résultat du processus de digestion. Digestion : le son entre d'un côté de la chaîne en réseau du dispositif reliant les extensions physiques modulables et se transforme de manière aléatoire selon les combinaisons d'actions des artistes ou du public sur les interfaces des bornes.*) <http://www.apo33.org/cia/doku.php?id=drm>

- **2003** \_\_ **Drumming Hands Orchestra**, Bernd Kremling (28 Aug 2003: Wuerzburg, Germany. A German conductor is incorporating mobile phone ringtones into his orchestra's performances. Bernd Kremling, who runs the Drumming Hands orchestra in Wuerzburg, used ringtones ranging from Bach and Mozart to Old McDonald Had a Farm. Some phones are set off by the musicians but others have to be rung from backstage at the right moment to set off their sound. During a recent performance in Bayreuth, reception was so low that part of the work remained unperformed. Kremling calls mobiles "versatile percussion instruments", but says he still asks audiences to switch their phones off during the concert. Only afterwards does he ask them to join him for an encore.) [http://web.archive.org/web/20050222085508/http://www.ananova.com/news/story/sm\\_813801.html?menu=news.technology](http://web.archive.org/web/20050222085508/http://www.ananova.com/news/story/sm_813801.html?menu=news.technology)

- **2003** \_\_ **Electrical Walks**, Christina Kubisch (*In 2003, Berlin-based sound artist Christina Kubisch began an ongoing project called "Electrical Walks." This project employs specially built headphones that receive electromagnetic signals from the environment and convert them into sound. Kubisch maps a given territory, noting "hot spots" (ATM machines, security systems, electronic cash registers, subway systems, etc.) where the signals are particularly strong or interesting. She then loans the headphones to the public, allowing participants to undertake an auditory dérive through the invisible network of electromagnetic information. To date, Kubisch has undertaken her own personal walks in Germany, England, France, Ireland, Japan, Latvia, Sweden, Switzerland, Slovakia, Spain, Taiwan, and the United States, and has held public walks in Berlin, Cologne, Karlsruhe, Bremen, Oxford, and London. The idea of the "Sound Walk" in fine art is usually a marriage between the artist's presentation of site specific concepts and the pre-recording of natural / urban sounds provided to listeners for experiencing. Christina Kubisch adapts this idea to previously invisible worlds. By developing headphones that act as receivers of electromagnetic impulses Kubisch allows listeners to hear the network of transmissions that surrounds them and seek out individual experiences of their own. For the purpose of this recording she gathered sounds from*

many cities (Birmingham, Chicago, Taipei, Paris etc.) and many sources (NYC's Times Square, various train stations and airports, retail security doors) and with careful sequencing has created a kind of music that is alien despite continually being present in our lives. "The magnetic headphones with their built-in coils respond to electrical fields in the environment. At first I tried to filter the soft hum of the electrical wires out of the headphones. Then, in 2003, the constant increase and spread of "unwanted" electrically-produced sounds triggered a new cycle of works: Electrical Walks. With special, sensitive headphones, the acoustic perceptibility of aboveground and underground electrical currents is thereby not suppressed, but rather amplified. The palette of these noises, their timbre and volume vary from site to site and from country to country. They have one thing in common: they are ubiquitous, even where one would not expect them. Light systems, transformers, anti-theft security devices, surveillance cameras, cell phones, computers, elevators, streetcar cables, antennae, navigation systems, automated teller machines, neon advertising, electric devices, etc. create electrical fields that are as if hidden under cloaks of invisibility, but of incredible presence. ELECTRICAL WALKS is an invitation to a very special kind of stroll in cities (or elsewhere) With a special magnetic headphone and a map of the environs, upon which the possible routes and especially interesting electrical fields are marked, the visitor can set off on his own or in a group. The perception of everyday reality changes when one listens to the electrical fields; what is accustomed appears in a different context. Nothing looks the way it sounds. And nothing sounds the way it looks." [Christina Kubisch] (Les Promenades Électriques de l'artiste Christina Kubisch offrent une toute nouvelle perspective sur notre environnement habituel. Ceux qui découvriront les rues, les bâtiments et les centres commerciaux de Montréal et Québec avec les « casques d'écoute » de Kubisch (conçus par l'artiste) vivront une nouvelle expérience acoustique et visuelle. Nous entendons l'invisible autour de nous et devenons des compositeurs de notre environnement. Depuis 2004, les Promenades électriques fascinent les visiteurs de nombreuses villes d'Europe et d'Amérique. Pour la première fois, elles seront offertes au public canadien. Les champs électromagnétiques que nous rencontrons continuellement par le biais de systèmes de communication et de sécurité, de transmission de nouvelles sans fil et d'autres circuits, sont captés au moyen de capteurs spéciaux et transformés en fréquences audibles. Lors de votre promenade, soyez vigilants en traversant la rue. Prenez votre temps en marchant. N'hésitez pas à vous arrêter et bouger la tête. Les sons changent ! [contenu du programme du Centre Oboro en septembre 2008]) [http://www.oboro.net/archive/exhib0809/christina\\_kubisch/info\\_fr.html](http://www.oboro.net/archive/exhib0809/christina_kubisch/info_fr.html) [http://www.oboro.net/pdf/press/0809/exhibi\\_event/promenade\\_elec\\_fr.pdf](http://www.oboro.net/pdf/press/0809/exhibi_event/promenade_elec_fr.pdf) [http://www.christinakubisch.de/english/install\\_induktion.htm](http://www.christinakubisch.de/english/install_induktion.htm)

- **2003 \_\_ Experimental live concert**, Tim Didymus (7 September 2003: Ars Electronica Festival, Linz, Austria. Performer Tim Didymus conducted a live concert featuring music and sounds generated entirely on-the-fly from a mobile phone application. Using SSEYO Koan generative music software running on the intent Sound System from theTao Group, curator and performer Tim Didymus played music for his 250,000-watt electronic ambience set from his Microsoft Windows Mobile-based i-Mate Smartphone, using the integrated intent Sound System. US-based Tao Group is behind the technology, called Intent Sound System (iSS), a suite of audio technologies that makes it possible to relay music composed live and in high quality through a mobile phone. Tao said its intent Sound System (iSS) for mobile devices includes comprehensive audio and MIDI frameworks for audio effects plugins, visualisers, synthesizers, music engines and codecs, as well as playing high quality polyphonic MIDI or audio ringtones in a wide range of popular formats. According to Tao, iSS allows application developers to use advanced interactive audio and MIDI techniques in games, visualisers or equally in music tools and players. In providing an extendable framework, it also creates possibilities for developers of plugin audio engines, synthesizers and effects, in turn developing new opportunities for musicians, creative and content developers.) <http://www.pdastreet.com/articles/2003/9/2003-9-10-Performer-Rocks-the.html>

- **2003 \_\_ « Flash Mob »** (A flash mob is a large group of people who assemble suddenly in a public place, perform an unusual action for a brief time, then quickly disperse. The first flash mob was organized in Manhattan in May 2003, by Bill Wasik, senior editor of Harper's Magazine. The origins of the flash mobs were unknown until Wasik published an article about his creation in the March 2006 edition of Harper's. The first attempt was unsuccessful after the targeted retail store was tipped off about the plan for people to gather. Wasik avoided such problems during the second flash mob, which occurred in June 3, 2003 at Macy's department store, by sending participants to preliminary staging areas—in four prearranged Manhattan bars—where they received further instructions about the ultimate event and location just before the event began. Flash mobs began as a form of performance art. While they started as an apolitical act, flash mobs may share superficial similarities to political demonstrations. Flash mobs can be seen as a specialized form of smart mob, which is a term and concept forwarded by author Howard Rheingold in his 2002 book Smart Mobs: The Next Social Revolution. In 1973, the story Flash Crowd by Larry Niven described a concept vaguely similar to flash mobs. It described how, with the invention of popular teleportation, an argument at a shopping mall, which happened to be covered by a news crew, swells into a riot. In the story, broadcast coverage attracted the attention of other people, who use the widely available technology of the teleportation booth to swarm first that event — thus intensifying the riot — and then other events as they happened. In Niven's story, when a riot begins and is televised, others join in, resulting in the participation of millions of people. Commenting on the social impact of such mobs, one character (articulating the police view) says, "We call them flash crowds, and we watch for them." The 1998 novel Distraction by Bruce Sterling features a riot by a flash mob in its opening pages, although the term is not used, and the flash mob riot is only a very peripheral element of the plot. The first recorded use of the term flash mob was in 2003 in a blog entry posted in the aftermath of Wasik's event. The term was inspired by the earlier term smart mob. In 1800s Tasmania, the term flash

mob was used to describe a subculture consisting of female prisoners, based on the term flash language for the jargon that these women used. The 1800s Australian term flash mob referred to a segment of society, not an event, and showed no other similarities to the modern term flash mob or the events it describes.) <http://www.kablam.tv/flashmob>

- 2003 \_\_ **GigaPop Ritual**, Ajay Kapur, McGill University / Princeton University (Live networked performance piece for two electronic Dholaks, digital spoon, digitaldoo, 6 string electric violin, rbow, sitar, tabla, bass guitar) <http://soundlab.cs.princeton.edu/research/gigapop/>

- 2003 \_\_ **Le Hurloir**, Thierry Fontaine, André Lozano aka (loz), Elli Medeiros (Le Hurloir est un dispositif capable de transmettre en temps réel et sans interruption un cri ou une parole libre. Il est composé de microphones placés dans un lieu public où chacun peut venir s'exprimer pour se faire entendre à l'autre bout de la planète. Le son est entendu sur des hauts-parleurs placés dans un autre lieu public. En l'absence d'interventions volontaires le son ambiant est transmis intégralement) <http://hurloir.net/>

- 2003 \_\_ **Interfacing Realities/Radiotopia/KeyWorx**, Michelle Teran (Live transatlantic performance at the Dutch Electronic Arts Festival DEAF03 by artists Michelle Teran, Isabelle Jenniches, Lodewijk Loos, Eric Redlinger, Arjen Keesmaat and Daniel Vatsky. The project uses the software KeyWorx, developed at Waag Society. Interfacing/Radiotopia/KeyWorx consists of one space (Radiotopia) that has no images and has only sound, and one space (Keyworx) that has no sound and only images. They are connected both physically and via the Internet. [Radiotopia] Walk into a theatre and enter an audio space with no images. Artists from all over the world are asked to send in audio material to fill up a database. Behind every sound is an idea, a world of words and definitions. The one big experience with Radiotopia is the peaceful confrontation of all the world's sounds, audio artists, concepts, sights and sometimes ideologies. In the Scapino theatre ding DEAF Festival at V2, the sound is mixed live by musicians and sent as an audio stream (Radiotopia streaming participants are Sophea Lerner (<http://phonebox.org>), John Hopkins (<http://neoscenes.net>) and Steve Bradley). [KeyWorx] Walk out of the theatre, down a narrow hallway and enter a space filled with images. Three artists sitting in the space, are connected with three artists in New York City. Three translocally linked pairs, three simultaneous and connected performances. Behind every sound is an idea, a world of words and definitions. In the KeyWorx space, one listens to the world of words within the audio-spoken words, ideas, emotions, memories—and translates that world into actual text. Inspired by a Surrealist game 'Parallel Stories', a word sent by performer or public from a mobile phone in response to the audio appears simultaneously in all three performances. Each performance pair responds to this foreign text input sent via 'sms' by creating a visual story around it. Three parallel translocal exchanges within one physical space (a room in New York, the V2 bookstore) are connected by the same word yet are unique in the visual interpretation of it. The performance is improvised and created collaboratively in real-time.) <http://www.ubermatic.org/interfacing/> <http://connected.waag.org/archive.html>

- 2003 \_\_ **Interplay #2 - Collaborations in 4 Cities** (Niobe (Sonig) + Rob Flint (scopac/Ticklish), Andy Vaz (Background Recs) + Portable (Sudelectronic), Iris Garrelfs (Sprawl) + Si-cut.db (Bip\_Hop), Vert (Sonig) + Tom Chant (Cinematic Orchestra), Mapstation (To Rococo Rot/Staubgold) + Bill Wells (Domino), Kumo (Spoon Recs) + Ryoko Kuwajima (Japan/Melange) <http://www.sprawl.org.uk/INTERframe.html>

- 2003 \_\_ **The Invisible Landscapes**, Malmö (The first part of "The Invisible Landscapes" organized in Malmö consisted of group projects related to the mobile phone and was held from August 16th to September 7th, 2003. It had three subsequent parts, 1) the exhibition, 2) a 3-day conference and 3) workshops. The project intended to explore the mobile phone from diverse aspects, both from perspectives of subjective and objective knowledge, in order to deepen a general technical, historical, and artistic understanding of the device. The first part were four workshops called "Discover the Invisible Landscapes", a series of sessions held by Noriyuki Fujimura organized in collaboration with me, at Rooseum and Malmö Kunstmuseum. The workshops aimed at offering participants an understanding of how mobile phones actually function and are part of a complex world-spanning system of technologies. Over the weekend workshops, participants sought for locations of mobile phone masts and antennas, while the next traced the radiation routes of the mobile phone while completing one phone call. Through the physical movement in urban space, not only theoretically but in actual movement, participants gained better understanding of the invisible operation system "behind" the mobile phone. The series of workshops also pointed to a gap of articulation within everyday exchange processes of verbal information. The sessions revealed a different order of sending and perceiving information. People often unconsciously use their memory or their imagination to reinforce a missing part of information. The exhibition part, called "Experience the Invisible Landscapes", had six contributing artists, five of them invited and newly commissioned from Sweden, Norway, Finland, Japan and the United States. Each artist presented his/her own art project which concerns the mobile phone operation system in public and private spaces. They introduced subjects crucial for the context of the mobile phone, such as the perception of the device by elderly people (Annika Ström, Laura Horelli), surveillance and political implications of the SMS system (Henrik Andersson), a questioning of information society (Kay Loker), a poetic interpretation of mediated existence (Tony Oursler), a democratic tool for public participation (Henrik Frisk), etc. The artists' observations, apart from any categorization, created new reference materials for the study of the mobile phone. The exhibition concept intended to provide a channel for the "Invisible Landscapes" through the projects, and set out to point to the new possibilities of the

mobile phone that were suggested by artists – as opposed to both “professional developers” and “power users”. The third part was a three-day conference called “Discuss the Invisible Landscapes”. It aimed at reviewing what the mobile phone art projects explored over three weeks and provided a forum for further discussions with the contributors. The scope of the discussions was quite wide-ranging. It was an experiment of juxtaposition of different methods in diverse fields related to the mobile phone – from business, neuroscience, theoretical physics, contemporary art and sociology. In combination with the previous parts, the conference tried to provide a platform where the everyday experience of the mobile phone could be discussed alongside more specialist and abstract discourses. One of the curatorial expectations was not only an exchange of information, but the emergence of a common space of dialogue able to overcome the different professional backgrounds of the speakers. It showed different approaches to concepts of truth and subjectivity/ objectivity not only between science and art, but among scientists as well. It also revealed problematic aspects of presenting different kind of knowledge within the dispositive of the neutral “white cube” space. [Miya Yoshida]

- **2003 \_\_ Kalerne**, Yannick Dauby (KALERNE is a platform about sound and environment, initiated and curated by Yannick Dauby. Here will be presented artistic works, ongoing researches, projects and reflexions about how do we perceive and deal with our acoustic surrounding. These activities are developed in various field of art practices, social and natural sciences, with an interdisciplinary approach. The sounds and images presented here are not meant to be “rough material” to be sampled and used, but if you feel the need of them, please ask before. The name “Kalerne” is derived from Calern, a karstic plateau in the Mediterranean Alps area, dry in appearance but very interesting from an ecological point of view. Its ground is underlain by caves and underground rivers. On the ground is an astronomical observatory which use interferometry. This technic is based on the study of two waves creating together another one which will inform about the two original ones. We would be interested to share with artists and researchers involved in the topics of Kalerne.) <http://kalerne.net>

- **2003 \_\_ LAC, Linux Audio Conference** (ZKM Karlsruhe 2003/2004/2005/2006, TU Berlin 2007, KHM Köln 2008) (The Linux Audio Conference is both a meeting of developers writing audio software for Linux as it is a music festival, where artists from all over the world show how free software can create fresh and exciting new sounds. A wide range of workshops, talks and presentations will once again prove, how Tux, the friendly penguin, spreads its little wings into areas, that no longer are the realm for the big fish alone - like computer music, sound engineering and audio distribution. The LAC aims at bringing together developers and users of Linux and open source audio software with the goal of information sharing, project discussions, making (and dancing to) music.) <http://lac.linuxaudio.org>

- **2003 \_\_ Life: A User's Manual**, Michelle Teran (Michelle Teran has carried out performances in which she periodically walks through the streets of a big city in order to reveal an invisible reality: the fluxes of information which inhabit every urban space. Armed with her frequency scanner, Teran intercepts the signals of wireless video cameras from the surrounding area and shows their images on a monitor placed in a cart which she pushes as if she were a homeless person. We see hotel receptions, bank branches... emerging like ghosts from the analogical mist. A tiny fraction of the radio spectrum has been allocated for public use. Taking advantage of this unlicensed part of the spectrum, the result has been an increase in use of wireless devices that are transmitting on this narrow band. Private use of wireless internet, cordless phones, bluetooth and wireless surveillance cameras has turned the average consumer into ‘micro-broadcasters’ who transmit their personal narratives through the airwaves. The culmination of these autonomous and synchronous acts contributes to an invisible, ad-hoc network of media overlaid within the socially codified spaces of urban environments, the café, the home, the apartment building, the office, the store, the bar, the hallway, the entrance, the parking lot and the street.) <http://www.ubermatic.org/life/>

- **2003 \_\_ Light Curtain**, Achim Wollscheid (The light-system for Tetsuo Furudate's piece “The auditory sense of Mr. Roderick Usher”, performed in October 03 at the Festspielhaus Hellerau, Dresden. Sound (by Tetsuo Furudate, Edwin van der Heide and Leif Elggren) and light were networked - sound triggered changes of light and light triggered changes of sound.) <http://www.selektion.com/members/wollscheid/default.htm>

- **2003 \_\_ Listening Post**, Mark Hansen, Ben Rubin, 3rd Takeway Festival, London (A Special Viewing and Question and Answer session via Satellite link with Mark Hansen and Ben Rubin. Listening Post is an art installation that culls text fragments in real time from thousands of unrestricted Internet chat rooms, bulletin boards and other public forums. The texts are read (or sung) by a voice synthesizer, and simultaneously displayed across a suspended grid of more than two hundred small electronic screens. Listening Post cycles through a series of six movements, each a different arrangement of visual, aural, and musical elements, each with its own data processing logic. Dissociating the communication from its conventional on-screen presence, Listening Post is a visual and sonic response to the content, magnitude, and immediacy of virtual communication.) <http://www.earstudio.com/projects/listeningpost.html>

- **2003 \_\_ Live Coding Duet**, Nick Collins and Fabrice Mogini (Friday 20th June 2003 Royal College of Art, London. Live coding duet (SuperCollider 2), Nick Collins and Fabrice Mogini)

- 2003 \_\_ « **Locative Media** » (Locative media may be understood to mean media in which context is crucial, in that the media pertains to specific location and time, the point of spatio-temporal 'capture', dissemination or some point in between. The term "locative media" initially appeared [...in 2003...] as a tentative category for new media art that sought to explore the intersection of the virtual space of the Internet with [...] physical space. [...] The term locative media has [...] been associated with mobility, collaborative mapping, and emergent forms of social networking. [Andrew Hemment] [Locative Media Definition. Retrieved Aug 15, 2005, from <http://locative.net/FrontPage/network/> Electronic Source.] <http://www.drewhemment.com/texts/>

- 2003 \_\_ **Metronome Piece**, Akitsugu Maebayashi (The artist walks around the town bringing along a clicking metronome. The regulated clicks produced by the metronome works as 'sonor' which detects information of spaces, and the echoes of clicks are recorded binaurally through microphones that are putted on both of ears of him. This is how, the sound of clicks becomes the medium which transmits experience as a mixture of space and time. In the exhibition room, when audience sit in front of the clicking metronome, they can perceive another clicks coming through headphones. It means that another layer of space and time begins to overlap with what is going on around audience in the room. And when we come to find it difficult to distinguish the border of layers of clicks, what is happening to our sense of reality ?) <http://www2.gol.com/users/m8/installation.html>

- 2003 \_\_ **Monodialogs**, Jeff Gates (Jeff Gates explores the vernacular language of mobile phone use, performing one-sided imaginary conversations in public places. Interestingly, Gates performs the absence of mobile phones. He writes: "Every month I perform a monodialog on the subway: a repertoire of mobile phone conversations culled from reality. Putting my finger to my ear (no one will look closely to discover I have no phone) I produce pithy and topical urbane conversations. When my audience ignores me I know I am a success." - The Theatre of the Barely Socially Acceptable, Act 1) [http://outtacontext.com/life/archive/cat\\_barely\\_socially\\_acceptable.shtml](http://outtacontext.com/life/archive/cat_barely_socially_acceptable.shtml)

- 2003 \_ **[murmur]**, Shawn Micallef, James Roussel, Gabe Sawhney ([murmur] is a documentary oral history project that records stories and memories told about specific geographic locations. We collect and make accessible people's personal histories and anecdotes about the places in their neighborhoods that are important to them. In each of these locations we install a [murmur] sign with a telephone number on it that anyone can call with a mobile phone to listen to that story while standing in that exact spot, and engaging in the physical experience of being right where the story takes place. Some stories suggest that the listener walk around, following a certain path through a place, while others allow a person to wander with both their feet and their gaze. The stories we record range from personal recollections to more "historic" stories, or sometimes both -- but always are told from a personal point of view, as if the storyteller is just out for a stroll and was casually talking about their neighbourhood to a friend. It's history from the ground up, told by the voices that are often overlooked when the stories of cities are told. We know about the skyscrapers, sports stadiums and landmarks, but [murmur] looks for the intimate, neighbourhood-level voices that tell the day-to-day stories that make up a city. The smallest, greyest or most nondescript building can be transformed by the stories that live in it. Once heard, these stories can change the way people think about that place and the city at large. All our stories are available on the [murmur] website, but their details truly come alive as the listener walks through, around, and into the narrative. By engaging with [murmur], people develop a new intimacy with places, and "history" acquires a multitude of new voices. The physical experience of hearing a story in its actual setting - of hearing the walls talk - brings uncommon knowledge to common space, and brings people closer to the real histories that make up their world. [murmur] was first established in Toronto's Kensington Market in 2003. That same year projects were launched in Vancouver's Chinatown and along St. Laurent Boulevard in Montreal, and over the past two years [murmur] has grown and expanded across other neighbourhoods in Toronto, Calgary, and San Jose, California. [murmur] Edinburgh launched in Leith in January 2007, and [murmur] Dublin Docklands launched in May 2007.) <http://edinburgh.murmur.info/> <http://murmurtoronto.ca>

- 2003 \_\_ **N.A.G. - Network Auralization for Gnutella**, Jason Freeman (N.A.G. (Network Auralization for Gnutella) is interactive software art for Mac OS X and Windows 2000/XP which turns the process of searching for and downloading MP3 files into a chaotic musical collage. Type in one or more search keywords, and N.A.G. looks for matches on the Gnutella peer-to-peer file sharing network. The software then downloads MP3 files which match the search keyword(s) and remixes these audio files in real time based on the structure of the Gnutella network itself) <http://turbulence.org/Works/freeman/> [http://music.columbia.edu/~jason/sandvox/catalog/music\\_technology/nag/](http://music.columbia.edu/~jason/sandvox/catalog/music_technology/nag/)

- 2003 \_\_ **Nine(9)**, Mongrel (A wide area of artware consists of "social software" — tools that are aimed at providing platforms for community-based exchanges and publishing. An example of this type of project would be Nine(9) by the British collaborative Mongrel. Nine(9) is a continuation of Mongrel's project Linker and was created by Mongrel member Harwood while he was artist-in-residence at the Waag Society Amsterdam. The project is an open-source software structure that allows individuals and communities to "map" their experiences and "social geographies." Nine(9) consists of a server-based application that can incorporate 9 groups x 9 archives x 9 maps = 729 collective knowledge maps. An important part of the project as "social software" is

an ongoing dialogue between users and programmers in order to transcend standardized social relations. Nine(9) obviously plays with limitations – in structure or functionality, respectively – to test and explore possibilities of software. [Christiane Paul] <http://9.waag.org/Info/> <http://www.mongrel.org.uk/research>

- **2003 \_\_ On-the-fly Counterpoint**, Ge Wang and Perry Cook, Princeton University (This piece is a study of the technical and aesthetic aspects of "on-the-fly" audio programming for synthesis and performance. We use the new ChucK synthesis language, which supports real-time, sample-synchronous, concurrent audio programming, and a highly "on-the-fly" style of programming, in which the composer | performer | programmer augments and modifies multiple programs while they are running, without stopping or restarting. "On-the-fly Counterpoint" begins with a blank ChucK program. As part of the performance, we project the entire process on the screen for the audience to see and follow. We construct the counterpoint piece-by-piece in real-time, using the facets of concurrent audio programming and on-the-fly programming in ChucK. Contrapuntal simultaneities can be separated and compartmentalized into autonomous, concurrent entities. We can program and reason about each entity independently, as well as interact with other entities and with the program as a whole. This is part of our ongoing investigation into using code as an interactive and expressive musical instrument. It is also an instantiation of the ideas in our NIME2004 paper: "On-the-fly Programming: Using Code as an Expressive Musical Instrument".) <http://on-the-fly.cs.princeton.edu/listen/>

- **2003 \_ Ozone**, Bas van Koolwijk & Derek Holzer (OZONE is an immersive electromagnetic environment in order to address the issue of the constant shifting tide of signals, frequencies and codes we are literally awash in during our daily lives. Four video monitors display an ever-changing array of video signal disturbances. The electromagnetic waves created by the monitors are captured by a series of specially-constructed antennae, and then converted to sound which is processed and spatialized over a 4.1 channel loudspeaker system. The sound, in turn, goes on to create further video signal disturbances, and an ongoing chain reaction ensues. This installation functions algorithmically in real-time, meaning that no two moments can ever be repeated. OZONE was originally commissioned as an installation by the Medienturn, Graz, and has been realized as a radio broadcast by Kunstradio, Vienna as a performance by the Earational Festival, Den Bosch, and as an installation for the European Media Art Festival, Osnabrueck) <http://www.umatic.nl/projects.html>

- **2003 \_\_ PEEP Variation for network auralizer**, Shinji Kanki (Network Auralizer which monitors network activity with sounds. It is conceived by Michael Gilfix and Dr. Alva L. Couch in Tufts University. The original sounds of PEEP are sounds from natural environments such as birds, frogs, water streams, etc. in order not to disturb or interfere network administrators' works) <http://silakka.fi/> <http://peep.sourceforge.net/intro.html>

- **2003 \_\_ Peerings**, Scot Gresham-Lancaster (A collaborative Internet2 performance between vocalists, musicians, dancers, designers, and audience members exploring the mediated space of live internet performance. Performers from Rensselaer Polytechnic Institute in Troy, NY and Mills College in Oakland, CA will perform in a common visual and acoustic space by virtue of the high-speed internet, the Synthetic Space Environment, a research project of Rensselaer Polytechnic Institute, and the interdisciplinary Center for Immersive Technology (iCIM) at California State University, Hayward) <http://www.o-art.org/peerings/>

- **2003 \_\_ Peeringscope**, Doug Van Nort (Audience participation/network instrument for Peerings: an internet2 collaboration. This instrument is an audio application that allows participants to collaborate in a live computer music performance via the internet with Doug Van Nort and Tadashi Usami of Mills College.) <http://dl.cwikked.com/peerings>

- **2003 \_\_ PeerSynth**, Jörg Stelkens (p2p multi-user network synthesizer. peer-to-peer performance that makes use of latency as a parameter of synthesis) <http://www.peersynth.de/>

- **2003 \_\_ « Peer-to-Peer: the collective, collaborative and liberated memory of sound »**, Alessandro Ludivico ("The unstoppable popularity of peer-to-peer networks and of millions of mp3 files exchanged every day cannot simply be reduced to the usual equation "free=everyone wants it". There is something more complex and wider-ranging that makes neophyte users constantly rack their brains over how to make hardware and software mechanisms work to access the "celestial jukebox". This is the instinctive search for one's own experience of sound, everyone's memory of music which has found somewhere to begin afresh and re-establish those neural connections which produce indelible associations between events and tracks and tunes. Unlike any form of 'revival', decided from above by publishers, the peer and non-profit network offers large amounts of original, unmanipulated material which awakens familiar sensations and brings back memories." - This text is part of the 'adonnaM.mp3 - Filesharing, the Hidden Revolution in the Internet' exhibition curated by Franziska Nori and the digitalcraft.org team into the Museum of Applied Arts in Frankfurt, opened to the public from the 19th of March to the 20th of April 2003) [http://www.neural.it/art/2003/04/peertopeer\\_the\\_collective\\_coll.phtml](http://www.neural.it/art/2003/04/peertopeer_the_collective_coll.phtml) [http://www.digitalcraft.org/index.php?artikel\\_id=504](http://www.digitalcraft.org/index.php?artikel_id=504)

- **2003 \_\_ Phonographic Migrations**, Yannick Dauby (remote projects based on exchanges of field recordings, and the concept of

shared soundscapes. "Phonographic Migrations" is the name of a series of remote projects based on exchanges of field recordings. The first two projects in the series are coordinated by Yannick Dauby and Dale Lloyd, and have been or will be published by Tiramizu and and/OAR Records, respectively. Its principle is to invite phonography enthusiasts to involve their recordings into a process of collaboration, that will be materialized into a publication or a public event, physical or on-line. The aim of these projects is introduce the possibility for participants to share sound information about one's environments through divergent channels, and consequently to enact a collective soundscape. There is no copyright on the "Phonographic Migrations" concept, and anyone is free to initiate a similar project.) <http://www.kalene.net/joomla/> <http://www.kalene.net/txt/ydauby-pspartages.pdf>

- **2003 \_\_ Pieces for Plants**, Miya Masaoka (Presented as part of Lincoln Center Out of Doors, Homemade Instrument Day in New York, Pieces for Plants is an interactive sound installation for laptop, synthesizer, and the American semi-tropical climbing Philodendron. Versions of the piece have also been presented in a musical setting in which the plant participates as a member and soloist within an instrumental ensemble. In the piece, a plant's real-time responses to its physical environment are translated to sound. Highly sensitive electrodes are attached to the leaves of the plant. Scored movements by a human "plant player" stimulate physiological responses in the plant that are monitored via the electrodes and biofeedback wave analysis. The "plant player's" proximity, touch and interactions with the plant are then expressed in sound via midi and synthesizer. During the piece, the plant is brought to a range of physical/psychological states, from calm to agitation. The audience is encouraged to contemplate questions such as: What is the nature of consciousness? What is our relationship as human beings to our physical environment and to other species — plants and animals? What does it mean to be human? During the all-day installation of the piece at Lincoln Center Out of Doors, some of the audience members came back again and again throughout the day to interact with the plant and watch others do so as well. The audience members — including children — seemed to have a special attraction to the project. A common response to the piece by audience members was a desire to talk about their relationship and experiences with plants during their lifetime, and things they had noticed which gave them an inkling that plants had extraordinary capabilities and awareness beyond what was normally attributed to plants. The piece evolved into really being about the people, their personal stories with plants, and I realized that I was brushing the surface of a deeper questions — our complex role as humans in a diverse, inter-dependent biological environment, and the potential for communication with plants that has not yet been discovered.) [http://www.miyamasaoka.com/interdisciplinary/brainwaves\\_plants/pieces\\_for\\_plants.html](http://www.miyamasaoka.com/interdisciplinary/brainwaves_plants/pieces_for_plants.html)

- **2003 \_\_ pim**, pizMO, Yannick Dauby, Jérôme Joy, Julien Ottavi (2001-2003), SFMOMA 33RPM ("factual & event musical moments, quasi-improvized and programmed-like, starting from digital audio, electronic and data-processing devices and systems. The concert is for them a kind of temporary "camping" (free laptop party or open audio streaming) - acapamentos -, a temporary interface of non-stop activities on the networks and the medias which we explore : radio, edition, p2p, streamings, etc." PizMO was an improvisation trio between 2001 and 2003, based on total improvisation (no rehearsals) and complete immersive listening.) <http://pizmo.free.fr/> <http://jeromejoy.org/>

- **2003 \_\_ Ping Melody**, Pawel Janicki, WRO Center For Media Art, EyesWeb system from Laboratorio di Informatica Musicale DIST - University of Genoa (music-net-performance. emporary and unique state of all actions of Internet users has an influence on form of music composition. Musician (instrumentalist or singer) is playing on acoustic instrument/singing and sounds coming from instrument/voice are shared in packets of data information (granulated), then transmitted to selected Internet locations (as "ping" unix command) <http://ping.wrocenter.pl/>

- **2003 \_\_ PoliceState**, Jonah Brucker-Cohen, Dutch Electronics Arts Festival (DEAF) (PoliceState is a Carnivore client. Carnivore was the third incarnation of surveillance software such as Etherpeek and Omnivore created by the FBI to snoop on data such as email, urls, Instant Messages, etc. sent through Commercial ISPs. PoliceState connects to the open-source version of Carnivore (which exists as a server and packet sniffer) developed by the NYC-based Radical Software Group and attempts to reverse the surveillance role of law enforcement into a subversive one for the data being gathered. The client consists of a fleet of 20 radio controlled police vehicles that are all simultaneously controlled by data coming into the main client. The project looks for packet information relating to international and domestic US terrorism. Once found, the text is then assigned to an active California state police radio code, translated to its binary equivalent, and sent to the array of police cars as a movement sequence. In effect, the data being "snooped" by the authorities becomes the same data used to control the police vehicles. Thus the police become puppets of their own surveillance. This signifies a reversal of the control of information appropriated by police by using the same information they gather to apprehend criminals but instead, uses it to control the police themselves. In the gallery, the PoliceState police cars are setup on a raised platform with a projection of the screen interface so that visitors can see the data being parsed in real-time through the network. For this particular installation I am using data gathered at local and International wireless hotspots as well as the traffic moving through the gallery's local area network (LAN). <http://www.we-make-money-not-art.com/archives/2006/09/interview-of-jo.php> [http://www.noemalab.org/sections/gallery/brucker\\_cohen/police\\_state.html](http://www.noemalab.org/sections/gallery/brucker_cohen/police_state.html) <http://www.coin-operated.com/projects/policestate.html>

- **2003** \_\_ **Pure : Dyne – Dyne : bolic** (Dyne:bolic, the instant bootable gnu-linux system, is shaped on the needs of media activists, artists and creatives as a practical tool for multimedia production: you can manipulate and broadcast both sound and video with tools to record, edit, encode and stream, having automatically recognized most device and peripherals: audio, video, TV, network cards, firewire, usb and more; all using only free software! Denis Rojo, aka jaromil, has designed Dynebolic to meet "... the needs of media activists, artists and creatives as a practical tool for multimedia production". With this goal in mind Dynebolic has been designed to be functional and powerful even on lower-powered hardware. According to its minimum requirements Dynebolic will run on any machine with at least a Pentium processor and 64MB RAM. Since Dynebolic runs in either live or installed modes you don't even need a hard disk. Pure:dyne is an operating system developed to provide media artists with a complete set of tools for realtime audio and video processing. pure:dyne is a live distribution, you don't need to install anything. Simply boot your computer using the live CD and you're ready to start using software such as Pure Data, Supercollider, Icecast, Csound, Fluxus, Processing, and much much more. You can boot pure:dyne from usb stick, CD or DVD. All you have to do to get started is download pure:dyne, put it on your preferred medium and boot your computer. Without installing anything you'll have the full system at your disposal, including all the software that comes with it. pure:dyne is optimised for use in realtime audio and video processing. Both the system and the software are tuned especially for low latency and high responsiveness. pure:dyne is based on Debian and Debian Multimedia. All packages provided by pure:dyne can be used if you are running these flavours of GNU/Linux. pure:dyne is developed by artists, for artists. Our primary users are people like us – media artists who build all kinds of creative projects, using pure:dyne to do anything from recording and manipulating sound, making live visuals, creating interactive media in installations, and more. We use 'artist' as a broad term for anyone who is doing or wants to do something creative using their computer. Currently developed by Rob Canning, Heather Corcoran, Antonios Galanopoulos, Karsten Gebbert, Claude Heiland-Allen, Aymeric Mansoux, Chun Lee, and Marloes de Valk (and formerly with Jaromil), it's a complete GNU / Linux platform for Free / Libre / Open Source Software (FLOSS). pure:dyne for everyone is a project by GOTO10 and friends. With partners Access Space, MediaShed and Folly, pure:dyne for everyone is supported by the Creative Partnerships programme of Arts Council England.) <http://puredyne.goto10.org/> <http://goto10.org/puredyne/>

- **2003** \_\_ **Raccorps**, Apo33 (Raccorps project operates as a system in which artists expand their practice toward a greater spatial understanding. Through such work, Apo33 dramatically shifted its focus from organizing concerts and performances toward constructing framework for reimagining the very structure of musical presentation. As in Tanaka's experiments, Raccorps demand that a musician relate to spaces beyond local presence in which bodily gesture, instrumentation, sound production, and spatial materiality contend with telepresent interactions. For instance, in 2003, the group Le Doigt de Galilée was invited to give a performance incorporating the spatial framework presented by Apo33. This took the form of a live performance occurring in one space (an apartment) then being transmitted through the Internet to the Apo33 studio and then again sent to another space, this time a large bunker in the city (Nantes) that operates as a music venue, then farther, to another private apartment, and finally, to arrive back at the musicians. Inviting the public to visit the various sites over the course of the performance, each space, in turn, developed specific spatial reflections: the apartment spaces presented the sounds through small home stereos, creating a more intimate listening experience, while in the bunker a large sound system was used, creating a radically different acoustical and social environment. Each node along the network thus added its particular local quality, while feeding and influencing the sonic creation. (...) The Apo33 work accentuates the contextual boundaries of a given sound event while broadcasting and transposing it onto a greater space of sound. (...) Mixing architecture, mixing music, Apo33 use the musical organization of a given band or artist to organize multiple spaces, shifting spatial meaning into a form of musical significance. [Brandon Labelle] <http://www.apo33.org/raccorps/>

- **2003** \_\_ **Radio 4x4**, free103point9 (Radio 4x4 is a collaborative radio transmission performance. Four simultaneous audio performances are separately sent through FM transmitters to radios positioned throughout a performance space. Each radio receives only one of the signals, so that the audience becomes an active collaborator in the performance, "mixing" the audio feeds by moving about the space among the four signals. Radio 4x4's have taken place at Anthology Film Archives, Art in General, the free103point9 Gallery, OfficeOps, and Hogar Collection in New York; the Walker Art Center at the Minneapolis School of Art in Design in Minnesota; as part of South Korea's tenth Gwangju Biennale; and at the Center for Contemporary Art Laznia in Gdansk in May 2005.) <http://www.free103point9.org>

- **2003** \_\_ **Radio Kinesonus**, Tetsuo Kogawa (Tetsuo Kogawa began to stream his live performance regularly over the net. "We have started this net.radio station exclusively for experimental sound art and performance." (Hiroshi Hasegawa, Kenji Maehara, Tetsuo Kogawa, Hiroyoshi Osanai). 2007 presentation : Radio Kinesonus has been established in celebration of the Art's Birthday 2003. Therefore Art's Birthday is always special in our program. In our understanding, Art's Birthday is a continuing project that Robert Filliou initiated the idea and Hank Bull, Robert Adrian and Heidi Grundmann developed toward global networking. I personally started to be involved in it in the early 1990s on Hank's invitation. Radio Kinesonus has been conscious of the dual aspects of the Art's Birthday: getting together face-to-face and networking globally. Every unit of face-to-face party around the world spontaneously links together over the telephone previously and the Internet today. This year, our party consisted of four types of participations: face-to-face, telephone and videophone, recorded files and the live Internet connection. As an introduction, Hank Bull

and his friends in Vancouver sent their voice and still video images over the videophone. This was a reproduction of the legendary media performance of Hank Bull. By the MP3 files, Keith de Mendonca from Bangalore, India, Jacques Foschia from Brussels, Belgium, Tonic Train (Knut Aufermann and Sarah Washington) from Vienna, Austria, Ralf Homann from Haparanda, Sweden participated. Over the Internet, Jan Hendrik Brueggemeier from Weimar, Germany provided his live streaming. The Tokyo-based sound artists Reiko A, Kelly Churko, Jun Oenoki, Astro aka Hiroshi Hasegawa, and Tetsuo Kogawa provided their live performance at the "STUDIO" of Tokyo Keizai University.) <http://anarchy.k2.tku.ac.jp/kinesonus/> <http://anarchy.k2.tku.ac.jp/streaming/> [http://www.translocal.jp/radioart/tetsuo\\_radioartperformance.html](http://www.translocal.jp/radioart/tetsuo_radioartperformance.html)

- 2003 \_\_ **Rant/ Rant Back/ Back Rant**, Peter Sinclair & GH Hovagymian (special interface to sample voice input, manipulate it and send it back into the general audio mix in real time and by streamings. There are two performers; the ranter and the processor. In English the word rant means (verb) to talk in a noisy, excited or declamatory fashion or (noun) a bombastic, extravagant speech. The processor listens to the ranter and grabs live audio which he outputs to loud speakers. The ranter hears the processed sound clips and responds. The performance can be likened to to a musical jam session using digital signal processing. In society you often see ranters on the street. They talk about the current events or shout about people in power etc. They often speak the truth. We listen with one ear while pretending not to hear. The two performers process the information in a feedbackloop, in real time. What then is the content ? It's information gleaned from TV, newspapers, conspiracy theories, hearsay, paranoid delusions etc. Presented at "La Gâté de Paris" September 2003, Split New Media Festival - Croatia September 2003) [http://nujus.net/gh\\_04/gallery9.html](http://nujus.net/gh_04/gallery9.html) [http://spaghetti.nujus.net/rantapod/archives/cat\\_rants.html](http://spaghetti.nujus.net/rantapod/archives/cat_rants.html)

- 2003 \_\_ **Resonance fm London Soundscape**, Tom Wallace (This project aims to broadcast simultaneous 'live' soundscapes from various locations around London. This is made possible using laptops to stream audio over the internet using 'Wifi' networking. The 'streamed' audio is then broadcast on Resonance FM) <http://www.londonsoundscape.net/>

- 2003 \_\_ **Semantic HiFi**, IRCAM (In the context of large-scale digital music distribution, the goal of the project is to develop a new generation of HIFI systems, offering new functionality for browsing, interacting, rendering, personalizing and editing musical material. This next generation of hard-disk based HIFI systems will drastically change the home users' relationship to music and multimedia content. They will be able to interact with music, blurring the traditional limits between playing, performing and remixing. These HIFI systems will be as much open instruments as listening stations.) <http://shf.ircam.fr>

- 2003 \_\_ **SimpleTEXT**, Jonah Brucker-Cohen, Tim Redfern, Duncan Murphy (SimpleTEXT is a collaborative audio/visual public performance that relies on audience participation through input from mobile devices such as phones, PDAs or laptops. SimpleTEXT focuses on dynamic input from participants as essential to the overall output. The performance creates a dialogue between participants who submit messages which control the audiovisual output of the installation. These messages are first parsed according to a code that dictates how the music is created, and then rhythmically drive a speech synthesizer and a picture synthesizer in order to create a compelling, collaborative audiovisual performance. SimpleTEXT was originally funded by a commission from Low-Fi, a new media arts organization based in the UK. The modular organization of SimpleTEXT relies on pieces of subverted and repurposed software to be linked into a performing whole. These include several custom applications that we have designed that enable various types of audience input in both mobile and stationary environments. The project is informed by, and makes use of components developed for projects such as 'AudioBored', 'Falken's Maze' and 'Octree.Faces' A vital aspect of this lies in creating feedback between these systems which can be delicately balanced in order to allow audience interactions to trigger spectacular, unexpected chains of events. SimpleTEXT focuses on mobile devices and the web as a bridge between networked interfaces and public space. As mobile devices become more prolific, they also become separated by increased emphasis on individual use. The SimpleTEXT project looks beyond the screen and isolated usage of mobile devices to encourage collaborative use of input devices to both drive the visuals and audio output, inform each participant of each other's interaction, and allows people to actively participate in the performance while it happens. Our purpose with the performance is to create the possibility of large-scale interaction through anonymous collaboration, with immediate audio and visual feedback. SimpleTEXT encourages users to respond to one another's ideas and build upon the unexpected chains of ideas that may develop from their input. SimpleTEXT is a rare example of an interactive piece that works in crowded public spaces such as social and unruly atmospheres where heckling, irony, criticism, and sarcasm are common modes of communication. We are unaware of such a large-scale interactive piece in terms of scale of audience interaction, where the interaction is as tangible, direct, and therefore individually satisfying. The result is a public, shared performance where audience members interact by sending SMS, text, or voice to a central server from their input devices. These messages are then dynamically mixed, cut, parsed, and spliced to influence and change the visual and audio output. These communications are also run through a speech synthesizer and a picture synthesizer. The incoming images and text are dynamically mixed according to specified rule sets such as pixel values, length of text, specified keywords, and inherent meanings.) <http://www.simpletext.info>

- 2003 \_\_ **SisterO Trinity**, Nancy Mauro-Flude, Linda Dement, Michelle Teran (Sister O is an digital media divinator, a

conduit for the underwater database, [a realm where, subjugated knowledge's that are unvalidated and censored surface themselves & are mobilised]] a morphing creature who multiplies, and resonates in individual ways depending on the place. sister O often conducts Operation's via the internet, the cellular network in a trinity (Nancy Mauro-Flude with Linda Dement, Michelle Teran) in order to mobilise information that is kept under the surface, the underwater database. Often these performance installations are based on real-time digital media processing using collaborative virtual environments with KeyWorx software.) <http://sistero.sysx.org/sisterOtrinity/index1.html> <http://sistero.org/sister0operations/static.php?page=sister0trinity> <http://sistero.sysx.org/networked%20spaces/porthole/porthole.html>

- **2003 \_\_ Six Pack Radio**, Per Platou (compact, networked, concert concept - a portable FM radio/ PR system for live concerts and installations. Six off-the-shelf micro-FM senders are used to transmit audio signals from a 'mixing board' to six battery-driven mono-radios. The cable-free mono-radios are placed according to the specific location at hand to achieve the desired acoustic expression of the concert. Diverse eclectic sound sources; live instruments, vocals, modulated samples and environmental sounds are processed and distributed as a live mix to the six radios as a real-time musical composition is performed. Collaborations with local musicians and radio stations (including eventual pirate radio stations) are desirable, as well as net radio collaborations. Collaborations with both local and net radio stations may include both the transmission of audio signals as sound material, and the transmission of the concert on local radio. A supplementary part of the Six Pack Radio concept includes lectures on the history and development of the micro FM, radio art and net radio movements, and the [mpepe.fm](http://www.mpepe.fm) webpage will host a number of links to historic and DIY websites) <http://www.notam02.no/motherboard/SIXPACK/>

- **2003 \_\_ Sounding the Net**, John Levack Drever («You are invited to participate in 'Sounding the Net' by recording the prevailing environment(s) in which you, your computer and web connection are located. We are interested in the sounds of the space(s) in which the Internet is modulated and experienced, and where it surfaces in the 'real' world. ») [http://www.swr.de/swr2/audiospace/engl\\_version/audioart/projects/sounding\\_the\\_net.html](http://www.swr.de/swr2/audiospace/engl_version/audioart/projects/sounding_the_net.html)

- **2003 \_\_ Sound Walks via SoundCity**, Jakob Hougaard Andersen, Stanza (Sound Walks explores some of the possibilities of Stanza's Soundcities. It uses the Soundcities database through the openly distributed XML-file. Choose the city you want to visit: Amsterdam, Barcelona, Bergen, Bilbao, Bristol, Cork, Dresden, Ljubljana, London, Los Angeles, Napoli, Paris, Rotterdam, Salzburg, San Francisco, Sao Paulo, Shanghai, or Tokyo. Soundcities is an online open source database of city sounds from around the world, that can be listened to, used in performances on laptops, or played on mobiles via wireless networks. Initially all of the sounds were by Stanza, but you can now contribute your own found sounds. This is was the first online open source found sound database. First version 2003.) <http://www.daimi.au.dk/~u042689/soundwalks/> <http://www.soundcities.com/>

- **2003 \_\_ Talking Crosswalks - An Acoustic World Atlas**, ORF Kunstradio Vienna, Wolfgang Temmel, Norbert Math (for this senseless sound project, artists are being invited from around the globe to record authentically on location these minimalistic "signal symphonies" which often resound so differently from country to country) <http://www.kunstradio.at/PROJECTS/CROSSWALKS/>

- **2003 \_\_ « Telematic Embrace »**, Roy Ascott ("A network is any system of interconnected points / locations, nodes, which become greater, augmented, than when in isolation. While emphasis is most often placed on the nodes, it is the connections / links / lines / flows, the spaces between, the hinterland of the network, and their resulting mesh / matrix, which provides the site, means and context for the networks ability to transfer and transform. Similarly art can be thought of as a space in-between: "The work of art occupies a pivotal point between two sets of behaviour, the artist's and the spectator's. It is essentially a matrix, the substance between. It exists nether for itself nor by itself.")

- **2003 \_\_ Tune(In))**, free103point9 (Tune(In))s are sound events designed for a virtually silent environment in which listeners experience multiple live performances in individual radio headsets as opposed to amplified within a performance space. Audience members encounter other signals on the FM dial as they navigate among the Tune(In)) frequencies thus considering the spectrum as a potential venue in and of itself. Past Tune(In))s have been presented at the NY Center for Media Arts, Long Island City (2003); The Kitchen, New York (2004); The Santa Fe Art Institute, New Mexico (2004); the free103point9 Gallery, Brooklyn (2005), and free103point9 Wave Farm (2005.) <http://www.free103point9.org>

- **2003 \_\_ Wählt die Signale! Ein Radiokonzert für 144 Handys** (Dial the Signals !), Ligna, in combination with Radioballett (18 April 2003: Hamburg Kunsthalle, Hamburg, Germany. "Dial the Signals!" was a temporary installation of a radio station, 144 mobile phones, numerous radios and the listeners of the free radio FSK, being all part of a complex instrument. The radio transmitter, die phones, the radios of the listeners and die spaces of the Hamburger Kunsthalle (as junction and resonator) are the technical elements of an equipment, that developed public-collective aleatory acoustics. The radio concert had an explicit beginning and ending. The audience could take in the concert part via phone from any place. During 12 hours, from Saturday evening 20pm to

*Sunday morning 8am 144 mobile phones could be reached via 144 phone numbers. The temporal extension of 12 hours should avoid the compression of sound like in common concerts. On the other hand the concert should change in relation to the listeners' situation of reception. The aim was to make evident that the radio concert is not received dispersively, but also played dispersively. The caller could produce a spontane and complex music, audible on the radio: the calling person was composing at the same time. The phone numbers of the mobile phones had been published before, so that the listeners could directly address the mobiles and enable the concert and also navigate the concert. It consisted exclusively of the ring tone of the calling mobiles. There was no other superior entity, having direct access to the creation of sounds. The aim was to make evident that the radio concert is not only received dispersively, but also played dispersively.)* <http://www.transmediale.de/04/page/detail/detail.0.projects.111.html>

- **2003** \_\_ **Windows Oscillations**, Katherine Moriwaki (She explores ad hoc networking, where connections are made directly between individual devices, so that data can hop from one to another without needing to be routed through a central point. She presents an application for close-proximity network communication: Oscillating Windows. The project uses physical co-location, proximity, and group interaction to move a digital image from one location to another. With this project we explore the concept of 'enforced cooperation' and the effect it has on the spatial and social behavior of individuals in public space. The technology at the core of this project is an ad-hoc network developed by the NTRG at Trinity College Dublin. Successful transmission of data from source to destination in an ad-hoc network depends on there being a critical mass and distribution of nodes to create a path for the data. This can be seen as a weakness of ad-hoc networks as it means that communication between two nodes is not always possible. However, we leverage this perceived weakness by establishing a consequential 'reward' which capitalizes on non-verbal aspects of body language and communication. Oscillating Windows provides an opportunity to exploit the natural formations and patterns of individuals and groups in social and public space. The way in which people sit and orient themselves while socializing, or the way in which their movement in a public space is directed/constrained in a public space can be exploited within this framework.) <http://www.kakirine.com/windows/>

## 2004

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- **2004** \_\_ **212 925 2035 ext 17**, The Swiss Institute (In 2004, The Swiss Institute of Contemporary Art began inviting artists to create voicemail works as part of their effort to inhabit their exhibition space as comprehensively as possible. Past projects have included works from Kim Gordon, John Giorno, Olaf Breuninger, Radio Ghost/Laurent Grasso, Lawrence Wiener, Bill of the Mob Project, Dan Graham, Santa Clause, Janine Gordon, Nic Hess, and Christophe Fiat. Call (212) 925-2035 ext 17 to hear the current project.)

- **2004** \_\_ **AgoraXchange**, Natalie Bookchin (Natalie Bookchin's agoraXchange, an online community for designing a massive multi-player global politics game aimed at questioning violence and inequality of present political systems and exploring issues of government and governance. The project was commissioned by Tate Online and launched on 15 March 2004. The project explicitly invites participation by individuals, groups, classes, or organizations and the development takes place in a collaborative virtual space called the "Game Design Room." It is interesting to note that agoraXchange establishes certain governing rules by asking that proposals must be consistent with the four Decrees of the project (citizenship by choice, not birth; no inheritance; no rules for kinship relations established by a state; no private landrights). In terms of the concept of a digital commons, the project consists of shared resources, but the rules and mechanisms of access are not entirely determined by the community. [Christiane Paul - Digital Art / Public Art : Governance and Agency in the Networked Commons])

- **2004** \_\_ **Anywhere**, The Kitchen NYC (ANYWARE global streaming event organised by SHARE @ KITCHEN, New York. networked audio/visual collaborations, worldwide online livecast, artists from 14 cities create multiple webstreams in this synergistic public performance. Artists are collaborating from remote locations to generate an enveloping audio visual experience for your entertainment. Around the room are headphone stations with displays from which we invite you to take a look at different contributions streaming in from 3 continents. Over The Kitchen's house PA and on multiple projection surfaces around the room, you may witness the collaborations from our perspective here as we tune in and create fresh media locally to stream back out into the ether. [London : Phil Durrant, Rob Flint, Leafcutter John, Ryoko Kuwajima, Joe Gilmore, Kaffe Matthews], [Barcelona : Solu, Eduardo Imasaka, Nice-Noise, Fernando Casanas, Felix Luque], [Prague : Lemuria TAZ (Milos Vojtechovsky, Jan Dufek, Ladin Zelezny, Jan Bartos), Martin Janicek], [Ljubljana : Luka Princic, Yves Degoyon, Dunja Kukovec], [Berlin : aaron spectre, Bryan Jurish & Hans-Martin Görtner, Boris Hauf], [Vienna : dieb13, stefan geissler, michaela schwentner "jade"], [Montreal : [sic], Tomas Phillips, Tobias c. van Veen, Sylvain Aubé, Physical Noise Theatre], [Toronto : Ben Bogart, Jeremy Rotsztein, Michelle Teran], [Los Osos, CA : Isabelle Jenniches], [Brno : "Cell Interactive Ambient - (C.I.A.)" / Michal Marianek, Robert Morkovsky, Fiip Nerad, Vaclav Ondrousek, Dusan Urbanec], [New York City : Jodi Shapiro, Eric Redlinger, Michael Liegl, Shelley Hirsch, o.blaat, koosil-ja,

"Out of Phase-- Audio Nude Descending a Staircase #2", Lu(x)z+seeMonkey, Amoeba Technology, ikulius) <http://share.dj/events/anyware/>

- **2004 \_\_ Apodio multimedia GNU/Linux LiveCD, Apo33** (This LiveCD or USB GNU/Linux distribution is a complete system for everyday work, and not only multimedia. It base on the very good SAM distribution wich is based on the famous PCLINUXOS wich is based on the well-known Mandriva distribution. Apodio 4.3.9 is based on the Mandriva 2006.1 distribution, with a 2.6.12 kernel, ALSA 1.0.9b, and version 0.100.1 of the JACK audio server. I was unable to determine whether the kernel had been optimized for low-latency audio and high-definition MIDI timing, but Apodio's overall performance was impressive. According to its Web home, Apodio is "... a GNU/Linux platform containing audio, text-friendly, graphic and video tools. It can be used as a liveCD or be installed on a partition of your hard disk. APODIO is a GNU/Linux platform containing audio, text-friendly, 3D, Streaming, graphic, Live Coding and video tools. It can be used as a liveDVD or be installed on a partition of your hard disk (on any PC 32bits to Mac Intel).) <http://apo33.org/apodio/> <https://sourceforge.net/projects/apodio/> <http://apodio.org>

- **2004 \_\_ (area) code** : a collaboration between centrifugalforces and Jen Southern, FutureSonic04 ((area)code is a themed locative project that enables passers by to leave their own digital graffiti through simple SMS. Text the numbers on the (area)code signposts that have sprung up around Manchester to reveal the hidden history of the location at which you stand, and upload a story of your own - something you did there, some useful advise, or what that place means to you - for the next passing stranger to discover. A themed and participatory locative media project that "annotates" the city and builds an ever growing record of personal traces. Whereas the buzz around locative media is often about emergent technologies, (area)code - in a similar way to projects such as [murmur] - <http://murmurtoronto.ca/> - allows anyone with a phone in their pocket to participate.)

- **2004 \_\_ Art's Birthday 2004, Scrambled\_Bites** (Artists from around the world streamed sensor data with the intent of activating robotic devices in various social spaces. Cake was consumed. The data streaming project was developed during Scrambled\_Bites - a year long artist residency at the Western Front. "Scrambled Bites" is a year long project initiated by the Western Front Artist-Run-Centre. The central theme of the project is to collect data from sensors that are used in multiple installations (by different artists), use the Internet to translate and re-route this information, and then send the data back to the installation sites. In this way, the data of one art work informs the output (or content) of others. The project is inspired in part by a web-article Entropy and Imagination by Christopher Locke and a desire to strip-back complex systems to reveal the basic underpinnings of data flow, exchange, and intersection. It is intended as a forum for research, demonstration, and critical dialogue and includes three artist-in-residence projects and a variety of artist talks, walk-through workshops, presentations, streaming events, and a catalogue. The Scrambler is a message server that is used to connect the work of different artists. It broadcasts data from various sensors and other inputs to anyone who wants to receive and decode the data stream. The visualizer is a simple Java Applet that monitors traffic through the server. Artists can connect to the server using Norman Jaffe's TCP Client object for cycling 74's Max programming language, or use an ASCII protocol through Telnet, Java, or any other programming language that supports TCP Client socket) <http://projects.front.bc.ca/2003/scrambled/> <http://kunstradio.at/SPECIAL/AB2004/> <http://toysatellite.org/arts-birthday/>

- **2004 \_\_ Audicle**, Ge Wang, Perry Cook, Ananya Misra, Philip Davidson (November 2004, ICMC, Audicle: a Context-sensitive On-the-fly Audio Programming Environ/mentality presented, Ge Wang, Perry Cook, Ananya Misra, Philip Davidson. Many software environments have been developed for computer music. Programming environments typically provide constructs to implement synthesis or musical algorithms, whereas runtime environments allow performers to exert parametric control over their programs onstage, in real-time. We present a potentially new type of audio programming environment that integrates the programmability of the development environment with elements of the runtime environment. The result, called the Audicle, is a duct-taped intersection of a concurrent smart editor, compiler, virtual machine, and debugger, all running in the same address space, sharing data, and working together at runtime. We sometimes believe this augmentation has the potential to fundamentally enhance the way we write and visualize audio programs both offline and on-the-fly. Our model of the Audicle is integrated with the ChuckK programming language and inherits many of its fundamental properties, including: decoupling of data-flow and time, concurrency, and modularity for on-the-fly programming. The Audicle not only provides an amusing class of programming tools for real-time composition and performances, but also motivates a new type of on-the-fly programming aesthetic: one of visualizing the audio programming process.) <http://audicle.cs.princeton.edu/>

- **2004 \_\_ Aura**, Steve Symons, FutureSonic04 (Aura explores how a soundscape is composed by the relative movement of participants. Sounds will be placed within Cathedral Gardens outside Urbis to create a virtual sound environment. These sounds will be accessed through walking through the space wearing headphones and carrying a Global Positioning System (GPS) enabled Personal Digital Assistant (PDA), which coupled with a digital compass will provide full spatial listening and allow individual users to hear the location of other users. Aura seeks to go beyond the conventional approach within locative media of overlaying of digital information onto real space by focusing on dialogues and communication between participants, enabling them to work

together to create sonic tapestries through their relative movements. Augmented reality involves the overlaying of digital information onto real space. By moving through the real environment users experience the digital information at the location to which it refers. The aura project takes this on through the full sonic augmentation of real space. aura rejects visual interfaces (mouse, keyboard, screen) in favour of directional augmented reality using 3-dimensional sound to create a seamless, naturalistic experience. Probably the best metaphor for an aura sound world is to imagine walking through an array of invisible audio speakers suspended in space. Each speaker represents a sound node and emits different audio depending on where you, the user, is situated in relation to it.) <http://stevesymons.net>

- **2004 \_\_ Auracle**, Max Neuhaus (Jason Freeman, C. Ramakrishnan, Kristjan Varnik, Phil Burk, David Birchfield) (*Auracle is a voice-controlled, networked sound instrument that enables users to control a software synthesizer with their voice and to interact with each other in real time over the Internet. The architecture of the system includes the multi-level analysis of vocal input, the communication of that analysis data across the network, and the mapping of that data onto a software synthesizer. Not only is Auracle itself a collaborative, networked instrument, but it was developed through a collaborative, networked process. It is implemented in the JavaTMprogramming language using a combination of publicly available libraries (JSyn and TransJam) and custom-built components. Users run a Java applet through which they can "jam" with others around the world. The applet analyzes and classifies user microphone input and transmits the analysis and classification to other participants in the jam. This data drives a synthesis module, which itself evolves in response to the user input.*) <http://www.auracle.org/>

- **2004 \_\_ The Burning Question**, Abinadi Meza (*In a gallery setting, several computers were loaded with multiple tunes-contributed by other artists under a free license. Visitors were offered blank cd's and invited to freely burn music; as they mad playlists, they collectively generated an 24 hour-Internet radio broadcast from the gallery for the duration of the exhibit. The gallery became an impromptu radio station and visitors became guerrilla DJ's.*) <http://abinadimeza.net/>

- **2004 \_\_ The Bush Telegraph - Networked Cooperative Music-Making**, Rodney Berry, Mao Makino, Naoto Hikawa, Masami Suzuki (*The Bush Telegraph is based on the Music Table, a system that allows people to make music by arranging cards on a table. Because the user manipulates a schedule for note events rather than directly initiating them, this schedule can be shared between two remotely linked systems. The Bush Telegraph allows remote players to play together without timing problems due to network delays. Shared music making is made very easy but still allowing for creative freedom. We see this type of system becoming a fixture in dance club environments.*)

- **2004 \_\_ CERNET2 - China Education and Research Network** (*CERNET2 is the biggest next-generation Internet network in operation in the world and connects 25 universities in 20 cities in China. The speed in the backbone network reaches 2.5 to 10 gigabits per second and connects the universities at a speed of 1 to 10 gigabits per second. A trial on CERNET2 between Beijing and Tianjin on December 7 achieved a speed of 40 gigabits per second, the highest in the world in real applications. CERNET2 is also the first network based on pure Internet Protocol Version 6 (IPv6) technology, one major characteristic between the current Internet and the next-generation Internet. CERNET2 is the largest next-generation Internet backbone which is the core network of the China next generation Internet demonstration project CNGI and is the only nationwide academic network, also it is so far the world's largest native IPv6 backbone. CERNET2 will use CERNET's nationwide DWDM transport network to connect all key research universities distributed in 20 cities around China with speed of 2.5~10Gbps, and will provide IPv6 connectivity to more than 200 universities and other institutions and R&D organizations which will offer domestic and international Internet access via the exchange point CNGI-6IX. China Education and Research Network (CERNET) established in 1994 played a significant role in the development of China Internet as the first IPv4 nationwide Internet backbone. Under the leadership of Ministry of Education CERNET launched the investigation and experiment of next-generation Internet in 1998, resulting in the establishment of IPv6 test bed (CERNET-IPv6). In 2000, China first next-generation Internet NSFCNET and China next-generation exchange point DRAGON TAP were established in Beijing, which took part in the Internet organization on behalf of China and realized the interconnection with international next-generation Internet. In 2001, CERNET brought forward the program to construct nationwide next-generation Internet. In August 2003, CERNET2 program was brought into China next-generation Internet demonstration project CNGI which was confederative leaded by eight ministries and commissions including National Development and Reform Commission. In October 2003, CERNET2 trial network connecting Beijing, Shanghai and Guangzhou cities was in operation. On 15th January 2004, the largest international science Internet organization including Internet2, EU GEANT and China CERNET declared the simultaneous opening of global IPv6 next-generation Internet service to all over the world in Brussels, capital of Belgium and Europe Union HQ. In December 2004, CERNET2 backbone opened and its PoPs are distributed in 20 cities with 10G transmission rate.*) <http://www.cernet2.net>

- **2004 \_\_ City Sounds 1.0**, Spatial Information Architecture Laboratory (SIAL) RMIT University Melbourne (*Audio/visual simulation of an indicative inner city Melbourne precinct. CitySounds was developed for the City of Melbourne, to investigate individuals' awareness and attitudes to sounds within the CBD (database). Like most contemporary cities seeking to promote a*

*diverse and lively inner city culture, the Melbourne City Council is dealing with a diverse array of sound related issues affecting its residents, commercial operators, workers and visitors. The Council required an instrument to collect a broader range of individual responses to acoustic conditions and aural experiences within the CBD than was currently available simply from noise complaints or further acoustical measurements. Using the Auran Jet games engine, the staff in the SIAL Sound Studios developed an application combining a 3D model of an indicative Melbourne precinct, with detailed soundscape design and a series of embedded survey questions. Survey results are sent and collected online. Respondents can self-navigate the virtual precinct or be automatically 'flown' through it. By stepping through special visual markers, survey questions are activated on-screen. At each point, the questions relate to the soundscapes heard at that location, forming an immersive survey designed to maintain contextual cues about sound in an urban environment. When they have finished the virtual soundwalk, respondents can send their previously saved answers over the web to a server, where they are collected for later analysis.)* [http://www.sial.rmit.edu.au/Projects/City\\_Sounds.php](http://www.sial.rmit.edu.au/Projects/City_Sounds.php) <http://sound.sial.rmit.edu.au/>

- **2004 \_\_ Come Closer**, Squidsoup (*Come Closer* (2004-5) uses wearable technology and collaborative interaction to explore and challenge our sense of personal space and proximity to others. Participants in the piece become acutely aware of each other; aware of their presence in both physical and virtual space. They are encouraged to probe and investigate the boundaries that define our personal space, to test them and to cross them. Interaction is defined entirely by people's position in a room, and the distances between them and others. Continuing squidsoup's explorations into immersive intuitive media and the boundaries between virtual and physical space, *Come Closer* uses wearable technology, wireless networking and stereo vision to explore and expand on our sense of personal space and proximity to others. The closer two people get to each other, the more acutely aware of each other's presence they become. This sensation may be comforting or disquieting, but participants are encouraged to transcend the normal barriers of personal space and explore the meaning of closeness in both virtual and physical terms. The space between people is filled with sound that is affected by their movement and position. With more people in a room, complex harmonies begin to appear and disappear, allowing scope for cooperation and confrontation, intimacy and rejection.) <http://www.squidsoup.org/comecloser/>

- **2004 \_\_ Compatible / Téléchargeable**, Richard Kongrosian & Jérôme Joy, *Oeuvres dans la ville II / Works in the city II*, La Villette, Festival d'Automne, Paris - in collaboration with Locus Sonus (*A concert for Disklavier solo - for the first time in France -, a website with downloads of Disklavier musical works to be played at home, and finally an updatable and evolving database of contemporary and historical works for Disklavier and mechanical piano has been set up. "In this period of the convergence of the digital technologies, just as the artists more and more abandon the exhibited forms, the artworks seem to disappear and to become non-materialized. In fact we are at the emergence of practices which are discrete, crypted and infiltrated into other social spaces, encapsulated into other economies, or in emulating other cultural practices, and in oftenly escaping the question of their own artistic status. To the logic of exhibition are now succeeding logics of downloadings. The "Compatible" project is speaking about the setting up of downloading forms and is offering to three artists the possibility to develop strategies of inter-operabilities."* [Paul Devautour]. *"The mechanical piano, already fed by an historical repertoire, embodies the meeting between composition and programming, between mechanics and feelings, between presence and absence. The recent electro-mechanical pianos are deserving a contemporary musical repertoire which concerns the new situation of home playing, into our networked society. The aim of the International Contest Richard Kongrosian and Concert want to favour the creation of works for electro-mechanical piano (Disklavier), and to build up a collection of downloadable and home-playable contemporary musical works on electro-mechanical piano."* Concert: Disklavier works by Andrian Pertout, Karlheinz Essl, Warren Burt, Tim Labor, Jocelyn Robert, Peter Gena, Rick Bidlack, Christopher Dobrian. The Disklavier Database : This index is a list of works for disklavier, solo or accompanied, historical and contemporary, from music or from fine arts. In extension, other works for mechanical instruments will be included too. Today, the database has got more than 160 references with references of works from the XIX° century to 2004.) <http://nujus.net/~locusonus/site/english/compatible/compatible.html>

- **2004 \_\_ Daisyphone**, Nick Bryan-Kinns (*A Group Music Interaction Tool. Daisyphone lets people play loops of music together in a novel and engaging way. Your contributions are shared with others over the internet. You can see and hear what they do. They see and hear what you do*) <http://gouda.dcs.qmul.ac.uk/>

- **2004 \_\_ Determinale Verschweifungen**, Thom Kubli, Sven Mann (*For the premiere event as part of the Transmission Series at the New Museum of Contemporary Art in New York, Thom Kubli and Sven Mann (Cologne, Germany) created a spatial sound environment where the principle of "transmission" is explored through a wireless FM transmitter system and listening stations. Determinale Verschweifungen provided a topology of fragmented electronic loops and microphone recordings of spatial ambiances and encouraged the audience to interfere. Visitors could bring their own radios to the venue or pick up one of the portable radios positioned in the site to select their own channels and manipulate the transmitters.*)

- **2004 \_\_ DIP v.2 (Distributed Immersive Performance)**, Univ. Of Southern California (*The Distributed Immersive Performance (DIP) project explores one of the most challenging goals of networked media technology: creating a seamless*

environment for remote and synchronous musical collaboration. The objective of DIP is to develop the technology for live, interactive musical performances in which the participants - subsets of musicians, the conductor and the audience - are in different physical locations and are interconnected by very high fidelity multichannel audio and video links. DIP is a specific realization of broader immersive technology - the creation of the complete aural and visual ambience that places a person or a group of people in a virtual space where they can experience events occurring at a remote site or communicate naturally regardless of their location) <http://imsc.usc.edu/dip>

- **2004** \_\_ **Disembodied Voices**, Jody Zellan, FutureSonic04 (Disembodied Voices by Jody Zellan is a web based project examining the connected - but disembodied - voices that populate modern telecommunications. Disembodied voices is a web-based meditation on the nature of public space. It is a visual representation of how different bodies communicate across space, using mobile phones as a metaphor for the new translocal of connected, disembodied voices, linked across space invisibly - forming an unseen network of wanderers, always within reach yet nowhere in sight.) <http://www.disembodiedvoices.com>

- **2004** \_\_ « *L'Époque des Appareils* » (The Epoch of Devices), Jean-Louis Déotte (In book after book, Jean-Louis Déotte, a philosophy professor at the Université Paris VIII-Saint-Denis has been engaged in a critical discussion (particularly in *L'Époque des appareils*, L'Harmattan, 2004) with Jacques Rancière and Jean-François Lyotard. In this text, first published in America, Déotte returns to what separates Lyotard and Rancière: the "différend" and the "mécontente," two words which are also the titles of books. Walter Benjamin is a reference shared by both, but differently by each; also shared is the putting to the side of technical questions. But the question of machines, which includes technical questions, is an essential matter for Déotte, who makes his own Foucault's distinction between "dispositif" [roughly, "device"] and "appareil" [roughly, "apparatus"]. The appareil has the advantage - unlike the dispositif - of being partly connected to temporality. This is why, as Déotte puts it, the appareil can "do an epoch." Déotte has a generous conception of the appareil, because it can just as well qualify the construction of Renaissance perspectival representation, photography, film, the narrator according to Benjamin, and even the framework of the psychoanalytical cure. Appareils are certainly specific, but the concept of the appareil offers the advantage of freeing one from the question of art's autonomization, a direct or indirect inheritance from Adorno's theory, on which both Lyotard and Rancière in their way, depend. An appareil's function is to articulate the law and the appreciable "under the mode of an address to singularity and being together." Jean-Louis Déotte tries to get beyond sharing, rather than its alternative, singularity and being together (community) by proposing a cosmetic différend, and cosmetic is a notion that is practically out of date for designating the inscription of appearance." [Michel Enaudeau])

- **2004** \_\_ **Fada'iat**, Tarifa/Tangiers (Transactions/fada'iat was an event that happened in June 2004, between Tarifa and Tangiers: i.e. on the border between Fortress Europe and North Africa. Continuing with the Multitude Connected? project, (La Rabida, Huelva, 2003), it was a social, political, technological and artistic laboratory that brought together a wide group of activists.- migration, labor rights, gender, communication...-, political theorists, hackers, union organizers, architects and artists to think about the relations between freedom of knowledge and freedom of movement in a society of globalised information production. Fada'iat means "through spaces" in arab. The word Fada'iat is also used to mean satellite dish and space ship. "After many months of preparation Hackitectura and many diverse collectives are working on the field: a very tense and militarized EU border. Our location now is a medieval castle in Tarifa, in front of a detainee migrant camp at the southeastern point of continental Europe. In a few hours we will try the wifi link to Tangiers, Morocco." "We consider that, for a few hours, in fada'iat we were able to deprogram the system of automatism which we usually react to the reality of geography with. The flux of anonymous data generated by mediatic cooperation achieved to feed a geographic algorithm, free code produced and supported by multiple nodes that managed to fly over and across all directions of Europe Southern border." "Transacciones/Fada'iat, eventually, was a foundational festival, in the anthropological and original sense of the term; festival as a form of knowledge, a form of producing new subjectivity, imaginaries, worlds. It was like a rite presenting the new myths of origin of the multitude in the Straits of Gibraltar; - which is, indeed, a place that is not isolated from the world, but a central node in the global fight between Empire and the multitude..." <http://www.hackitectura.net/aljwarizmi/> <http://fadaiat.net>

- **2004** \_\_ **GÉANT2** (GÉANT2 is the high-bandwidth, academic Internet serving Europe's research and education community. Connecting over 30 million researchers with a multi-domain topology spanning 34 European countries and links to a number of other world regions, GÉANT2 is at the heart of global research networking. GÉANT2 is co-funded by the European Commission and Europe's national research and education networks, and is managed by DANTE. In 2008, the roll-out of the GÉANT2 network is almost finished. All of the network's 25 Points of Presence (PoPs) are fully equipped and in service. 43 of the network's total of 44 routes are fully installed and operational, with just one of the 18 originally planned dark fibre routes still in preparation. An additional dark fibre link to Ireland is also in preparation. The first links came into service in early December 2005, between Switzerland and Italy, and Switzerland and Germany, respectively. Multiple 10Gbps wavelengths are being employed in the network's core. The GÉANT project was a collaboration between 26 National Research and Education Networks representing 30 countries across Europe, the European Commission, and DANTE. Its principal purpose was to develop the GÉANT network - a multi-gigabit pan-European data communications network, reserved specifically for research and education use. The project also

covered a number of other activities relating to research networking. These included network testing, development of new technologies and support for some research projects with specific networking requirements.) <http://www.geant2.net>

- **2004** \_\_ « **How Control Exists After Decentralization** », Alex Galloway (In the networked digital world, one layer of control and authority consists of the multiple protocols that enable and determine exchanges. In his book *Protocol: How Control Exists After Decentralization*, Alex Galloway (2004) describes protocols — the sets of rules that govern networked relations — as based on two opposing technologies: one distributing control into autonomous locales, the other centralizing it in defined hierarchies, with the tension between the two creating the conditions for protocological control. Among the many protocols that control network relations are those enabling data transmission over the Internet, such as TCP/IP (Transmission Control Protocol/Internet Protocol) and UDP (User Datagram Protocol); the Domain Name System (DNS), which handles Internet addresses; and, the Hypertext Transfer Protocol (http), which enables the retrieval of documents over the World Wide Web. The tension between autonomy and hierarchy on the Internet becomes obvious in the difference between client–server relationships (allowing a client to retrieve information from a server via a personal computer) and peer–to–peer ones (providing a direct link for exchange between computing devices). Peer–to–peer as opposed to client–server becomes a philosophical as well as political issue: peer–to–peer is the promise of the liberation from the server as a hierarchical structure. [Christiane Paul])

- **2004** \_\_ **The Hub at the Dutch Electronic Arts Festival DEAF 2004** (The Hub was invited to play at the Dutch Electronic Arts Festival DEAF 2004 : "As a matter of fact, the pioneering networked music band The Hub have not performed together over the last 10 years. Deaf invited them for a reunion concert in their festival." Tim Perkis implemented a flash based client that polled our text chat on AIM and projected it to the audience. We were connected on line to musicians in Tokyo, Montreal, and Marsielles and there video images were projected for the audience as we played in real time. February: Using ProTools and pluggo created VST plugins to exercise real time control over semi programatic playback for an excerpt from "The Martian Time Slip" and a reworking of the material from 1984's "Functions of Permanent Revolution".)

- **2004** \_\_ **ImproMasters – version 1**, Open Free Collective Oscillation Sessions, Shinji Kanki, Sibelius Academy Helsinki, <http://silakka.fi/ImproMasters/indexold.html>

- **2004** \_\_ « **Interaction, Participation, Networking - Art and telecommunication** », Inke Arns, Medien Kunst Net - Media Art Net ("Reception, participation, interaction—from receptive to active participation. The idea that the reception of a work of art demands the participation of the beholder was not exclusive to the twentieth century, but was anticipated in the late nineteenth century by Mallarmé's notion of process-based art encompassing permutable, aleatoric elements that would, in the form of the «open artwork,» become programmatic for the avant-garde movement some fifty years later. (...) The notions and concepts of interaction, participation and communication are central to twentieth-century art, and in equal measure concern he work, recipient and artist. Generally speaking, these terms involve a movement from the closed to the «open» work of art, from the static object to the dynamic process, from contemplative reception to active participation. It was a movement away from the concept of the «author» and leading, over the «author as producer» and the «death of the author,» towards «distributed » or collective authorship. As the twenty-first century approached, the nineteenth century artist-genius had evolved into an initiator of communicative, and often also social and political, (exchange) processes. In all these «opening-up movements,» the notion of interaction plays an important role.") [http://www.medienkunstnetz.de/themes/overview\\_of\\_media\\_art/communication/1/](http://www.medienkunstnetz.de/themes/overview_of_media_art/communication/1/)

- **2004** \_\_ **Interplay**, Locus Sonus, Aix en Provence / Musashino University Tokyo (Christophe Charles) (Networked performances with rules of interaction between the two locations and the two groups of players. The rules used various sequences of improvisation and live composition : by dividing the stereo in two independant channel corresponding to each location, by interacting with feedback circuits between the two locations, by using video in order to extend one sound location to the other, etc.)

- **2004** \_\_ **InterUrban** - an interactive narrative, Jeff Knowlton, Naomi Spellman & Jeremy Hight, FutureSonic04 (An interactive narrative that relies on visitor movement to tell a story about telecommunciations and transportation through time. InterUrban offers an interactive narrative in the city streets. InterUrban is a user driven experience that responds to a participant's amble through city streets. It is an interactive narrative that unfolds according to the visitor's movement. It runs on a Tablet PC with headphones and GPS card. Environmental factors such as Listener location, the distance travelled by the Listener, time of day, heading, and proximity to hypothetical or historic events determine how the narrative is constructed. InterUrban is a reactive, scalable reflection on time, distance, and the urban psyche.) <http://www.interurban.34n118w.net> <http://34n118w.net/>

- **2004** \_\_ **Jazz Combo Virtual Performance** (Manhattan School of Music—in collaboration with Columbia University—presented a jazz combo virtual performance over Internet2's Abilene Network as part of National Internet2 Day on 18 March 2004. The jazz performance was multicast live to more than 35 National Internet2 Day participation sites and also webcast live on the commodity Internet. Following the jazz performance, the National Internet2 Day featured a performing arts panel discussion,

highlighting topics such as bringing connectivity into a theater or venue, producing remote master classes, presenting multi-site performances, and providing educational outreach in the arts and humanities. The panel was moderated by Ann Doyle, Internet2 program manager for Arts & Humanities Initiatives, panel presenters included: Thomas Knab, Case Western Reserve University, Christianne Orto, Manhattan School of Music, Louis Brown, Manhattan School of Music, Tom Snook, New World Symphony, Benton Hess, Eastman School of Music, University of Rochester, Ramon Ricker, Eastman School of Music, University of Rochester) <http://www.internet2.edu/arts/member-performances.html>

- **2004 \_\_ Kalerne.Netradio**, Yannick Dauby (« ma fenêtre donne sur les toits : une grande chance, car l'environnement sonore depuis les hauteurs est très calme. le 'drone' urbain est parfois perturbé par quelque oiseau ou klaxon lointain. un microphone capte en permanence ce paysage sonore, et un système informatique traite le signal. par accumulation, superposition au travers de systèmes de boucles en réinjection, au travers de filtres successifs, le réalisme de la prise de son directe laisse place à une trame indistincte. la réduction et l'étirement électroacoustique estompent les aspérités, démultiplient les micro-événements pour n'en laisser que quelques traces, quelques résonances qui émergent occasionnellement de cette brume. » L'ouverture du canal de diffusion KALERNE.NETRADIO s'est rapidement avérée indispensable. Les notions de temps-réel, de non-fixité d'une temporalité, nous semblent primordiales quant à la question des paysages sonores. Le principe de cette net-radio est de rendre possible la présentation d'expériences en direct : on assiste au fur et à mesure à un processus d'expérimentation, plutôt que l'on ne constate des conclusions après coup (ce qui vient compléter notre activité d'écriture sonore, de composition). Il nous est alors possible de partager ces expériences à distance, de considérer l'expérimentation comme étant délocalisée (ce qui s'oppose fructueusement à notre pratique d'enregistrement et d'improvisation in-situ). Un autre aspect est la grande malléabilité de ce support audio : il est possible de mettre en public une expérience de manière quasi-immédiate, de privilégier des expériences spontanées plutôt que planifiées. Un des aspects qui nous intéressent tout particulièrement est aussi l'aspect domestique de la net-radio : l'auditeur peut laisser les phénomènes sonores s'introduire dans son quotidien, laisser entrer ce qui semblerait réservé à des lieux consacrés à la représentation artistique (le concert ou la galerie). Il peut choisir et évoluer entre écoute parallèle à une activité (professionnelle, ludique ou autre) et écoute immersive (seul face aux hauts-parleurs, concentré sur l'écoute) [Yannick Dauby].)

- **2004 \_\_ London Noise-map** (" Noise can cause annoyance, interrupt conversation, disturb sleep and, in extreme conditions, cause physical damage to those affected. The types of noise that are experienced can be classified into some fairly broad categories. For example, occupational noise which is experienced at work, neighbour or neighbourhood noise and environmental (aka ambient) noise caused by transport and industry." The London Noise Map Web-viewer that was developed and hosted by Atkins from 2004 to 2008 has now been decommissioned by Defra (Department for Environment, food and Rural Affairs). We understand that Defra intends to commission a replacement at some future time. Noise levels were calculated from a three-dimensional computer model of the whole of the Greater London Authority's area, as a pilot for the national ambient noise strategy and the EU's Environmental Noise Directive. This was a multi-disciplinary project, involving Noise, GIS, photogrammetry and software training specialists within Atkins, and liaison with all 33 London Boroughs, GLA and other stakeholders. The map covers an area of over 1,600 square kilometres, containing 2.67 million buildings considered to be acoustically significant and over 5,200 kilometres of roads carrying significant traffic flows. A Noise Map is a map of an area which is coloured according to the noise levels in the area. Sometimes, the noise levels may be shown by contour lines which show the boundaries between different noise levels in an area. The noise levels over an area will be varying all the time. For example, noise levels may rise as a vehicle approaches, and reduce again after it has passed. This would cause a short-term variations in noise level. In the slightly longer term, noise levels may be higher in peak periods when the roads are busy, and lower in off-peak periods. Then again, there is a greater volume of activity from more people and traffic in the day-time than in the evening or at night. In the longer term, wind, weather and season all affect noise levels. NoiseMap is designed, developed, marketed and supported in-house by NoiseMap Ltd, which is run by Roger Tompsett, a former Technical Director of Atkins Ltd, and Alan Williams, who is an expert in software engineering. NoiseMap software has been a commercially-successful product since its public launch in 1985 and is in world-wide use. Roger was Atkins' project manager for the London Noise Map, which was the largest noise map ever produced at the time (in 2004). He has been working on the computer prediction of noise, and on noise mapping, for over 35 years.) <http://www.londonnoisemap.com>

- **2004 \_\_ Lunaphone**, Brian Duffy (Optophonic Lunaphone is the sound recording of a recent performance held at the Mac store in Birmingham, that explored the "celestial soundscape." Brian Duffy created a unique instrument called a Lunaphone, consisting of six specially adapted telescopes that collected light waves from the night sky. These waves were translated into sounds and fed into a central control panel where they were mixed and sequenced in real-time. Co-commissioned by Ikon, Vivid and mac.) <http://www.free103point9.org/studycenter/historicaltransmissionworks>

- **2004 \_\_ Macadamcadam**, Antoine Schmitt (Grâce à une caméra placée à coté du chauffeur et à un dispositif de synthèse sonore sensible à la lumière, Macadamcadam se propose de transformer le bus en une réelle tête de lecture de l'infini ruban lumineux de la route nocturne. Les phares des voitures glissando, les lampadaires rythmiques, les vitrines bruitistes, les paysages sonores, les feux synchrones forment autant d'éléments du vocabulaire de cette partition concrète. Héritier d'Oskar Fischinger et du système laser des

CDs, *Macadamcadam, sous le pilotage attentif d'Antoine Schmitt, interprète dans le champ sonore la physicalité de la pellicule de la route et déconstruit la synesthésie de la réalité extérieure.*)

- **2004 \_\_ MicroRadio Sound Walk**, free103point9 (*Microradio Sound Walk is a multiple transmitter sound piece and walking tour of local airwaves utilizing broadcast and computer technology to create a soundscape on a single FM frequency that responds to both the architecture and sonic phenomena of a specific space. Consisting of multiple transmission stations situated along a loosely defined walking path, listeners proceed through the route in the order of their choosing, as they move farther away from one station and grow closer to the next, the signal they receive too will shift. This sonic progression maps the spatial qualities of an area's local airwaves. Microradio Sound Walk premiered in 2004 with free103point9 transmission artists Damian Catera, Matt Mikas, Michelle Nagai and Tom Roe. It was presented in conjunction with Spectropolis: Mobile Media, Art and the City, a three-day event in New York City that highlighted the diverse ways artists, technical innovators and activists are using communication technologies to generate urban experiences and public voice. In May 2005, free103point9 presented its second Microradio Sound Walk at the Center for Contemporary Art Ujazdowski Castle in Warsaw, Poland with Damian Catera, Tianna Kennedy, Radio Ruido, and Tom Roe.*) <http://www.free103point9.org/studycenter/historicaltransmissionworks>

- **2004 \_\_ MicWorld**, Software Instrument, Multiple international sites, IXI audio software (*MicWorld is an application in which 3D environments are used to organize sounds and their attributes. There are 8 sound objects in the world which can be moved around by keyboard commands, joystick or by the mouse. These sound objects are silent until the microphone, also controlled by the user, comes near to them. The small microphone picks up the sounds from the rotating objects. The distance between the mic and the objects defines the volume. If you prefer, the vertical location of an object in the world can define the pitch of that objects sound. When you ve set up meaningful constellation(s) of objects, the mic can be set into an orbit around either an anchor or a chosen sound object, thus creating a recurring sequence of sounds. You can import your own sounds into the control section of micWorld and allocate the sounds to the objects. There are various ways to use the application; using short or long sounds, drum or bassloops, or just single notes in different frequencies. Future developments of micWorld include rotating objects, multiple mics and multi-user environment where many users can compose music in the same world using networked computers.*) [http://www.ixi-audio.net/content/body\\_software\\_micworld.html](http://www.ixi-audio.net/content/body_software_micworld.html)

- **2004 \_\_ MILKproject**, Esther Polak (*In 2004-2005 Esther Polak developed MILKproject. In this project a European dairy transportation was followed from the udder of the (Latvian) cow, to the mouth of the (Dutch) consumer. All people who played a role in this chain received, for a day, a GPS-device that registered their movements. MILKproject tells the personal life-stories of these very different Europeans, from the Latvian farmer to the Dutch open-air market salesman with his clients. The project was awarded with a Golden Nica at Ars Electronica in 2005 It was developed in collaboration with Leva Auzina and Rixc, Riga center of new media culture.*) <http://milkproject.net>

- **2004 \_\_ Mind the World, Sound Bum**, Encounters in the 21st Century: Polyphony - Emerging Resonances, Museum of Contemporary Art of Kanazawa, Yoshihiro Kawasaki, Haruo Okada, Yoshiaki Miyata, Yoshiaki Nishimura (« *On a wall four meters in height and 27 in length, we created a minimal rendition of a world map, and hung headphones linked to sounds from 24 locations around the world* ») <http://www.livingworld.net/works/mind-the-world/> <http://soundbum.org/>

- **2004 \_\_ Mobile Connections**, Futuresonic04 (*The Mobile Connections (2004) was the first major art exhibition on mobile and locative media. It was staged by Futuresonic at the Urbis museum in Manchester, featuring participants from more than 20 countries. The exhibition Mobile Connections explored how mobile and wireless media reconfigure social, cultural and information space? Looking beyond computing in its current form, towards the social and cultural possibilities opened by a new generation of networked, location-aware media. Seeking an art of mobile communications: are there any forms of expression that are intrinsic or unique to mobile and wireless media. It explored how artists are responding to new ways of seeing, sensing and representing: radar, sonar, GPS, WiFi, Bluetooth, cellular, GIS, etc. The exhibition probed new horizons in wireless and mobile media, and looked at the diverse ways in which artists and technical innovators are pushing the limits, and soliciting unexpected or unforeseen results from communication media past and present, from the radio to mobile telephony and wireless LAN. Some are seeking to make visible and audible the signals and transmissions that fill the air around us, exploring the potential of interfaces unfettered by wires and cables for performance or interaction, or the kinds of communication and creative expression that emerge within networks with no fixed centre, but rather multiple, mobile nodes. Just as recording enabled sound to be heard apart from the place and time of its creation and radio made possible remote listening, so a new generation of communication technologies are now reconfiguring geographical, cultural and perceptual space, and transforming the nature of the art object and the art event. Mobile Connections sought to sketch the outlines of emerging artforms that are coalescing around artists, programmers and DIY technologists who are responding to new technical tools by asking what can be experienced now that could not be experienced before. The rapid uptake of the mobile phone, both in the West and increasingly in the global South, the proliferation of wireless networks, and the promise of pervasive computing in which networked devices become embedded in the environment around us has created a space that increasing numbers of people are*

starting to explore. Mobile phones have enabled places without fixed line telephony to get connected. In comparison to the internet, however, the mobile phone networks are centralised and proprietary. To date, in Europe and North America especially, this has limited the scope for DIY innovation. At the other end of the spectrum, the Free Networks movement empowers people to build their own wireless networks, its goal not just to leak bandwidth but to extend an independent and free community infrastructure. [Drew Hemment] [http://www.futuresonic.com/futuresonic/mobile\\_connections/](http://www.futuresonic.com/futuresonic/mobile_connections/) [http://www.drewhemment.com/2004/mobile\\_connections.html](http://www.drewhemment.com/2004/mobile_connections.html)

- **2004 \_\_ M.U.S.H.**, Joachim Montessuis & Eleonore Hellio (M.U.S.H. (Multi-User Sensory Hallucination), by Joachim Montessuis and Eleonore Hellio (FR), was developed and produced in collaboration with V2\_Lab. M.U.S.H.' is a dual site telematic installation with one room in each location. Each visitor enters a closed room and faces a black image on a video screen. The person is provided with a wireless 'M.U.S.H.' device, equipped with accelerometer sensors, when they enter. The room is quiet but as soon as the person starts to move around the 'M.U.S.H.' device, their movements control the sounds and visuals. This exploration of the space causes a sound composition and works simultaneously as a synchronisation tool for telecommunication between the two sites. The system captures each person's movements to generate a sound and visual 'partition' and 'orchestration' in real time that becomes the 'carrier wave' for telecommunicated experience. 'M.U.S.H.' is a digital collision space where a chance is given to share an experience together (or alone). This will first depend on one's ability to fully explore and interact in its multi-sensory environment. The synchronicity of behavioural patterns is what may trigger the appropriate feed-back for a tangible link to occur. If both participants 'excite' the 'M.U.S.H.' room at the same time, in the same manner, they will increase their chances of meeting each other through virtual space. The sound acts both as a subversive and immersive element. The image is considered as both place and language. A visual dialogue that doesn't follow the usual rules of videoconferencing will define the feeling of tele-presence or tele-absence. The sound environment consists of different layers of sinusoids, infra-basses, drones and granulated samples that react to the movements of the device in terms of intensity, frequency and loudness. 'M.U.S.H.' offers the operators a complete stage for jamming. As one conquers the system, the flickering image may become more precise and give a chance to the other operator to appear on the screen. The main conceptual research objective in this project dealt with various aspects of the real-time telematic user experiences. The artistic research is informed by theory and concepts for real-time performance, as has been topic of research in the area of music instruments in Ircam in Paris (FR) and Steim in Amsterdam (NL). Michel Waisvisz's research into gesture controllers for electronic music is most closely related to the interface concept of 'M.U.S.H.' Furthermore, 'M.U.S.H.' has been informed by concepts of space-time discontinuity in cybernetics, a re-occurring artistic research topic, which lead to networked experiments by numerous artists over the years, among them earlier telematic art pioneers like Roy Ascott with his slowscan telematic videowork 'Organe et Fonction d'Alice au Pays des Merveilles' (1985) and in 1991, Paul Sermon with his Telematic Dreaming project where voyeurism and a telepresent body and reality were mirrored over each other via ISDN telephone lines and a video conferencing system.) [http://www.processpatching.net/online-reading/chapter3/ch3\\_1\\_1.html](http://www.processpatching.net/online-reading/chapter3/ch3_1_1.html)

- **2004 \_\_ My Way of Life**, Toru Takemitsu (by Kent Nagano, musical director and conductor, USA), Peter Mussbach (director, Germany). The co-author's goal in this project was to compose a playable gesture instrument that could be used to accompany the existing orchestral, chamber and electronic music of the opera. Important musical aims were: 1) the ability to blend in with the existing music, 2) use the extremely limited rehearsal time as effectively as possible, 3) the ability to learn, vary, improvise, and 4) to create an enveloping and immersive sonic experience. Important design concerns in this undertaking were the integration of gestural controllers (including the JazzMutant Lemur and a standard pen-based tablet), real-time generative software, and mapping schemes for gestural control of audio signal processing.) <http://alimomeni.net/takemitsu-my-way-life>

- **2004 \_\_ Network-centric Music Performance**, Zefir Kurtisi, Xiaoyuan Gu, Prof. Dr.-Ing. Lars Wolf, Matthias Dick (The advances in information technology and the great proliferation of the Internet have changed nearly every aspect of the work and life of human beings. Despite the progress in networked entertainment, many music professionals and enthusiasts are still sticking to the traditional way of carrying out rehearsals and concerts. Music performance in this way requires physical presence of the participants and has a number of inherent limitations. We introduce a novel system called "Network-centric Music Performance" (NMP) that enables multiparty music performance through cyberspace. Our target is to support real-time multi-channel natural audio streaming over the network, using audio compression schemes that can provide acceptable audio quality. Besides many challenges to cope with today's technology, a tight delay bound between the production and perception of audio is the dominant requirement for this project. The NMP system is bandwidth demanding, highly delay-sensitive and requires the synchronization of the audio streams. Hence, the support from underlying end-systems and the networks is critical. However the current source coding mechanisms and the best-effort nature of the Internet poses many challenges to achieve the desired quality of service. We implement a prototype of NMP using the client-server architecture and exploit end-system's and network's influences on Network-centric Music Performance. This is done in a local area network environment using Linux PCs (see the provided video clips). The system enables two different application scenarios, namely, real-time rehearsal and rehearsal on-demand. Real-time multi-channel audio transport and different audio compression schemes are supported. Both subjective and objective measurements are conducted to verify if the system suffices the audio quality level for the target application in such environment. Scalability tests are carried out to validate whether the system

scales well with the increase of clientele. While most of our work has been focused on system aspect of NMP, we are working on QoS support through bandwidth prediction and forward error correction techniques at the moment. We plan to extend the scale of the application to networks spanning across reasonable larger physical distances and supporting more simultaneous users. Realistic network conditions outside the LAN will be considered in the next step to investigate the performance of the application in larger-scale networks. Then also delay jitter, its impact and counter-measure approaches will be more intensively studied. A more sophisticated evaluation model will be developed to compare different approaches with higher fidelity.) <http://www.ibr.cs.tu-bs.de/projects/nmp/>

- **2004** \_\_ **Networked performance blog**, Turbulence.org media arts organization (In July 2004, Jo-Anne Green and Helen Thorington of Turbulence.org, and Michelle Riel, Assistant Professor of New Media at California State University Monterey Bay (CSUMB), originated the networked\_performance blog. It was their intent to chronicle current network-enabled practice, to obtain a wide-range of perspectives on issues and to uncover commonalities in the work. What the blog revealed at that time was an explosion of creative experimental pursuits made possible by the migration of computation out of the desktop PC and into the physical world and by the continuing advances in internet technologies, wireless telecommunications, sensor technologies and Geographic Information Systems (GIS). In these explorations artists utilized pervasive, ubiquitous computing technologies that are inexpensive, readily available, and most importantly, mobile and wirelessly networked. The blog further revealed that these technologies were being utilized by a growing generation of programming capable artists and artistically minded engineers and computer scientists. "Networked\_Performance, launched in July 2004, that brought home the truth of the radical changes taking place as a result of the Internet and its spawn of new technologies. In 2004 the blog entries archived the practice made possible by the ready availability of inexpensive portable devices – wireless, mobile phones, PDAs, GPS cards, Bluetooth, and others. Computation was leaving the desktop and migrating to the street. It would now be carried in the hand, worn on the body, or embedded in devices and in the environment." [Helen Thorington]) <http://transition.turbulence.org/blog/>

- **2004** \_\_ « **New Intimacy** » ("Intimacy", or "intimate connections" are quite often found in research texts and essays on the mobile phone, and this notion seems to have become one of the key words to understand the phenomena of the mobile telecommunication. Some researchers suggest that the connectivity of the mobile telecommunication does not create communication but something else – connectivity –, and some of them tend to believe this could be called the mechanism of a "new intimacy". (...) The portability of mobile phones and the general development of communication technology are realizing instant global communication, and are consequently also accelerating our mobility. Callers and receivers are constantly on the move, and even cross over geographic borders while being on the phone. This accelerated mobility increases opportunities to experience the diversity of cultural domains, at the same time changing our positions in social contexts and altering our perceptions. Generally speaking: communication is for connection. (...) Kate Fox also added to this, mobile telecommunication functions rather like a vocal grooming to feel "intimacy", and to reaffirm the belonging of individual users to their social network [Kate Fox, *The Role of Mobile Telecommunications in the 21st century*, Retrieved on January 22nd, 2004 from <http://www.sirc.org/publik/gossip.shtml> ]. (...) New "intimacy" has to be constantly updated, and requires us to be "in touch" all the time. Its "immediacy" presents us with a sense of illusionary emancipation, but simultaneously exerts control over individual schedules by implementing unlimited social interactions. In other words, it means a domination of social control by speed. (...) Although it is not certain if mobile phones create any sort of "new intimacy", they are obviously functional as support media for already existing intimate relationships. However, little is known about the specifics of their adoption and their use in the "obliteration of distance" - A concept phrase dear to art historian Aby Warburg, used when he referred to the effects of telegraphy and telephony in his seminal lecture on the American-Indian "Images from the Region of the Pueblo Indians. trans. Michael P.Steinberg -, and the conceptual limits thereof. (...) Starting with the question what kind of communicative mechanism mobile telephony actually has – if seen as opposed to previous forms of telecommunication –, one could say that sight isolates, while sound incorporates with its changeable mixture of imagined reality and "real" reality. The mobile phone may create an experience of "presence", combined with the detachment of mental self and a diminishing sense of physical attachment to a given location - I will elaborate this concept of the division of the senses and their social consequences further using Jacques Rancière's text "Le partage du Sensible", la fabrique: Paris 2003 -. (...) The notion of "new intimacy" has well circulated among mobile phone researchers. Also in 2002, Leopoldina Fortunati discussed transformations of the meaning of "space" and "place" through an emergence of "an itinerant 'cellular' intimacy". She argued that the ubiquitous character of the mobile phone is creating a social space within existing network spaces – instead of creating a location. She went on to assume that a "'nomadic' intimacy" diminishes what she calls "place intimacy" [Leopoldina Fortunati, "The Mobile Phone: New Social Categories and Relations" 2002]. (...) For example, in her essay of the year 2001, Anna Rotkirch has introduced the expression "internationalisation of intimacy" – to refer to a particular use of the mobile phone [Anna Rotkirch, "The Internationalisation of Intimacy: A study of the chains of care", 2001]. She was able to show how the mobile phone contributed to make it possible for migrants to maintain distant relationships with "back home", and also helped them to establish and to develop a network within their own social circle under aggravated language and living conditions. (...) Lin Prřitz declares the intimacy created via mobile phones as different in as far as it seems to function only as "mediated presence". (...) In "Mobile Communication Society" in 2004, Manuel Castells argues that mobile does not create any "new" or "neutral" space, since what is actually addressed is not closeness, but simply the connectivity

to a person on "other side" of a medium. He explained that "mobile telephony blurs spatial contexts and time frames rather than transcends, which is a life style defined by moving communication patterns in which organizational context and social practices are often mixed." To describe these phenomena, Castells uses "the emergence of new social landscapes", "the second public sphere" (2004), whereas others have introduced the notion of "new kinds of bounded places" (Ito and Ota, 2003), "the conversational space" (Palen, Salzman and Young, 2002),<sup>46</sup> "secondary space" (Michael Humle, 2004),<sup>47</sup> "shared,telecommunicative place"<sup>48</sup> (Ruth M. Rettie, 2005), and "phone place" (Ruth M. Rettie, 2005). [Miya Yoshida - THE INVISIBLE LANDSCAPES - A curatorial project and a comparative study on concepts of intimacy in mobile telephony] [http://www.khm.lu.se/pdf/Yoshida\\_All.pdf](http://www.khm.lu.se/pdf/Yoshida_All.pdf)

- **2004** \_\_ **Nocinema.org**, Jérôme Joy, Jocelyn Robert, Christophe Charles, Yannick Dauby, Dinahbird, Chantal Dumas, Magali Babin, Alain Michon, Luc Kerléo, Emmanuelle Gibello - The Thing, / nujus.net (Net-based documentary/fiction of web interludes that appear differently each time. Nocinema.org can be interpreted as an improbable cinema or a movie in which both actors and action appear to have wandered out of shot, having no beginning and no end, no participants and no storyboard, except perhaps subjective interpretations born of an impulse to impose purpose and meaning upon random stimuli. Nocinema.org is an automatic process, drawing upon strings of live streaming webcams across the world, transmitting live scenes collected from different locations with added panoramic movements and temporized on-line editing, into which some black shots are inserted (listening without visual). The sound, each time offering a different sequenced overlay, comes from a shared soundfiles database which is fed and updated by a team of sound artists/partners. The project is accessible only on-line on a website. Next version includes an upgraded PHP configuration. Nocinema can be considered as an automatic streaming audio-visual composition, from distributed live materials (webcams, soundfiles) streamed from plenty of servers. It gives experiences of slowness through derives among strings of live images and sounds streamed on the Internet. The potential of fictions created from this programmed system is multiple and continuously different. Conceived as an automatic 'no-cinematic' process, it's an infinite variation of combinations. The webcams list used by the process are selected according to categories of images shifted from what we normally recognize as 'webcam' : countrysides, skies, seashores, and so on. Although the used technologies and the simplicity of the principle (association of images and sounds), the project seems to have no end and wants to give the impression to forget the technological context. The soundfiles are modified along the project depending on the artists who contribute; they reflect reactions from them in front of the images and the possible 'events' or 'non-events' which appear on the live webcams. The contributing group continuously 'play' with the system in order to generate non-controlled 'musical movements' issued from this audio-visual process (as an 'Internet screen-saver' or 'ambiancer').) <http://nocinema.org/>

- **2004** \_\_ « **OuterNet** » ("Surfing the Outernet: Where net art presented the medium of the Internet, locative art brings to the fore those of mobile and wireless systems. Drew Hemment unfolds a taxonomy of locative-art approaches to the gap between the perfect grid and the reality of the mapped world." [Andrew Hemment]) <http://www.drewhemment.com/texts/>

- **2004** \_\_ **The Pavilion « Into the 21st Century** », Randall Packer (Via the Internet, the online viewer will experience a complex multimedia environment, a virtual space of sound and image. This environment will extend and distribute the multi-user experience of the original Pavilion (EAT Expo '70 in Osaka) into virtual, networked space. For artists, who will make new works as part of the project, "Pavilion: Into The 21st Century" will provide a platform for creation, a programmable, interactive "multimedia performance instrument," a laboratory and showcase for media experimentation. This multimedia "instrument" will offer a critical forum for researching and advancing the integration of art, music and science into singular, multi-disciplinary artworks. It will also allow for the consideration of the social implications of emerging forms of interactivity in networked environments) [http://www.zakros.com/projects/pavilion/overview\\_new.html](http://www.zakros.com/projects/pavilion/overview_new.html) <http://journal.planetwork.net/article.php?lab=packer0704>

- **2004** \_\_ **the-phone-book Limited** (the-phone-book Limited and Tim Cole of the Tao Group explore the mobile phone as a creative medium - taking the limited technical resources as a creative starting point, or pushing the frame to generate high quality live sounds on-the-fly. Create your own animations and ringtones for mobile phones, with the-phone-book Limited (UK) who specialise in the creation and distribution of content for wireless devices worldwide.) <http://www.the-phone-book.ltd.uk>

- **2004** \_\_ **Phonographic Migrations 3 : SoundscapeFM**, Yannick Dauby, Derek Holzer, Sara Kolster, Garage Festival Stralsund (G) ("Phonographic Migrations 3: SoundscapeFM" is a collaborative sound work which takes place during the Garage Festival in Stralsund, Germany from 23 July to 14 August. It takes the form of an FM radio broadcast, combined with a user-uploadable database filled with field recordings taken from all over the world. In this way, the local radio is made an interface to the global as the residents and visitors in Stralsund suddenly have the chance to immerse themselves in an Amazonian rainforest, a Baltic ice-flow or a Vietnamese street market--sometimes mixed together into one acoustic environment. Various field-recordists and soundscape artists were invited to contribute recordings made in locations ranging from Iceland to Malaysia. All sound material is held on a server which is installed at Garage Festival, and which creates an algorithmic mix of all the tracks submitted. New tracks can be continuously added via a website or uploaded locally at the Festival, resulting in a wider range of possible new soundscapes

which can develop. These soundscapes are broadcasted locally with an FM transmitter, streamed to the internet and made available through an online database where listeners can find out more about the sounds and the artists as well as download their favorite soundscapes. The basis of "Soundscape FM" comes out of the "Phonography" community, which is a loose-knit group of amateur sound hunters, sound artists, electronic musicians and professional sound recordists who collect and share field recordings taken from various places around the world. Their personal interests range from wind and water sounds, wildlife recordings and natural radio emissions of the ionosphere to urban environments, improvised situations and the resonance of solid objects. Likewise, their treatment of these sounds varies from individual to individual, some preferring a "pure", un-composed approach while others make extensive edits and post-processing to get the sounds they are listening for. The Phonography community gets together largely through a website <http://www.phonography.org/> .) <http://www.umatic.nl/projects.html>

- **2004 \_\_ Ping 2.0**, Chris Chafe, Greg Niemeyer (Ping is a sonic adaptation of a network tool commonly used for timing data transmission over the Internet. As installed in the outdoor atrium of SFMOMA, Ping functions as a sonar-like detector whose echoes sound out the paths traversed by data flowing on the Internet) <http://crossfade.walkerart.org/ping/>

- **2004 \_\_ Podcasting** (A podcast is a series of audio or video digital media files which is distributed over the Internet by syndicated download, through Web feeds, to portable media players and personal computers. Though the same content may also be made available by direct download or streaming, a podcast is distinguished from most other digital media formats by its ability to be syndicated, subscribed to, and downloaded automatically when new content is added. Like the term broadcast, podcast can refer either to the series of content itself or to the method by which it is syndicated; the latter is also called podcasting. The host or author of a podcast is often called a podcaster. Podcasting is the concept of distributing a media file by paid or free subscription by way of the Internet. Podcasting uses syndicated feeds and the podcast product is played on either personal computers or mobile devices. The term podcasting is a derivative of the media player iPod created and manufactured by Apple. Podcasting began to catch hold in late 2004, though the ability to distribute audio and video files easily has been around since before the dawn of the Internet. What makes podcasting different than various other digital audio formats is the fact that it can be automatically downloaded. To do podcasting, therefore, you'll need software that is capable of reading feed formats such as the most common RSS (really simple syndication) or Atom. The term "podcasting" was one of several terms for portable listening to audioblogs suggested by Ben Hammersley in *The Guardian*, referring to Lydon's interview programs ("...all the ingredients are there for a new boom in amateur radio. But what to call it? Audioblogging? Podcasting? GuerillaMedia?"). The iPodder idea was picked up by multiple developer groups. While many of the early efforts remained command-line based, the first podcasting client with a user interface was iPodderX (now called Transistr), developed by August Trometer and Ray Slakinski and released. Shortly thereafter, another group (iSpider) rebranded their software as iPodder and released it under that name as Free Software (under GPL). Since it was free-software this program was developed extensively and used quite a lot. The project was terminated after a cease and desist letter from Apple (over iPodder trademark issues). It was reincarnated as Juice and CastPodder. The PodNova desktop client is also a derivative of iSpider. The PodNova desktop client is slightly modified so that it can keep the subscriptions on the server. At the same time, Dannie Gregoire used the term podcasting to describe the automatic download and synchronization of audio content; he also registered several 'podcast' related domains (e.g. [podcast.net](http://podcast.net)). The use of 'podcast' by Gregoire was picked up by podcasting evangelists such as Dave Slusher, Winer and Curry, and entered common usage.)

- **2004 \_\_ Le Poulpe**, Apo33 (Networking experimental radio that mix several "spaces" processed and streamed through the Internet. This Platform is dedicated to net-radio broadcast, built in the perspective of radio-communication, each listener is a potential transmitter. The APO33 webradio network try to activate such a perspective through the introduction of multiple servers for audio streaming (net-radio transmission) used for different projects and by different groups of people. "Le poulpe (the octopus) is an analogical and digital organism living in a network. Each branch constitutes a sonic installation which, out of a specific location, collects its own locally generated sound effects, transforms them via a digital automaton into a new arrangement of sounds. The outcome is then broadcast locally, through loud speakers, and on the Net, through streaming. Le Poulpe belongs in the city, where people live and make noise. It gives a virtual body to this city, expressing through sounds its invisible movements and its continuous flows. Over the Net, its tentacles collect and connect continuous sonic fluxes from ever changing contexts, to infiltrate and modify another environment." [Sophie Gosselin, "Sound mutations: from radio diffusion to radio communication"]. Le Poulpe (the octopus) is/was an analogical and digital online organism that was constituted of sound installations in Bourges, Orleans and Nantes, communicating and exchanging sound flows via/through internet and a single experimental web radio interface. During the construction of this online virtual and material automat, the goal was to imagine radio simultaneously as a transmitting device, sending and transforming flows, and as an articulation point between intercepted sounds in concrete reality situations (in the context of those working/living places) and also between /multiple/multipurpose entry and exit communication networks: a circulation of flows. Every situation was a territory of a multiple interpretations: the sound installations which consisted of sound sensors intercepting elements of actions and events everywhere in the buildings, sounds played elsewhere in the building and transmitted online, interfering then and mixing with the other installations and back in the environment of origin.) <http://poulpe.apo33.org/> <http://radio.apo33.org/>

- **2004 \_\_ Prototype #44, Net Pirate Number Station**, Yoshi Sodeoka (*Prototype #44, Net Pirate Number Station* by Yoshi Sodeoka is an online short-wave radio station that broadcasts numbers derived from websites. Software in the work goes out to websites of all sizes, grabs some text, converts it into numbers, filters the numbers and then transmits them to the listener using a prerecorded video host personality. Why a radio station that broadcasts numbers rather than music and news? The artist's reply: 'We hope you, the user, will look for meaning where there may not seem to be meaning... we want you to see the world in a new way.' [Helen Thorington]) <http://turbulence.org/Works/sodeoka/>

- **2004 \_\_ Radio Astronomy**, Radioqualia, Adam Hyde (*Radio Astronomy* is an art and science project which broadcasts sounds intercepted from space live on the internet and on the airwaves. The project is a collaboration between *r a d i o q u a l i a*, and radio telescopes located throughout the world. Together we are creating 'radio astronomy' in the literal sense - a radio station devoted to broadcasting audio from our cosmos. Radio Astronomy has three parts: 1) a sound installation; 2) a live on-air radio transmission; and 3) a live online radio broadcast. Listeners can hear the acoustic output of radio telescopes live. The content of the live transmission will depend on the objects being observed by partner telescopes. On any given occasion listeners may hear the planet Jupiter and its interaction with its moons, radiation from the Sun, activity from far-off pulsars or other astronomical phenomena. This project links radio as broadcast medium for sound with radio astronomy. The signals being received by radio telescopes in Hawaii, Latvia, and other locations throughout the world are converted to sound in real time and transmitted on line and on the airwaves, thereby casting into high relief the nature of the cosmos as a dynamic information site in which the planets and stars are ceaselessly generating sound.) <http://www.radio-astronomy.net/>

- **2004 \_\_ Rock music performance transmitted over mobile phones**, Rooster (Nick Atkinson et.al.), in cooperation with BMG and 3 (Mobile service provider) (3 November 2004, Institute for Contemporary Art (ICA), London. The four-piece boyband Rooster broadcasted a live 45-minute gig, over mobile phone video services. Ten minutes before the performance was scheduled to start, 10,000 pre-registrants were sent an SMS which invited them to pay £5 to view the concert. Only the first 1,000 customers were admitted. Rooster, a London-based four-piece rock band, were chosen because Mobile Service Provider 3 is already in partnership with their record label, BMG. Rooster are one of the label's most hotly tipped young acts, with their potentially lucrative combination of boyband good looks and an eminently palatable style of music they have termed "griff rock". 3's spokesperson admitted: "They're quite good-looking young guys, so it made sense to have them on video.") <http://web.archive.org/web/20050213062547/http://www.visimon.com/cell-phone/rock-band-rooster-in-first-mobile-phone-concert.htm>

- **2004 \_\_ Round table on the history of network performance**, Vilette Numérique (A 20 interventions were made in Paris and in videoconference from other cities and country [Anne Roquigny])

- **2004 \_\_ Semaphore** - Mapping Acoustic Space of Radio Communications residency (La Plate-Forme, Dunkerque, FR) (Musicians, radioamateurs and sound artists used radar and radio scanners to map the traffic in the Calais-Dover Straits ; played live music in several sessions during the « God Save the Kranes » festival ; and worked with the Control Tower and a tugboat from the port of Dunkerque to produce visual and audio materials. The project was organised by the associations Ellipse (Fr), RIXC(Lv) and la Plate-Forme of Dunkerque (Fr) and is supported by Projekt Atol (Slo), EU Culture 2000 program, the Fondation de France, the association Nautilosh-Jokelson of Dunkerque, the Port Autonome of Dunkerque and the City of Dunkerque) <http://semaphore.blogs.com/semaphore/semaphore/index.html>

- **2004 \_\_ SIGNAL\_SEVER! - TRANSIGNAL 1**, Projekt Atol, Makrolab and Pact Systems, FutureSonic04 (*In SIGNAL\_SEVER! - TRANSIGNAL 1* musicians, visual artists and high frequency and satellite telecommunications experts explore the radio zones of the electromagnetic spectrum. Live performance by musicians, visual artists and high frequency and satellite telecommunications experts from Projekt Atol, Makrolab and Pact Systems jamming live over satellites and working with and within the radio zones of the electromagnetic spectrum.)

- **2004 \_\_ Sky Ear**, Usman Haque (15 Sep 2004: Greenwich Park, London. This project visualizes electromagnetic transmissions in the atmosphere. Electromagnetic fields (EMF) exist just about everywhere in our atmosphere. Urban locations in particular have a diverse and vibrant hertzian culture, with mobile phone calls overlapping text messages, combining television broadcasts with garage door openers that interfere with radio transmissions and wireless laptops, etc., not to mention the natural EMF that already exists in the atmosphere. This project is a spatial investigation of some of these phenomena. Sky Ear is a non-rigid carbon-fibre "cloud", embedded with one thousand glowing helium balloons and several dozen mobile phones. The balloons contain miniature sensor circuits that respond to electromagnetic fields, particularly those of mobile phones. When activated, the sensor circuits co-ordinate to cause ultra-bright coloured LEDs to illuminate. The 30m cloud glows and flickers brightly as it floats across the sky. As people using phones at ground-level call into the cloud (flying up to 100m above them) they are able to listen to distant natural electromagnetic sounds of the sky (including whistlers and spherics). Their mobile phone calls change the local hertzian topography; these

disturbances in the electromagnetic fields inside the cloud alter the glow patterns of that part of the balloon cloud. Feedback within the sensor network creates ripples of light reminiscent of rumbling thunder and flashes of lightning. Sky Ear shows both how a natural invisible electromagnetism pervades our environment and also how our mobile phone calls and text messages delicately affect the new and existing electromagnetic fields.) <http://www.haque.co.uk/skyear.php>

- **2004** \_\_ **Sonosphere - Biosphere of Sounds**, Tokui Nao, n\_ext NTT ICC Tokyo (A Kinetically Driven 3D Music Environment. "SONASPHERE" is a musical software based on the concept of negating once the metaphor of computer as the user's physical expansion or a tool. This installation is the interactive version of it. In SONASPHERE, functional units, such as sound samples, effects and mixers, are represented as small spherical 'Objects' floating within 3D Space. Connections are made between these objects, using simple mouse interaction, to establish signal stream networks.) [http://www.ntticc.or.jp/Archive/2004/n\\_ext/Works/sonosphere.html](http://www.ntticc.or.jp/Archive/2004/n_ext/Works/sonosphere.html) <http://www.naotokui.com/2004/05/sonosphere-2002-2004/> <http://www.sonosphere.com>

- **2004** \_\_ **Son-O-House**, Edwin van der Heide & Nox (Located in a large industrial park the Son-O-House is a public pavilion where visitors can sit around, eat their lunch and have meetings, surrounded by IT related companies. The structure is both an architectural and a sound installation that allows people to not just hear sound in a musical structure, but also to participate in the composition of the sound. It is an instrument, score and studio at the same time. A sound work, made by composer Edwin van der Heide, is continuously generating new sound patterns activated by sensors picking up actual movements of visitors. The structure is derived from typical action-landscapes that develop in a house: a fabric of larger scale bodily movements in a corridor or room, together with smaller scale movements around a sink or a drawer. In the house-that-is-not-a-house we position 23 sensors at strategic spots to indirectly influence the music. This system of sounds, composed and programmed by sound artist Edwin van der Heide, is based on moiré effects of interference of closely related frequencies. As a visitor one does not influence the sound directly, which is so often the case with interactive art. One influences the real-time composition itself that generates the sounds. The score is an evolutionary memoryscape that develops with the traced behavior of the actual bodies in the space. Nox: Lars Spuybroek with Chris Seung-woo Yoo, Josef Glas, Ludovica Tramontin, Kris Mun, Geri Stavreva and Nicola Lammers.) <http://www.arcspace.com/architects/nox/Son-O-House/>

- **2004** \_\_ **Soundbeam sensing technology** (The interactive creative possibilities of the Soundbeam sensing technology (UK). Soundbeam is a device which uses ultrasonic sensors to detect at a distance of up to six meters without physical contact - the direction, speed, and distance of physical movements, translating this into MIDI for the real time manipulation of both audio and visual material.) <http://www.soundbeam.co.uk/>

- **2004** \_\_ **SoundTransit**, Derek Holzer, Sara Kolster, Marc Boon (Soundtransit.nl is an online, collaborative soundscape dedicated to field recording and phonography. BOOK a sonic transit through a wide range of different locations recorded from around the world, or SEARCH the database for specific sounds by keyword, artist, country or location.) <http://soundtransit.nl/>

- **2004** \_\_ **Telematic Circle**, CCRMA Stanford, Pauline Oliveros, Deep Listening (The Telematic Circle is an interest group that uses and develops applications for telepresent music performances : CCRMA, STANFORD UNIVERSITY / DEEP LISTENING INSTITUTE, Ltd. / MCGILL UNIVERSITY / iEAR, RENSSELAER POLYTECHNIC INSTITUTE / VistaMuse, UNIVERSITY OF CALIFORNIA, SAN DIEGO. The group supports the creation of new art that specifically addresses broadband transmission systems as a new medium. The interest of the Telematic Circle goes beyond the requirements of mono-located music performances, for example musical solutions that address the unavoidable latency between two co-located sites. Among these goals are the development of systems with ultra-low latency, sufficient bandwidth to allow immersive multiple communication channels, and accurate spatial reproduction. Each institution represented in the TC has participated in multi-site concerts over the INTERNET. Institutions interested in participating in the ongoing research, rehearsals, jam sessions and concerts for the continual improvement of the telematic experience are welcome to join. Significant music making has occurred with both high tech multi-channel CD quality audio and DV quality video and low tech audio and video transmissions using iCHATav, SKYPE and other applications. Institutions wishing to join in this research should have an INTERNET2 connection. TC will provide the consultation to establish connection.) <http://www.deeplistening.org/site/telematic>

- **2004** \_\_ **Telenono**, Ruper Griffiths, FutureSonic04 (Telenono by Rupert Griffiths brings the radiation that is all around us into view by creating a negative image - an installation built to look like a phone box that is sealed off from all radiation, offering true radio silence. Installation built to look like a phone box that is sealed off from all radiation. Once inside, no-one can contact you. Phones, walkie-talkies, bluetooth, radios, TVs - none of your usual communication devices will work in here. Undertake a voluntary shrinkage of your personal influence on the world - communicate no further than you can throw your voice or than someone is prepared to walk to see you. This is True Radio Silence(TM) - gaining the freedom of reduced possibilities.)

- **2004** \_\_ « **That I Be! Echo Chambers and Rhetoric** », Pierre Maranda (This paper sketches a resonance model that bears on

Rhetoric Culture Theory in that it deals with “echo chambers” as the substrata on which rhetoric operates.. Culture-specific semantic fields reverberate on each other. They bounce back and forth in the minds and feelings of people that share homologous representational backgrounds pre-stressed along probabilistic vectors. Indeed cultures and sub-cultures make available to, and impose to a certain degree upon, their carriers the lexicons and semantic grammars without which they cannot communicate, without which people cannot feel that they belong together. Thus both constraints and prescriptions impinge – differentially -- on the use of the resources we have in order to think and act. In terms of social grammars taboos and other prohibitions are factors of cohesiveness as much as approved and conventional thoughts and behaviors. Over-all compliance rests on shared semantic universes, on evocation chambers that give us the impression that we understand each other when we interact. If we “resonate” in unison or at least in some sort of harmony, if we think that we feel approximately the same “vibes” as our interlocutors, we maintain and reinforce positive relationships. Orators work on such dynamics when they aim at consolidating cultural inertia. On the other hand, when they disrupt inertia through defiant or rebellious speeches, dissonance arises, consensual vectors are no longer operational and dissent or even conflict may ensue. This paper proposes an approach to explore some dimensions of Resonance Theory as it may bear on Rhetoric Culture Theory.)

- **2004 \_\_ TopLap** (26th August 2004 = TOPLAP live coding jam of audio and visuals (Perl, SC3, MAX/MSP, PD, fluxus, The Thingee), Aarhus, Denmark.) <http://projects.dorkbot.org/rd04/wiki/MediaFiles?action=AttachFile>

- **2004 \_\_ Ubuntu** (Ubuntu (IPA: [uːˈbuːntuː] in English, [ùḁúntú] in Zulu) is a computer operating system based on the Linux kernel. Its name comes from the Zulu word ubuntu, loosely translated as “humanity”. Ubuntu’s goals include providing an up-to-date yet stable operating system for the average user, with a strong focus on usability and ease of installation. Ubuntu has been rated as the most popular Linux distribution, claiming approximately 30% of desktop Linux installations in a survey. Ubuntu is free and open source, meaning that not only is it distributed without charge, but it may also be freely improved upon. Ubuntu is sponsored by Canonical Ltd, which is owned by South African entrepreneur Mark Shuttleworth. Instead of selling Ubuntu itself, Canonical makes money by selling paid support for Ubuntu. By keeping Ubuntu free and open Canonical is able to leverage the talents of outside developers willing to contribute rather than having to do all development within the company itself. Kubuntu and Xubuntu are official subprojects of the Ubuntu project, aiming to bring the KDE and Xfce desktop environments, respectively, to the Ubuntu core (by default Ubuntu uses GNOME for its desktop environment). Edubuntu is an official subproject designed for school environments and should be equally suitable for children to use at home. Gobuntu is an official subproject that is aimed at adhering strictly to the Free Software Foundation’s Four Freedoms. Ubuntu JeOS (pronounced “Juice”) is the newest official subproject. JeOS is a concept for what an operating system should look like in the context of a virtual appliance. Versions names : Warty Warthog, Hoary Hedgehog, Breezy Badger, Dapper Drake, Edgy Eft, Feisty Fawn, Gutsy Gibbon, Hardy Heron, Intrepid Ibex) <http://www.ubuntu.com>

- **2004 \_\_ userradio**, August Black (Userradio mixes the new technologies of personal communication with « old » broadcast radio technology. It is a set of tools for collaborative networked audio production, where an unlimited number of individuals can mix multiple channels of audio simultaneously and together from anywhere on-line using a standard flash-capable browser. The audio output of the application is broadcast on terrestrial FM radio and the users are ideally within the broadcast diameter) <http://aug.ment.org/userradio/>

- **2004 \_\_ Walk**, John Campbell (Walk runs for ten minutes as a series of 600 one-second audio snapshots recorded at different locations internal and external, public and private across the city of Liverpool. Each frame capturing a forgotten image from the soundscape of a sequence of planned walks. At 60 frames a minute the ear navigates the time line collecting information, much as the eye moves across the surface of the painting to complete the picture. In this way Walk compiles an impressionistic portrait of Liverpool, bringing into focus the inconsequential sounds of the city.)

- **2004 \_\_ When Attitudes become - Curating**, Rainer Ganahl (Rainer Ganahl wrote an essay about how the Boeing 747 “Jumbo Jet” started to operate in 1970, enabling massive long distance travels and created world wide transport possibilities for contemporary art. He states that the new agency of mobility and networking rendered the art system highly sophisticated and internationalized, and these facts made the emergence of conceptual art in the 70’s possible. Needless to say, these phenomena combined with other connectivities in new technologies and the media theory of the same decade. Not only through media but physically, Jumbo Jet made the concept of a “global village” become a reality. The space produced by mobility and connectivity created roles in the contemporary art world: Artists, curators, critics, writers, pedagogues, collectors, dealers, etc. could now swap their professions within worldwide networks. Ganahl points out that this is the nature of a networking art world in the age of mobility. Interweaving economic interests, identity investments and political tensions, the contemporary art world constantly reshapes social, political and cultural landscapes – which is ultimately made possible through the use of instant communication technologies. In order to reflect the dynamic changes in our living world, traditional approaches do not suffice for a new inquiry of the emerging fields. A set of communication and mobile technologies informed and produced the “attitude” of curating as an art

practice [Miya Yoshida].) <http://www.ganahl.info/attitudes.html>

- **2004 \_\_ Wifiledefrance** - wireless art event (Artists : Node Runners by Carlos Gomez de Llarena et Yuri Gitman, Steffen Rault, Guillaume Stagnaro, Peter Sinclair, Nao, Kevan Lemire, Anne Laforet, Douglas E. Stanley, Pavu.com. Smart Mobs points us to WiFiledefrance, an event tomorrow (July 3) in Paris promoting "alternative and creative" uses of 802.11 wireless networks. Chief among the festivities will be Noderunner Paris, a race to find and photograph various WiFi nodes around the city (sort of a capture-the-flag for wardrivers). Network configurations and signals will also be translated into live music. Now all they need to do is get some of the bicycle-based wireless access points we talked about awhile back, and combine WiFiledefrance with Tour de France) <http://www.wifiledefrance.com/> <http://www.nettime.org/Lists-Archives/nettime-fr-0406/msg00095.html>

## 2005

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- **2005 \_\_ 12 Miles Out**, neuroTransmitter (12 Miles Out is a visual and sound installation that merges analog radio technology and line drawing. Specifically referencing Radio Caroline, this work continues our exploration of offshore radio practice prevalent in the 1960's and 1970's. Pirate radio is a practice that undermines corporate media domination, and occupies the privatized space of radio bandwidth for non-commercial interests. Installed, the drawing as antenna represents a blueprint of one in the fleet of Radio Caroline ships. The audio composition mixes live and ambient sound recordings of a voyage neuroTransmitter took out into international waters and archival material from Radio Caroline broadcasts. Multiple radios within the exhibition space are tuned to the project's transmission frequency, or viewers can bring their own radios in order to listen to the work.) <http://www.neurotransmitter.fm/12miles.html>

- **2005 \_\_ AB\_TIME II**, Scot Gresham-Lancaster (Tri-location performance in Marseilles, FR, Troy, NY and, Oakland, CA. All spaces are interconnected in "near" s'real time over the Internet with large scale video projections in the performance areas. Dancers interact with the distortion of time and space created by aiming the video camera at the video projection of the other spaces. Screen inversion, network delay and dropout artifacts all add to the unique texture and dimension of the projection. The sounds of each space are mapped into the other spaces in a flawed and delayed manner. Creating unexpected discontinuities and delays that inform the interaction between the players and the dancers. Skalen / artistic group in Marseilles: MICHÈLE RICOZZI Dancer, Choreographer, JEAN MARC MONTERA Musician, PATRICK LAFFONT Video artist. At the iEar studios of the Rensselaer Polytechnical College in Troy, NY: PAULINE OLIVEROS (Music), TOMI HAHN (Dance and Shakahachi). At Mills College in Oakland, CA: SCOT GRESHAM-LANCASTER: (Music & Video), HOLLY FURGASON of the Mills College Dance Department)

- **2005 \_\_ AB\_TIME III**, Scot Gresham-Lancaster, NIME'05 (All spaces are interconnected in "near" s'real time over the Internet with large-scale video projections in the performance areas. Dancers interact with the distortion of time and space created by aiming the video camera at the video projection of the other spaces. Screen inversion, network delay and dropout artifacts all add to the unique texture and dimension of the projection. The sounds of each space are mapped into the other spaces in a flawed and delayed manner. Creating unexpected discontinuities and delays that inform the interaction between the players and the dancers. Tomie Hahn will be a featured artist in this performance dancing to Scot Gresham-Lancaster's custom midi guitar with extended controllers. This guitar was built with Jorgen Brinkman at STEIM in the Netherlands. The concept of this design is to maintain the context and familiarity of the guitar but augment the control parameters with proximity detection and various foot pedals used in conjunction with STEIM JunXion HID to MIDI conversion software. In Marseilles: Jean-Marc Montera will be playing guitar as well as a Corsican stringed instrument known as the Cittern. He will be playing with a variety of extended and prepared techniques in conjunction with the use of live electronics. Jean-Marc Montera was co-founder of GRIM (Groupe of Search and Musical Improvisation) in 1978. In Troy, NY: Pauline Oliveros will be playing accordion and various other small instruments using her Expanded Instrument System (EIS). The EIS is an evolving electronic sound processing environment dedicated to providing improvising musicians control over various interesting parameters of electronic transformation of their acoustic instruments. The setup includes delay and ambience processors, microphones, signal routing and mixing, and a computer which translates and displays control information from foot pedals and switches using MAX/MSP as interface. Olivia Robinson and Nik Kanter will be dancing. Kathy High and Zulma Aguiar will be the video artists.) <http://hct.ece.ubc.ca/nime/2005/concerts.html>

- **2005 \_\_ ARoundHead**, Mongrel (The head of Oliver Cromwell is stuck in the phone exchange of a psychiatric hospital. From an automated telephone system installed at the Royal Edinburgh Psychiatric Hospital, phone calls from Oliver Cromwell encouraged staff to pass around messages, songs, jokes and rude noises. The telephonic robot, in the character of Cromwell, rung up and asked questions and recorded results from the various people it spoke to. After listening to the current script, the callee could decide whether to pass it to another extension. The Head of Oliver Cromwell was spoken by voice actor Neil Conrich. 1. Where am I? Who is this at

the end of this phone? I remember descending into darkness. Nothing but the rustling of seeds sprouting in the soil – daisies tickling my nostrils with their roots. 5. Good person, I am in need of urgent release. Centuries of bad air and rotten fumes have built up inside me! I can hold it no longer ... ah ... (Loud fart noise) Ah ... that is exceedingly refreshing. Perhaps you can direct me to another line so I may release more vapours? Pray enter an extension number most speedily – I feel another emission building inside me ... 10. Kiss (pre-recorded kissing noises, or previous listeners recordings) Who teases me with this canoodling? Such displays of coquetry are a foreign habit. I ask you not to press 'one' to pass on these flirtations. Nor do I encourage you to add your own bawdy love play by pressing 'two'. Eighteen different scripts were used. Cromwell's messages ranged from trying to expel a fart, asking for help deciphering a joke he had read on the toilet walls or ejecting a bird that had been caught in the telephone exchange with him. He played love songs to listeners and offered to pass them on to their sweetheart at the hospital, extolled staff to put down their phones and take the rest of the day off or to join him in singing a rousing (and deafening) hymn of praise. More than one out of ten of all calls (including those calls not even answered) resulted the listener choosing to take part and converse with Cromwell. Members of staff actively passed the head between their colleagues. Some found it "funny", "weird", a "shock", "jaw dropping" or wondered whether a bizarre virus had infected the telephone exchange... This project was chosen by the Arlink and Functionsuite teams from five proposed projects submitted. "ARoundhead" was realized in consultation with and facilitated by, Tom Arnott, Louise Birrell and Gill Watson all Facilities Managers, and Teresa Quinn the switchboard manager at The Royal Edinburgh Hospital. Commissioned by ARTLINK for Functionsuite.) <http://www.mongrel.org.uk/aroundhead>

- 2005 \_\_ **Art's Birthday, reverie : noise city** (reverie : noise city is a virtual urban landscape (on the Web). Inside this city, an ever-expanding group of international sound artists will build venues for their work. Reverie imagines an urban landscape that includes a variety of poetic extrapolations on the types of regions that exist in our cities - a merging of Sunset Boulevard, Lower Manhattan, boat houses on the canal, the Surrey Landfill site, and a public botanical garden of the future. Over time, the growing collection of audio art venues will define a structure of neighbourhoods and communities in which artists plan time-based events and engage other inhabitants in collaboration and exchange. There will be an Exchange-Art Festival between all of the artists in the virtual city from Friday, January 14th to Monday, January 17th 2005. This will include on-site performances, concerts, radio-broadcasts and generative audio installations at Western Front, Studio XX, Radio Kinesonus, Kunstradio and other locations around the world.) <http://projects.front.bc.ca/2005/reverie/> <http://kunstradio.at/AB2005/>

- 2005 \_\_ **bend ++** (we always orchestra, we never orchestra. bend++ is a project started in 2005 by the sound & media art seminars of four universities in Tokyo: Zoke University, Musashino Art University, Tama Art University, Kogei University. "bend++" will be held at a club called "Aoiheya", which is located in Shibuya, Tokyo on 27th. A feedback performance between Korea, Japan and France) with Oki Keisuke, Baruch Gottlieb, Lee Seny, Auranoisazz, Izumo Michiko, Kubota Akihiro, Christophe Charles, and Locus Sonus, Jérôme Joy, Peter Sinclair) <http://blog.livedoor.jp/bend2005/> <http://home.att.ne.jp/grape/charles/bend07.html>

- 2005 \_\_ **Berlin.Soundscape-FM**, Sara Kolster, Derek Holzer and Marc Boon, Transmediale 05 Festival (Berlin.Soundscape-FM is a collaborative soundwork in the city of Berlin from 4-8 of February 2005. Inspired by the successful Soundscape Fm project which took place during the Garage Festival in Stralsund of this year, it takes the form of a FM radio broadcast and a user-uploadable data-base with fieldrecordings taken from the city of Berlin. During four days, sound artists, amateur sound hunters, phonographers among other interested participants will collaborate on gathering sounds from different places within the city of Berlin. A physical workspace will be created in the Haus der Kulturen der Welt, and is meant to be a post-production booth for the gathered sounds which can be uploaded immediately in a database-system. The uploaded sounds are online-accessible - as well as the user uploadable interface - and are broadcasted via several local fm-radio-stations within Berlin.) <http://www.umatic.nl/projects.html>

- 2005 \_\_ **Branching to Broadcast**, neuroTransmitter with Daniela Fabricius (neuroTransmitter's low-power FM radio station transmits from a tree-fort installed on Colonels Row on the grounds of Governors Island. The fort absorbs and broadcasts local sounds, both natural and artificial, and transmits them to radios planted around the Island. This project builds on our continued interest in alternative architecture and communication networks.) <http://www.neurotransmitter.fm/branching.html>

- 2005 \_\_ **Chop 10**, Tarikh Korula (Chop 10, a sound installation by Uncommon co-founder Tarikh Korula, exploits the techniques of current commercial radio practice by re-mixing a live, dynamic assemblage of radio streams as a commentary on the homogeneity of regulated radio. As Chop 10 moves from one Arbitron-rated Top Ten radio station in New York City to the next, the hyper "scan" makes it impossible to discern any single station's content, resulting in a jumpy, never-ending parody of commercial radio. Chop 10 was presented in the New Museum Media Lounge as part of the group show, "Airborne". Part of the New Museum's Transmission series) <http://uncommonprojects.com/site/play/chop-10>

- 2005 \_\_ **Concrescence / 8=8 / Hypertable**, Douglas Edric Stanley (Concrescence is a platform for creating and manipulating moving images outside of the traditional linear time-code. Images grow in spatialized mosaics, allowing for infinite recomposition

while avoiding purely random associations. This specialized software is then projected onto the Abstractmachine Hypertable: a multipurpose interactive table which allows multiple users to interact with the non-linear narratives by simply placing their hands on the surface. For the San Jose festival, two uses of the Concrecence platform will be presented: a fully developed algorithmic narrative entitled "The Signal", accompanied by a simplified version of the Concrecence authoring software where the public can record their own audiovisual clips and create collective non-linear patchworks. 8=8 is a group of 4 programmers = 4 composers = 4 VJs = 4 musicians = 4 artists. All four bring their own programming, visual and musical sensibilities to a collective instrument, the Abstract Machine Hypertable. By moving one's hands over the surface of the Hypertable, images and sounds are generated, creating a unique opportunity for musical improvisation. 8=8 uses the Hypertable to perform singular programs/instruments in a concert=performance=demo context. Although the Hypertable was originally designed as an interface for algorithmic cinema, 8=8 quickly discovered its musical potential as an instrument) <http://www.abstractmachine.net/blog/category/hypertable/>

- **2005** \_\_ **Conte pour une jurisprudence**, Patrick Bernier (Involved on a long-term project on the idea of hosting (by people, on the web) and knowledges exchanges, Patrick Bernier started a collaborative work with Carlos Ouedraogo, a storyteller, to relate as performances his latest experiences from his travels throughout Europe and the United States. Carlos Ouedraogo appropriates Bernier's world in order to reactivate his stories, meetings, exhibitions. This also becomes a new proposition of live-hosting, the one where identities, traditions and the handing down of knowledge meet together. Or how computers and networks find a voice thanks to a storyteller ...)(L'approche de Patrick Bernier & Olive Martin est assez similaire lorsque ceux-ci demandent à des conteurs de narrer leurs expériences artistiques et politiques, lesquelles évoluent autour des frontières entre nouveaux médias, exposition traditionnelle et engagement au côté des immigrés clandestins. Dans "Conte pour une jurisprudence", un texte de fiction écrit à la suite de l'impossibilité (signifiée par les autorités britanniques) de travailler avec un interprète africain dans une galerie londonienne, Bernier en appelle même à un boycott des pays qui refusent leur territoire à certains immigrants. Et à la transmission des œuvres d'art, comme des savoirs scientifiques, sous la forme de performances et de récits menés par des "passeurs" ("Conte pour une jurisprudence" a été publié dans le numéro 53 de la revue canadienne *Esse* et dans le recueil *Logs. Micro-fondements d'émancipation sociale et artistique*, Maisons-Alfort, Éditions Ère, 2005). Cette forme du conte-performance conceptuel en est même érigée comme une modalité artistique en phase avec le sujet traité tout en étant politiquement efficace. [Frédéric Maufras, in *Still performing - de la continuelle question de la dematérialisation de l'objet d'art après les attitudes de la fin des années 1960*, "L'Art Même, #31]) [http://www.editions-ere.net/IMG/pdf/logs\\_lybere.pdf](http://www.editions-ere.net/IMG/pdf/logs_lybere.pdf)

- **2005** \_\_ **Distant Views - Culture Catchers**, Michael Sheridan (Installed as 'Distant Views' for the 2005 Boston Cyberarts Festival and subsequently as 'Culture Catchers' at the gallery G-A-S-P, the artwork made by Michael Sheridan is a sound installation consisting of a transparent glass wall where different devices hung creating an interactive multichannel acoustic experience. The exhibited devices required to catch and broadcast shortwave signals, like digital recorders and microcomputers, are hung by suction-cups and receive inputs from all over the world. The visitors movements activate the detectors and triggers sounds. The environment might be then filled with Persian music, Muslim prayers or Chinese news at once. The idea comes from an experience Sheridan had while producing a documentary in Eritrea. After two days of driving in a sort of forbidding African nowhere-ness, through a land devastated by war, he met two men, wrapped in rags, listening to shortwave radios. The sound emitted by their radio reconnected the artist to the world after days of isolation. Distant Views / Culture Catchers it's a like a wall of sound made by an international stream of consciousness. It is tuned to more than radio signals and speaks about disorientation, connectivity and fragmentation, according to the main interest of Sheridan. As he claims, in his artistic practice he interprets "the emotional and psychological aspects of how people cope with life, finding the tipping point between stability and instability". So the work looks like a digital Babel Tower, able to connect people instead of separating them. [Valentina Culatti]. "Shortwave radios, digital recorders and players, motion detectors, micro computers and antennae were hung by suction-cups on a wall of windows or sheets of plexiglass. The movement of visitors triggers sounds from around the world to fill the environment and to be twisted together. At any one moment one might hear, for example, Persian music, Christian proselytizing and the day's news in Korean. They are a sequence of non-linear ideas that, with time, leave an impression of the continuous course of life that is speaking from all corners of the globe.") [http://www.sheridanworks.com/detail\\_15.html](http://www.sheridanworks.com/detail_15.html)

- **2005** \_\_ **Ether Ferry**, LoVid (LoVid (Tali Hinkis and Kyle Lapidus) is concerned with the preservation and materialization of information that is lost or ignored in mainstream media. In Ether Ferry, LoVid manipulates signal breakdowns and establishes a tactile relationship to technology. Ether Ferry features a live video feed generated by an electrical signal simultaneously broadcast between multiple video transmitters and receivers. The change in the relative locations of the transmitters and receivers affects the resulting video produced by the system.) <http://www.lovid.org/installations/etherferry/index.htm>

- **2005** \_\_ **Exhibition Transmission II: Airborne** (As part of the New Museum's on-going Transmission series, free103point9 collaborated with the New Museum's Anne Barlow and Defne Ayas to present the Media Lounge exhibition Airborne April 9 - June 4, 2005. Airborne profiled new projects by New York-based artists who investigate the aesthetic, sonic, and socio-political aspects of the wireless spectrum. Selected from an open call, artists 31 Down, Paul Davies, Melissa Dubbin + Aaron S. Davidson, Tarikh

Korula, LoVid, neuroTransmitter, and Mendi + Keith Obadike expose otherwise fleeting and invisible transmissions through conceptual projects, networked installations, live streams, and audio-visual works. "We are awash in waves and flows, invisible electromagnetic streams carrying sounds and images, digits and codes, information of all sorts. Our ears and eyes momentarily capture these flows, as do radios, cell phones, TVs, and computers. Incorporeal as air and sea, these currents are nonetheless charted by the institutions of power, cordoned by the lines of property, subjected to the regulations of the state, and routed into the game of capital. Airborne makes manifest these ethereal electronic currents and the interests they fuel. The participating artists imagine new forums and venues for the circulation of data and its transgressive potential, while tapping into these streams in order to divert their flows and reconfigure the social, political, and personal dynamics of electronic information -Christoph Cox " Christoph Cox is an art critic and philosopher. He is Associate Professor of Philosophy at Hampshire College in Massachusetts.) <http://www.free103point9.org/studycenter/historicaltransmissionworks>

- **2005** \_\_ **FON** (FON (FON Wireless Ltd.) is a company that runs a system of shared wireless networks. The business was launched in November 2005 (but officially launched in February 2006). FON was created in Madrid, Spain by Martín Varsavsky where it headquarters most of its operations. FON also has subsidiaries and branch offices in the U.S.A, Spain, France, Germany, Hong Kong, Taiwan, Korea and Japan. FON's investors include Google, Skype, Index Ventures, and Sequoia Capital. People can become members (called "Foneros" by the company) by agreeing to let FON share their wireless internet connection. Members need to purchase a low-cost wireless router (called "La Fonera"), which acts as a public internet access point; the device also creates a private network that can be used by the owner only. FON members can use any other FON access points free of charge. Customers who do not share their internet connection (called "Aliens") can buy internet access from FON for a relatively low daily fee. The members whose access points are used by a paying customer receive part of the revenue. According to FON, the company's business model is based on selling internet access to non-members ("Aliens"). They try to attract customers by offering substantially cheaper access than traditional providers like T-Online that own the hotspots themselves. In an early interview, FON founder Varsavsky set a goal of 1 million user-run hotspots by 2010, creating considerable coverage. The business model depends on the goodwill of the Internet Service Providers, who may forbid connection sharing by their customers. For this reason, FON tries to reach agreements with service providers. FON maintains that its sharing model is actually beneficial for service providers, since a typical broadband subscription is cheaper than permanently using FON as an "Alien". FON also sells WiFi products through its online shop (in the US, the Fonera router is available through Dell's online store), the La Fonera router being sold at a low price (about €15 in Europe and \$40 in the United States, as of early 2008). At an early stage, the routers were even given away for free in certain countries to quickly penetrate the market. There are also various promotions where Foneras are available for free; these are often aimed at creating hotspots near strategic locations, such as public spaces or cafes.) <http://www.fon.com>

- **2005** \_\_ **Freesound Project**, Bram de Jong, Music Technology Group (Pompeu Fabra University) (The Freesound Project aims to create a huge collaborative database of audio snippets, samples, recordings, bleeps, etc., released under the Creative Commons Sampling Plus License. The Freesound Project provides new and interesting ways of accessing these samples, allowing users to browse the sounds in new ways using keywords, a "sounds-like" type of browsing and more, to up and download sounds to and from the database, under the same creative commons license, to interact with fellow sound-artists! We also aim to create an open database of sounds that can also be used for scientific research. Technology based on work by the MTG and powered by BMAT. In very broad terms it works like this: for every sound a set of unique values is generated which describe this sound. For example, one of these values could be the mean of all audio values. Once this vector of numbers is generated the server can figure out the "distance" between two sounds by comparing these vectors) <http://freesound.iaa.upf.edu/> <http://freesound.iaa.upf.edu/geotagsView.php>

- **2005** \_\_ **G.I.S.S Global Independent Streaming Support** (Free streaming services for the world - free as in cost, free as in software. Giss.tv is basically IceCast2-server. In a context where the media have influenced a lot of political decisions these last years ( see the influence of the videos in the last al-qaqa intifada ) and is able to influence opinions in western countries, it seems very necessary to have a well-balanced view of the situation and this implies that the source of information shouldn't be so much controlled by rich and wealthy western media groups. A group of people that we represent here, a multitud of individuals with different histories, background and nationalities ( italian, french, spanish and spanish colonized, argentinian, chilean, mexican, colombian, brasilian, norvegian, slovenian, ...) joined together over the last three years to create a human-scale media and an empathic network of human experiences in different locations of the globe ( mainly europe and south america ), this informal structure took the name of G.I.S.S. ( Global Independent Streaming Support ). It is mainly run by free software activists, that lend some resources and servers to make it growing in terms of connections, but, keeping in mind that the media production unit must remain accessible to everyone ( so, yes, a simple internet connection and a basic computer equipped with a microphone and eventually a camera is enough to become one of the broadcasting agents ). For each emitting station, it is made easy to build its own web interface taking advantage of the modular architecture of the software components proposed. It is also possible to join the network by registering its own server in the ring of servers. [Yves Degoyon] <http://giss.tv> <http://gollum.artefacte.org/mapuse/map.html>

- **2005 \_\_ Graph Theory**, Georgia Tech, Jason Freeman (*interactive web site and concert work for solo violin or cello. Graph Theory seeks to connect composition, listening, and concert performance by coupling an acoustic work for solo violin or solo cello to an interactive web site. On the web site, users navigate among sixty-one short, looping musical fragments to create their own unique path through the composition. The navigation choices which users make affect future concert performances of the work. Before each performance, the soloist prints out a new copy of the score from the web site. That score presents her with a fixed path through the piece; the order of the fragments is influenced by the decisions that recent web site visitors have made*) <http://turbulence.org/Works/graphtheory/> <http://music.columbia.edu/~jason/> <http://www.jasonfreeman.net/>

- **2005 \_\_ Great International Audio Streaming Orchestra** (“An inter-cities sounds context spatialisation through a free-bi-directional net-radio system” Participating: Christian Galarreta (Lima), Achim Wollscheid (Frankfurt), As 11 (Atenas), TMP (New York), Randy H. Yau (San Francisco), Jason Kahn (Zurich), APO33 (Nantes), Ilios, Julien Ottavi, Xabier Erkizia, Mattin, Iñigo Telletxea (Donostia-San Sebastian)

- **2005 \_\_ The Hub**, Chris Brown, Phil Stone, John Bischoff, Scot Gresham-Lancaster, Tim Perkis (*HUB did a 6 day workshop at Tesla in Berlin with a concert on the evening of June 23, 2005. We focused our energy on getting oscgroups to work which enabled us to interconnect via TCP/IP using the OSC protocol*) <http://www.perkis.com/phlog/?pg=2005.06> <http://www.perkis.com/phlog/?pg=2005.11> <http://hub.artifact.com>

- **2005 \_\_ I am on the net**, David Worrall, Network and Sound Installation (*I am on the net (2005) is an installation work which employs language translation software to provide resonances of original spoken and textual materials in multiple-listening-post installation spaces. The inexact nature of such language translations (such as that provided by babelfish, for example) are used to resonate the text using multiple feedback pathways to create a chinese whispers environment. The work is in three parts: Part 1: A stand-alone voice-synthesis bagatelle. Part 2: A single multiple-roomed space through which an audience can be wander at will, adding their own utterances to the ongoing feebk network translation resonance. Part 3: An virtual (internet) space version of Part 2. Spatially dislocated audience can locate any number of portals for both exciting and auditing translation network resonances. The text is based on Alvin Lucier’s I am sitting in a room (see references below) using the original text fed through a number of different automatic language translation programs as both input and output. Here is the complete text: I am on the net through an interface different from the one use when you do. I am submitting the coding of my written text and I am going to submit it back into the net again and again until the resonant syntaxes of networked mind reinforces itself so that any semblance of my text, with perhaps the exception of of of subject, is destroyed. What you will hear, then, are the natural resonant syntaxes of networked mind articulated by text. I regard this activity not not not not so much as a demonstration of a linguistic fact, but more as a way to to to smooth out any irregularities my text might have. (Original English Text) I am in the network through an interface different from which you use when you do it. I am putting under the codification of my written text repeated times until the resonant syntaxes of the mind networked are reinforced, to destroy any appearance of my text, with perhaps the exception of the subject. What you then will hear are the natural resonant syntaxes of the mind networked articulated by the text. I watch this activity not as much as demonstration of a linguistic fact but more as way to a to smooth outside any irregularity my text could have.(Spanish) I am in the net through a different relation of that you use when you. I am submitting coding of my written text repeated times until the syntaxes resonant of the mind networked if strengthen, in way that all semblance of my text, with perhaps the exception of the subject, is destroyed. What you it will hear then networked is the natural syntaxes resonant of the mind articulated by the text. I consider this activity not thus very as a demonstration of a linguistic fact but more as a way to smoothing for my text is of all their regularities could have. (Portuguese). etc.)*) <http://www.avatar.com.au/>

- **2005 \_\_ ImproMasters – version 2**, A study of performance technology in free collective improvisation, Shinji Kanki, Sibelius Academy Helsinki (*We apply various tools of performance technology such as live electronics, new music performing devices and interfaces, sound syntheses or DSP (Digital Sound Processing) to free group improvisation practice in order to find out, develop and discuss new possibilities of live music making with technology. Club concert at the Sibelius Academy Winter Festival. Together with Vancouver musicians via the Internet. Telematic concert with the University of Alaska, Fairbanks. at CSC super auditorium*) <http://silakka.fi/ImproMasters/>

- **2005 \_\_ The Internet of Things**, published by the ITU (International Telecommunications Union) in 2005, declares a “new era of ubiquity” beyond the “ubiquitous computing” of networks available anywhere anytime for human-to-human (H2H) connectivity to an Internet reliant on connections between humans and things (H2T) and between things themselves—Thing to thing (T2T) communication circumvents the communicative networks between humans. The Internet is emerging as not only a network between anyone but between anything. [Anne Friedberg] [http://networkedpublics.org/afriedberg/blog/place\\_ubiquity\\_and\\_the\\_thing](http://networkedpublics.org/afriedberg/blog/place_ubiquity_and_the_thing)

- 2005 \_\_ **Interplay #3 - Collaborations in 4 Cities** (*max eastley + freeform, marcus schmickler + thomas lehn, pole + deadbeat, stephan mathieu + si-cut.db, scanner + iris garrelfs, janek schaefer + leafcutter john*) <http://www.sprawl.org.uk/INTERframe.html>

- 2005 \_\_ **iTunes Signature Maker**, Jason Freeman (*The dissemination of music as files has exponentially increased during the last years, creating a social phenomenon that has manifested itself in the form of hardware and software players. If the the former is a drastic evolution of the walkman, inflated of manageable musical information, the latter (iTunes as first) have slowly changed many of the physical media conventions in use, replacing them in the consumer society. iTunes Signature Maker by Jason Freeman analyzes (after user's permission), his library of tunes hosted in iTunes, and creates a sound 'signature' made out of very short samples of the most important tunes, basing on some customizable parameters. This ultra-synthetic profile of your own tastes is then saved on the hard disk and it is a sort of barcode of your own listenings. It is conceptually derived from the 'scanning' feature, technically introduced only with the compact discs to listen the first seconds of a track, and then evolved in the online files 'preview' (typically in streaming). This synthesis represent an arbitrary essay of the private acoustic selections, making a collage out of some scraps taken from our own sound memory. It's automatic and unfinished, nevertheless it always represents the involved person. [neural.it]) <http://www.jasonfreeman.net/itsm/>*

- 2005 \_\_ **The Lake**, Julie Freeman (*The Lake is the first in a series of works that track natural biological motion via electronic tagging systems and transforms the data collected into musical composition and animation. Supported by NESTA and presented at Tingrith Fishery, Bedfordshire, UK, the work collected real-time movement data from sixteen fish and used a custom developed software and hardware system to create a site-specific experience. n the acre sized lake sixteen fish had bio-acoustic tags implanted into their body cavity to enable their positions to be tracked. The tracking system comprised the tags, an array of six hydrophones (underwater microphones), a receiver unit, computer hardware and software (Max/MSP, Java, Flash). Over a six week period each tag emitted a unique signal approximately every two seconds (the 'ping interval'). A receiver unit located in secure housing at the side of the lake connects the hydrophone array to a laptop which analyses the constantly streaming audio data. The manufacturers software (Hydroacoustic Technology Inc) calculated the 3D position of each fish every time a signal was received and passed the x, y and z coordinates to a Java server. The Java server processed and analysed information about each fish individually and collectively, and broadcasted it over a wireless network sending it in XML to a Flash client and Open Sound Control (OSC) to a Max/MSP patch. The abstract visuals also reflect the activities of the fish. Each fish is represented by a polygon with two inner shapes. The work was housed in a 9 meter tall mild steel cylindrical silo. Inside, above the viewers head, a circular screen displayed an animated representation of the movement of fish in real-time, accompanied by a quadraphonic soundscape also created by the fish. By looking up at the animation the viewer felt as if they were in an artificial digital lake, absorbed in an environment resonating with vibration, movement and spatialised audio.) <http://juliefreeman.co.uk/lake/>*

- 2005 \_\_ **Long Range Audio Device LRAD** (*Designed and built by the American technology Corporation in 2005 and originally designed as a ship to ship hailing device to protect US naval shipping, LRAD is now used by the Illegal American occupation forces in Iraq as an assault weapon, by the US government on their own people as part of their 'non lethal' arsenal for crowd control and more recently by the (US sponsored) Georgian state to repress internal dissent. LRAD emits a high pitched warning tone "similar to a fire alarm" or a series of 'verbal challenges' (translatable through an inbuilt 'phrase-olator' or online via TCP/IP connection "immediately retrieve thousands of messages recorded by the Defense Language Institute") over a maximum effective land distance of 300metres at a volume of 120-150db. Used at medium range and beyond the manufactures specified duration the device is capable of delivering sounds well beyond the human pain threshold (120 – 140 dB); at a distance of 90m the LRAD will cause intense pain and permanent hearing loss. The LRAD is basically a series of in-phase speakers (not a infra-sound generator as commonly supposed). The phasing of the sound (combined amplitude giving louder sound) gives the device the ability to project high frequency sounds over a long distance at high volume. To focus the sound the LRAD uses a set of out of phase speakers around the perimeter of the device to phase-cancel the sound giving a directional arc of 30 degrees. Fifteen degrees outside the beam, the volume drops about 20 dB which although still loud means that the operator can focus the LRAD to a specific target without being themselves affected. [Simon Crab]. Developed specifically in response to the USS Cole attack, LRAD fulfills a capability gap for military vessels to hail, notify, and warn approaching vessels at extended ranges with clear voice or prerecorded messages in almost any language. LRAD provides military personnel the capability to transition through the rules of engagement to determine a target's intent, and also provides greater assurance that innocent lives on both sides of the device are not lost due to miscommunication.) <http://crab.wordpress.com/2007/12/10/a-short-history-of-audio-weapons/> <http://www.atcsd.com/site/content/view/27/41/>*

- 2005 \_\_ **Lost & Last Transmissions**, Melissa Dubbin and Aaron S. Davidson (*In a two-fold project entitled Last & Lost Transmissions collaborating artists Melissa Dubbin and Aaron S. Davidson focus on lost and found messages. In Last Transmissions, the artists rebroadcast an amalgam of final messages made by individuals—a disc-jockey signing off one last time or a lost sailor's plea, creating an opening into divergent narratives. In Lost Transmissions, the artists collect and rebroadcast, radio*

messages that have been lost during the process of transmission. Dubbin and Davidson offer the messages a chance to be found by devoting a small, temporary radio station to their re-transmission. Two low-watt radio transmitters, collected audio, antennas, cables, metal, plastic. dimensions variable. *Last Transmissions*. The last transmission of an individual often occurs at a significant point in time, a time of crisis or a moment of historical significance. In some cases the last transmission becomes more significant than all previous transmissions. Re-broadcasting this assemblage of final messages creates an opening into divergent narratives, their connections and consequences. *Lost Transmissions*. Occasionally, transmitted messages are lost. Once sent, they arrive at the wrong place, or no record of their reception is recorded. By collecting and re-broadcasting these messages, they are offered another chance to be found. A small, temporary radio station is devoted to this endeavor. While many 'last transmissions' are associated with tragedies that cannot be reversed, listening to these often heartbreaking broadcasts confuses one's desire for the truth with the helplessness of being a passive, secondhand recipient of the message. In turn, 'lost transmissions' is an attempt to counter that powerless feeling. We asked people to send us voicemails, email messages or letters they've received that were intended for another person. Our naïve hope is that by re-broadcasting them, the messages may eventually be heard by the intended recipient.) [http://www.dubbin-davidson.com/Melissa\\_Dubbin\\_Aaron\\_S\\_Davidson/Work/Entries/2005/10/9\\_Last\\_&\\_Lost\\_Transmissions\\_2005.html](http://www.dubbin-davidson.com/Melissa_Dubbin_Aaron_S_Davidson/Work/Entries/2005/10/9_Last_&_Lost_Transmissions_2005.html)

- **2005 \_\_ Making Things Public - Atmospheres of Democracy**, Bruno Latour, Peter Weibel & Steve Dietz (curator of the web-based projects), ZKM Karlsruhe ("The exhibition *Making Things Public* addresses the challenge of renewing politics by applying to it the spirit of art and science. This unusual exhibition builds on the *Iconoclash* exhibition (ZKM 2002), which dealt with the crisis of representation in art, whereas *Making Things Public* tackles the problem of representation in politics. In this pioneering project over one hundred artists, scientists, sociologists, philosophers and historians re-explore the term 'politics'. At a time in which many people doubt and despair of politics it is crucial that they should not be fobbed off with standard political responses to contemporary problems but that the question of what actually constitutes politics should be raised anew. It is perhaps worth pointing out that one of the most influential works on the philosophy of the politics, *Leviathan* (1651) by Thomas Hobbes, does not begin as a political treatise but with an outline of aesthetics: »Nature (the art whereby God hath made and governs the world) is by the art of man, as in many other things, so in this also imitated, that it can make an artificial animal.« Hobbes brings together the three forms of representation that are normally kept apart, i.e. science, representing nature and things; politics, representing people; and art, representing the coming together of people and things. This is precisely the approach we have adopted, too. We have become accustomed to a concept of democracy in which the sole focus is on a kind of representation, i.e. the representation of the people or of the interests of people whose conflicts are resolved in parliament. So when we think of democracy we think automatically of a representative democracy. The new concept of the political presented here does not turn a blind eye to the representational strategies of art and science. On the contrary, it extends the previous techniques of political representation by adding art and science to them. Instead of searching for more democracy only in the realm of professional politics, we draw attention to the new atmospheric conditions of democracy, to a complex set of technologies, interfaces, platforms, networks and media that allow things to become public. In other words, we go back to the things of nature, of people and of art that constitute the political and ask what these things actually are. We ask how things come about and are made public. What are public things, *res publicae*? A republic? (...) Having left the exhibition, it will have become clear to visitors that the repertoire of attitudes and passions that are usually associated with taking a political stand is much too narrow. There are many other ways of reacting politically in other non-Western traditions, in the old political philosophies, in most contemporary science and technology, in the new web-based spaces and in the instruments of representation, of which parliaments are only a part. So why not try an 'object-oriented democracy' and 'get back to things'? During their stay, visitors will have left many traces for the phantom public to be activated and it, in turn, will have left some traces on them. Without fully realizing it, they have become at once actors in, and the screen of, an invisible work of art that has tried to put flesh on the bones of the new body politic. Collectively exploring the unintended and unexpected consequences of our actions was the only way, in the words of the great American philosopher, John Dewey, »for the public to come into being«. This is precisely what we have tried to do with the visitors to this show: to reassemble them and make them part of a totally new thing." Participants : Honoré Daumier, Harun Farocki, Francisco de Goya, John Heartfield, Armin Linke, Pieter Bruegel, Lucas Cranach, Futurefarmers, Albrecht Dürer, Graham Harwood/Mongrel, Giorgio Vasari, Olafur Eliasson, Carey Young, Lucy Kimbell, Alan Sekula, Jean-Luc Moulène, Bureau d'Etudes, Natalie Jeremijenko) [http://www.bruno-latour.fr/expositions/002\\_parliament.html](http://www.bruno-latour.fr/expositions/002_parliament.html) [http://on1.zkm.de/zkm/stories/storyReader\\$4581](http://on1.zkm.de/zkm/stories/storyReader$4581)

- **2005 \_\_ Microradio**, Kristen Roos ("The micro radio project started as a site-specific sound and radio project. This involved collecting sounds from a given area, and using these sounds in compositions that were broadcast within the sites that they had been collected. The sounds were stored on my laptop and broadcast using a low-power radio transmitter. The project has evolved into a mobile performance which mixes prerecorded field recordings that I have stored on cassette, one off lacquer records, and my laptop. The performance is amplified through broadcasting to radios, the sound system at the venue, and tactile transducers attached to surfaces in the space (previously used in the ghost station installation). Experiments with a radio transmitter and antenna capable of broadcasting one kilometer during an artist residency, which was an exchange between Open Space and La Chambre Blanche. I started with a small radio transmitter, capable of transmitting 150 feet, for audio performances in public spaces. A trilogy exhibit

took place in a mall, a parking lot, and a commons space for my graduate degree in fine arts at the University of Victoria. Using records, cassettes, and a radio transmitter to perform live sound collage makes nod to the history of the phonograph, tape and radio as tools for the development of experimental sound art. Giving an alternative use for mediums that are largely used for commercial media is also a Situationist technique—detournement, in which a familiar medium is repurposed to create something new.” <http://www.microradio.ca>

- **2005 \_\_ Mobile Radio**, Sarah Washington and Knut Aufermann (*Mobile Radio is the travelling radio and sound art project of Sarah Washington and Knut Aufermann. Our aim is to take radio production to places outside of the studio environment. Mobile Radio has been established to connect Knut and Sarah's varied work across Europe. They take part in a number of projects that involve them in festivals and conferences, giving workshops, lecturing and playing live music on a regular basis. Due to the success of the radio station that they helped to create in London - Resonance 104.4FM - they are often invited as guest radio experts by projects tapping into the current of re-energized interest in radio and radio art. Mobile Radio is an ongoing touring project that enables Knut and Sarah to search for artists who want to realize concepts through the medium of radio. Through Mobile Radio they provide quality technical and production skills that can be called on by others to enhance or develop a radio project. It is also a personal artistic journey to create radio works from interesting encounters and incidental material collected along the way. Their mission is to seek out new forms of radio art by taking radio production out of the studio environment.*) <http://www.mobile-radio.net>

- **2005 \_\_ Neocommunicability**, Franck Popper (« I mean by neocommunicability an event - full with unaccustomed possibilities - that took place at about the same time as the passage from technological art to virtual art occurred. It was an event not only associated with radical technological changes - such as the latest computer developments and the wider use of the internet and of cell phones - but also with an aesthetic change that concerned artistic intercommunication on a wider and more personal scale. This phenomenon can be traced from the now classical writings of René Berger on art and communication, to Mario Costa's symposium *Artmedia 8*, which was held in Paris in 2002. Neocommunicability can even be found at a certain moment in the works of prominent early communications artists like Roy Ascott and Fred Forest. In the case of Roy Ascott, this change took place when he introduced the notion of consciousness into his research. In that of Fred Forest, we see it when he inserted ludic interactive devices into his critical statements. (...) In order to explain and illustrate the globalization of virtuality and the emergence of a techno-aesthetic, (...) I have established two leading lines of discussion: the technical and the aesthetic. The technical line, for current virtual art and artists (approximately 1983 to 2003), leads continuously from materialized digital-based work to multimedia on-line works (re: net art), passing through multimedia and multisensorial off-line works into the all-important interactive digital installations. The aesthetic line leads from cognitive to telematic and telerobotic human issues in a coherent and uninterrupted - but not yet straight line - with a beginning and an end. Thus it touches a good number of extra-aesthetic regions, such as the political, economic, biological and other scientific areas. These areas are always treated with a certain distance and within an aesthetic context - as well as with an aesthetic finality. This explains the globalized open-endedness of virtual works. (...) It is the combination of these two leading theoretical lines (...) which make up the emerging techno-aesthetic. This aesthetic is fostered by collective research in laboratories or on the internet in connection with a new attitude towards communication which affects the working methods both of artists and theoreticians. (...) There is no doubt that in the work of some virtual artists many characteristics of either modernism or postmodernism can be found. But generally speaking, in our emerging virtual era the stress is no longer put on questions relating to style, purism or historical tradition. If complexity and ambiguity are not shunned, scientific rationality is equally admitted. In fact, the emphasis in virtualism lies now on techno-aesthetic issues that are linked to such notions as cognition, synaesthesia, and sensory immersion. But also this aesthetic pivots on individual, social, environmental and scientific options towards interactivity, neo-communication, as well as on telematic and/or telerobotic commitments. One could conclude provisionally that the status of the artist is somehow lost in these multiple commitments. Yet I feel that the specificity of the virtual artist is nevertheless maintained through the overall techno-aesthetic finality he or she pursues and by the very distance maintained towards the areas when explored humanistically. Thus an all-embracing virtuality in art is not really a counter-revolution against modernism and post-modernism, but widens considerably the spectrum of investigation open to the artist-conceptor. (...) What is new in virtualism is precisely its virtuality, its potentiality and above all its openness. As regards virtual art, this openness is being exercised both from the point of view of the artists and their creativity and from that of the follow-up users in their reciprocating actions. Here again the point is that this openness implies a certain amount of liberty and freedom for action and creation but not at all to radically destroy what happened before. This open-ended virtual state corresponds to my mind both to the individual's and the society's needs to come to terms with the flux and the virtual dynamism that characterizes our present situation. (...) Technically speaking, virtual art, to my mind, includes elements from all the arts made with the technical media developed at the end of the 1980s (or a bit before, in some cases). One of its aspects, at the time, was that interfaces through which exchanges passed between human and computer - for example: visualization casks, stereoscopic spectacles and screens, generators of three-dimensional sound, data gloves, data clothes, position sensors, tactile and power feed-back systems, etc. - allowed us to immerse ourselves completely into the image and interact with it. The impression of reality felt under these conditions was not only provided by vision and hearing, but also by the other bodily senses. This multiple sensing was so intensely experienced, at times, that one could speak of it as a Virtual Reality. Thus virtual signified that we were in

*the presence not only of reality itself but also of the simulation of reality. A similar technical development took place at the same time with regard to the Internet and the new communications landscape. And also with regard to other technologies such as holography applied in conjunction with the above-mentioned technical achievements. Aesthetically speaking, virtual art, as I see it, is the artistic interpretation of the contemporary issues mentioned previously, not only with the aid of the above technological developments but through their integration with them. Such an integration - or combination - allows for an aesthetic-technological logic of creation which forms the essential part of the specificity of the virtual art works I am describing in this book and which differ from other art works in the sense that the latter lack this logic of creation based on the combination of current technical and aesthetic issues. (...) I think virtual art does not only depend on technology and technological "progress" but has a certain margin of free development and free will. The ingredients of cyberfuturism do, of course, play a part in this. But I see the artistic imagination as a driving force that can both concretize human ambitions and allow them to form a true social framework. » [From Technological to Virtual Art - The Humanization of the Machinic through Artistic Imagination, Frank Popper, ISBN 0-262-16230-X, 504 pp., 154 illus., M.I.T. Press, USA, 2005] <http://www.eyewithwings.net/nechvatal/popper/interviewwww1.html>*

- **2005** \_\_ **NetPD**, Roman Haefeli (PD (acronym of Pure Data) has recently emerged amongst the many software devoted to real time sampling and audio/video streaming, mostly thanks to its flexibility during live performances. It's a real time coding environment suitable for video, audio and graphic editing. Netpd is a project based on the software Pure Data. Its intention is to create an environment for electronic musicians and give them the opportunity to jam with each other in realtime, connected over the internet or a LAN. Netpd does not provide any software which produces sound, but an environment to share client created patches and broadcast control data. It is important to the idea of netpd not to prescribe a way how to make music. for this reason, the users of netpd are asked to build their own patches and to play them in netpd, which hopefully leads to a big variety of styles of creating music (or noise). The topology of the netpd-system is basically a server with an arbitrary numbers of clients connected. the clients are represented by the netpd-users. The server is relatively stupid, since it just forwards the messages it receives. through this network, clients can share data, that is: patches and controller/state data. The main principle behind this framework is to make sure, that every user hears/sees the same (or gets the same output in whatsoever format/medium) at any time, independently from the moment of joining the network.) <http://www.netpd.org>

- **2005** \_\_ **One Square Inch of Silence** (One Square Inch of Silence is the quietest place in the United States. Located in the Hoh Rain Forest at Olympic National Park, it is approximately three miles from the Visitor's Center above Mt. Tom Creek Meadows. The exact location is marked by a small red-colored stone placed on top of a moss-covered log at 47° 51.959N, 123° 52.221W, 678 feet above sea level. One Square Inch of Silence was designated on Earth Day 2005 (April 22, 2005) to protect and manage the natural soundscape in Olympic Park's backcountry wilderness. The logic is simple; if a loud noise, such as the passing of an aircraft, can impact many square miles, then a natural place, if maintained in a 100% noise-free condition, will also impact many square miles around it. It is predicted that protecting a single square inch of land from noise pollution will benefit large areas of the park. "The National Park Service will preserve, to the greatest extent possible, the natural soundscapes of parks. Natural soundscapes exist in the absence of human-caused sound. The Service will restore degraded soundscapes to the natural condition wherever possible, and will protect natural soundscapes from degradation due to noise (undesirable human-caused sound) (NPS Management Policy, Chapter 4.9 Soundscape Management). One Square Inch of Silence is an independent research project. In 1989, The Lindbergh Foundation awarded a grant to Gordon Hempton for The Preservation of Nature Sounds as a Natural Resource of the Pacific Northwest. This project was the first study of its kind. Ten years later (1999) the Sound Survey was added to the soundscape management toolbox. This innovative multi-media database allows users to click on a satellite image and view 360° panoramic photographs and hear 360° soundscape recordings. The database includes cultural and scientific information and can be searched by time of year, time of day, or a variety of other parameters. Natural resource managers can become familiar with a park's soundscape and its annual cycle of natural sounds in a matter of hours instead of years.) <http://www.onesquareinch.org/>

- **2005** \_ **panDEV**, Derek Holzer, Sara Kolster and Marc Boon (with support from STEIM, Garage Festival and Gemente Utrecht), (panDEV is intended to be an sound-gathering and processing application written for PDAs and palmtop computers running Linux. Its purpose is to assist psychogeographers, phonographers and sound artists in the collection and arrangement of environmental sound material for research and creative purposes. When activated, panDEV will take random sound samples at random lengths and intervals via a set of binaural microphones hidden inside quite normal-appearing walkman headphones connected to the PDA. The collected samples can be stored for later listening, uploaded via available wireless internet to a searchable database, plotted out in various types of cartographic representations for collective soundmapping, or algorithmically remixed to create new sonic environments. The resulting sounds may be as banal as they are sublime or exciting, but they are absolutely guaranteed to provide a unique insight into the user's acoustic environment. One optional extension requires the use of a GPS unit attached to the PDA, from which PANDev would determine geographic coordinates to tag all sound samples gathered. These GPS-tagged sound samples could then be exported to a cartographic mapping system, either in realtime via a network, or locally when each session is completed. For public exhibition, a running audio/visual display of the sounds gathered in the area could be maintained in a public or online space in collaboration Sara Kolster, a graphic and video artist from the Umatic group) <http://>

[www.umatic.nl/projects\\_pandev.html](http://www.umatic.nl/projects_pandev.html)

- **2005 \_\_ Paul Mc Cartney, International Space Station**, first live space broadcast (On November 13th, 2005, McCartney played a live concert at the Arrowhead Pond in Anaheim, CA. Towards the end of the concert, a satellite link-up was made to the International Space Station so McCartney and those at the concert could see NASA Astronaut Bill McArthur and Russian Cosmonaut Valery Tokarev as they were awakening for the 44th day of their six month mission in space. McCartney proceeded to play the traditional wakeup song played on each space mission, a tradition that began during the moon missions. McCartney played two songs, "Good Day Sunshine" and "English Tea," after which he and the concert goers were able to interact with McArthur and Tokarev via a projection screen at Arrowhead displaying live video from the ISS. This is the first time a live concert has been linked to a U.S. spacecraft) [http://www.nasa.gov/home/hqnews/2005/nov/HQ\\_05406\\_mccartney\\_wakeup.html](http://www.nasa.gov/home/hqnews/2005/nov/HQ_05406_mccartney_wakeup.html)

- **2005 \_\_ PDRadio**, Winfried Ritsch, Georg Holzmann (The ability of electronic media to make any image 'temporary' through its digital visualization follows the temporariness of today's informations and the shift from the stability of printed media to the transient disembodied light of pixels. The displays equipped with a small amount of memory. The definition of streaming 'radio' involves a fundamental difference with respect to traditional radio, that is, the possibility to organize a deterritorialized and computable flow of sound data. The PDRadio project, by Winfried Ritsch and Georg Holzmann, makes this possibility concrete. This radio station transmits Pure Data files uploaded by the audience and selected by a software-dj compiled in the code. This artificial entity also announces the pieces using voice synthesizing functionalities, telling the file name and the associated metadata, sprinkled with impromptu communications. If a user shows his appreciation for a piece, the dj will generate a personalized playlist. PDRadio runs on a Linux server with the programs Zope and Plone and the calculated music follows the composition scheme, that is, the rules of this ductile tool, aesthetically reflecting them in the loops used in its compositions. It's pure electronic music with a wide range of styles, but which can't detach itself from machinic frequencies. If we may talk of 'genre', it abstracts the usual musical style categories to transcend into a style of composition, recursively widening its concept. [neural.it] "PD Webradio is a self-regulating internet radio station for the PD-community. Registered users can upload PD-related music and share them with the community. Because we didn't want to compile the radio program all the time we build an automatic radio DJ. All user can vote for a song they would like to hear and the DJ will generate a playlist according to all votes. Additionally there is an automatic radio moderator, who speaks a little bit about the songs (metadata which can be uploaded together with the music) and maybe is joking sometimes ... PD-webradio is running on a Linux Server with Zope/Plone. The audio streaming, speech synthesis, radio-moderator, DJ, ... is implemented in PD and Python for the communication to plone. If you want to listen to the PDRadio, vote for songs or you have music related to PD and want to share it.) <http://grh.mur.at/projects/pdfs/pdradio.pdf>

- **2005 \_\_ Phone Slam - Southend Soundbites**, Mongrel ("Southend Soundbites" was a competition for young people to phone in sounds they think best represent their local area and then get their mates to vote for and comment on them online. This could include sounds they personally associate with the area, sounds they think sum up Southend, storytelling, music or seaside message for Valentines day. People can use their mobiles to record an overheard conversation, sounds from the seashore, arcades, Saturday nights, seafront car rallies - eventually creating an online audio library of the area. ... noises, stories, jokes, messages, songs, slogans, chants... "Southend Soundbites" was the first project to use Mongrel's recently developed "Phone-Slam" telephony network. This network allows people to spontaneously join in arts projects over an ordinary phone and then use the results on a web site. Mongrel specialises in using new media to find ways to involve people in arts activities that are fun and easy to participate in. "Phone-Slam" takes advantage of the widespread use of phones and mobiles and combines them with the flexibility of the internet. Although the Southend is not recognised as a cultural centre this project aims to draw on the area's distinctive and vibrant popular culture and give it a little twist. In this way it can reach those who are not aware that there are accessible forms of expression that are outside mainstream media. "Southend Soundbites" ran from January 15th to March 1st 2005. The winners were announced on April 1st. "Southend Soundbites" was part of "Being Here", a not-for-profit arts initiative managed by Momentum Arts, funded by Southend Borough Council, Arts Council England and the European Social Fund.) <http://www.mongrel.org.uk/phoneslam>

- **2005 \_\_ The Presence Project - Performing Presence: From the Live to the Simulated**, Stanford University, Gabriella Giannachi (Exeter UK), Nick Kaye (Exeter UK), Mel Slater (University College London), Michael Shanks (Stanford USA) (The Presence Project aims to combine expertise from performance and drama theory and practice, anthropological archaeology, and computer science to investigate means by which "presence" is achieved in live and mediated performance and simulated environments. The project aims to explore how exchanges of practices, concepts and methodologies between academic disciplines and between live, mediated and simulated performance may deepen an understanding of the performance of presence) <http://presence.stanford.edu:3455/Collaboratory/9>

- **2005 \_\_ Radio Aporee**, Udo Noll (radio aporee ::: maps is a project about the exploration and reoccupation of our living spaces. it collects audible material (recordings, sounds, spoken words) and connects them via a telephone network to the surface of google maps. Thus, navigating through landscapes and cities by means of (hi)stories, thoughts, inventions, it may change the way we experience

our daily surroundings. The mobile phone takes on the function of a microphone, not only for speech. it's available almost everywhere, so the idea was to use it as a recorder for sound and voices. radio aporee has several phone numbers (in Germany only for now) which are connected directly to the maps project via a voice over IP network. once it has been recorded, the call is online immediately. you can of course also upload pre-recorded sound files. any place on the map can have more than one recording, which will be played back consecutively, so different positions and perspectives as well as dialogues related to this specific location are possible.) <http://aporee.org> <http://aporee.org/maps/>

- 2005 \_\_ **Radio WNE**, laboiteblanche, Carl Young (Radio WNE concentrate his programs on diffusion of new emergent musics and musicians, performers and the broadcasting of stranges audio-contents, events retransmissions and acoustics phenomena, on a collaborative open-plateform online.) <http://www.radiowne.org>

- 2005 \_\_ **ResonanCity**, Live audiovisual performance, Sara Kolster & Derek Holzer (Many sounds and images in our everyday lives slip past our notice simply because they are too small, or because we lack the proper receivers to pick them up. "ResonanCity" is an ongoing project to gather these microscopic sounds and images from various cities, and to amplify and transform them. The goal is to build a new city of sound and visuals inside the old one, and to inspire curiosity and exploration of one's own environment. This audiovisual performance by Sara Kolster and Derek Holzer explores contemporary ideas about "Live Cinema" and demonstrates the principles and tools explained during their Pure Data workshops. Sound and image gathered in various locations around the world are rendered into a dreamlike journey in a live improvisation where sound and image are interrelated. ResonanCity has been performed live in Holland, Brasil, the Baltic States and the Transmediale 05 in Berlin. ResonanCity also took the Second Prize at the 11th International WRO Media Art Biennale in Wroclaw, Poland in May 2005) <http://www.sarako.net/resonancity.html>

- 2005 \_\_ **Skint Stream**, Mongrel (The idea for Skint Stream is based on a network which will connect audiences and cultural spaces previously separated by economic, geographic and political factors. The use of streaming technology over existing infrastructure allows us to start a conversation between spaces separated by different types of distance. Passing the mic around will allow us to reflect on the cultural space each sound is coming from? And will ask questions like: is geographic isolation a factor in cultural expression? what does it mean to be culturally remote in an electronically networked world? can we still think of ourselves as being in margins or centres when digital technologies allow us to bridge distances and make our own connections? can live, technologically mediated experience ever substitute for face-to-face communication? The first Skint Stream Event consisted of: 1/ Container Project - Clarendon (Jamaica) 2/ Sound Kitchen Studio/MMC - Johannesburg (South Africa) 3/ Nostalgie Ya Mboka - London (UK) 4/ Cue Music at Southend YMCA - Southend (UK) 5/ Regent Park Focus - Toronto (Canada) <http://www.mongrel.org.uk/skintstream> <http://195.169.149.103:8000>

- 2005 \_\_ **SoundWire – SOUND Waves on the Internet from Real-time Echoes (Internet2)**, CCRMA Stanford (SoundWIRE research group at CCRMA, Stanford University is concerned with the use of Internet networks as an extension to computer music performance, composition and research. SoundWire explores musical collaboration and network evaluation using high-speed internets for high-quality sound. SoundWire focuses on low-latency, professional-quality audio streaming for Networked Musical Performance (NMP). The SoundWire project is also interested in understanding the maximum latency that musicians can tolerate during performance.) <http://cm-wiki.stanford.edu/wiki/Special:Categories> <http://ccrma.stanford.edu/groups/soundwire/>

- 2005 \_\_ **Soundwire / XMess**, teleconcert CCRMA Stanford, SARC Belfast, Stanford/NY/Montreal/Seoul, Chris Jaffe (Sonorities Festival Closing Concert, Belfast) <http://www.sarc.qub.ac.uk/>

- 2005 \_\_ **S.O.U.P. - The Shapes of (Un)warped Packets**, Alejo Duque, Lorenz Schori (S.O.U.P is focused on taking part on the development of the potential uses of the datasphere. we stand for the open source model and share online our ideas and interests. the present state of our project gathers work presented in Riga earlier in 2005 <http://rixc.lv/splen.html> our participation in the Píksel festival in Norway <http://www.píksel.no/píksel05> where collaborated with the DRONE collective from Canada. S.O.U.P provides a visual and acoustic representation of the omnipresent wireless communication networks that surround us in urban spaces. think of it as a soup ladle spooning arbitrarily up the boiling air to transform the data into sound and video. Our application (coded in C) is a bridge between a wireless sniffer and any audiovisual software supporting OpenSoundControl (OSC) messages. a computer terminal shows a map of the surroundings plus basic points of reference of the city or town that hosts our installation. the observer can jump or fly from place to place in this representation of the cityscape and choose from different datasets recorded at different daytimes. the software will help provide visual and acoustic imaging. We are aiming to get things to work only with little programming effort. instead we just develop bridges between widely available and highly developed opensource software using open and well known protocols.) <http://soup.znerol.ch>

- **2005 \_\_ Speeds of Time**, Bill Fontana (*Microphones and accelerometers (vibration sensors) in the clockworks of London's Big Ben, and playing the sound back from loudspeakers in a corridor of the Palace of Westminster below. This work is called "Speeds of Time", and is a musical deconstruction of the most famous acoustic icon and symbol of time, Big Ben. Live sensors and microphones are mounted on the clockwork mechanism and near the bells of Big Ben to generate a spatial- acoustic composition that is placed in an historic colonnade of the New Palace Yard, directly below and within earshot of the bells. The presence of the sound sculpture in this setting interacts with the natural sound of the bells, creating a multi-dimensional acoustic zone. While this work was installed in Westminster, a 12 hour multi-track recording of the sound sculpture was made that makes it possible to fully recreate the real time sense of this artwork, which can be realized as an 8 channel sound installation. "Simultaneous sound events characteristic of Fontana's work are structured by his prefigured installation of microphones and sensors in many locations at the same time. His technique takes streams of discarnate information and reconstructs them in a new form of embodiment. Speeds of Time is distinct among Fontana's work in its representation of simultaneity: Sounds generated by the three live microphone connections in the tower are augmented in his final composition with acoustical reflections, echo, and bell strikes collected during the work's premiere a year ago in the colonnade of the Palace of Westminster. His fabricated structure adds layers of sound delay and repetition to the iconic chime of Big Ben achieving a greater density of environmental sound against the rotations of the audible clockwork mechanism. The rhythmic pattern and repetitive cycle of the clockwork indicates the passage of time while the bell and its echo stress the physicality of lived experience in the substance of time ≠ a substance that accumulates as it simultaneously disappears."* [Robert Riley]) [http://www.resoundings.org/Pages/Speeds\\_of\\_Time.html](http://www.resoundings.org/Pages/Speeds_of_Time.html) [http://www.meyersound.com/news/2006/harmonic\\_bridge/](http://www.meyersound.com/news/2006/harmonic_bridge/) <http://www.resoundings.org/Pages/Bill%20Fontana%20Speeds%20of%20T.htm>

- **2005 \_\_ TeleSon**, for two "reacTables", connected via the internet, Chris Brown (*The reacTable is an electronic multi-user musical instrument with a tabletop tangible user interface, developed by a team of digital luthiers at the Pompeu Fabra University of Barcelona. The reacTable has been conceived as a collaborative instrument in which several performers construct different audio topologies in a kind of tangible modular synthesizer, by moving physical artefacts on the table surface. The composition TeleSon (2005) by Chris Brown, premiered simultaneously in ICMC 2005 (Barcelona) and Ars Electronica (Linz), extends this collaborative capability in requiring four performers playing on two remotely located reacTables. All players share the control of a single instrument that is synthesized equally at both locations. The composition is based on the construction, interaction, and evolution of prearranged, modular synthesis patches. The network architecture of this piece, which is based on OSC using Ross Bencina's OSCgroups, will be discussed and demonstrated with a short performance including remote collaborators in Japan and Canada*) <http://www.cb Muse.com/>

- **2005 \_\_ Tool for armchair activists**, Troika (*Troika, the U.K. design firm that brought us the Tool for Armchair Activists. Where the projector displayed the text of an SMS message on a distant surface, the Tool for Armchair Activists will shout it out loud. The rig can be strapped to a lamp post and thanks to an embedded mobile phone, can vocalize messages from anywhere. The Tool for Armchair Activists is currently located in Troika's studio. Give them a shout by texting here: +44(0)7790272804. Troika teamed-up with Moritz Waldemeyer to create 'Tool for armchair activists', a machine for remote rants and protests. It can be strapped to lampposts in front of pro-eminent buildings like the house of parliament, or other institutional buildings in front of which many protests occur. Thanks to its embedded mobile telecommunication device, the machine is able to receive incoming sms messages and speak them out loud through its powerful megaphone, thus allowing the armchair activist to shout out its rants and protests in the comfort of his sitting room. Tool for armchair activists offers a modern alternative to the speaker corner, and saves you the hassle of sitting in the rain, waiting for your favourite MP to pass by. (With the support from Arts Council England.)*) [http://www.troika.uk.com/armchair\\_activists.htm](http://www.troika.uk.com/armchair_activists.htm)

- **2005 \_\_ Trespassing Boundaries**, Barbara Rose-Haum (*Trespassing Boundaries was a collaborative performance that took place simultaneously in New York and in Tel Aviv on 10 November 2005, with Internet2 technology serving as a site-less location in which artists from different locations and cultural backgrounds collaborated and exchanged their various cultural histories, memories and gestures of renewal. This performance, part of Barbara Rose-Haum's "Torn Texts" series, originated in two biblical portions that were read during the week of November 10 (Kristallnacht). Relying on the story of the tower of Babylon and the conflict between Sarah and Hagar, Trespassing Boundaries recoded and re-performed their mythical, and therefore limiting, systems of signification. On a set resembling a deserted archaeological site of Jerusalem, the performance dealt with concepts of longing for and destroying a home, construction and loss of national and personal identities, language as a barrier, holy texts as markers of sameness and difference, the relations between gendered territory and conquering the land, and the Israeli/Palestinian conflict.*) <http://www.internet2.edu/arts/member-performances.html>

- **2005 \_\_ Untitled 2005**, Rirkrit Tiravanija (*For his Hugo Boss Prize exhibition at the Guggenheim Museum in New York, Tiravanija created Untitled 2005 (the air between the chain-link fence and the broken bicycle wheel), a self-built low-power television station, to demonstrate that individuals can be active contributors to their own media culture, rather than mere consumers of it. "Using rudimentary electronic equipment, Tiravanija reveals how a broadcast can be transmitted over unused frequencies to a local*

community, circumventing traditional media networks. Two rooms have been constructed within the gallery: A sealed glass vitrine holds a transmitter, and a plywood structure holds the receiver, or television. Isolated within the vitrine, the transmitter is deemed valuable—just as the Federal Communications Commission (FCC) regards the airwaves as valuable. While the First Amendment protects the freedom of speech, it does not defend unrestricted access to all mechanisms of communication, such as the airwaves. A program is broadcast from a DVD player via the transmitter to the television across unused airwaves by means of the antennae. The found objects enlisted here as antennae indicate the grassroots nature of low-power transmission. To further demystify the broadcasting process, Tiravanija has surrounded the installation with texts describing the technology and its contentious regulation by the FCC in the United States. He also offers viewers instructions for building their own homemade TV stations. While a low-power broadcast could potentially reach viewers miles away, Tiravanija's transmission has been restricted to within this gallery's walls due to the many physical hindrances in New York City (for instance, the widespread use of cable and satellite television interferes with the signal) and the considerable legal and policy implications of broadcasting on museum premises. Tiravanija's democratic desire for everyone to participate freely in his artworks stands in contrast to the FCC's strict regulation of this public resource. Through such a reality-based project, Tiravanija encourages our consideration of commonly held assumptions about methods of communication in this country and issues of free speech.") <http://www.free103point9.org/studycenter/historicaltransmissionworks>

- **2005 \_\_ A Vernacular Web - MIDI**, Olia Lialina (*The vernacular web is not silent. Expressive pages are usually accompanied with music in the MIDI format. Before the MP3 hit the net, when bandwidth was precious, MIDI was the only option if you wanted to include a full song on a web page. (...) As all the instruments were standardized in 1983 the sound effectively goes no further than Italo Disco. There will never be any new and exciting sounds, only updated versions of old sounds. New sounds would only break the compatibility with all the existing MIDI files. Software vendors can't change the "trumpet" to a "Neptune's kinda honkashizzle" because, on the web, you can find all kinds of MIDI files that use the trumpet in many different ways. In this case the only solution is the lowest common denominator. The trumpet sound must fit into James Brown's "Sex Machine" in the same way it fits into "Ride of the Valkyries" by Richard Wagner. It does this by not really fitting into either. At least that's equality. The result is that most of the time MIDI files give the impression of somebody playing hit music on an electronic organ in the privacy of their own home. In reality this happens at village weddings or the annual gathering of a rabbit breeder's association.*) <http://art.teleportacia.org/observation/vernacular/midi/>

- **2005 \_\_ Virtual Marathon**, tsunamii.net (*"The Ultimate Online Game": run a marathon at a keystroke. As the race goes on, the runners shift through the host servers of the Internet world, with their speed determined by the physical distance between player and server. This work is an experiment in blurring the boundaries between games, sports, and technology.*) <http://www.ntticc.or.jp/Archive/2005/Opennature/Works/virtualmarathon.html>

- **2005 \_\_ Wanderlost**, 31 Down (*31 Down is a Brooklyn-based theatre group that uses radio transmission to expand the traditional boundaries of the performance stage. In Wanderlost, 31 Down tackles personal privacy issues and the paranoia surrounding new technologies by eavesdropping on live police scans to search for clues in the world of the dispatcher. Employing the central motif of a 1940s-style detective radio program featuring the fictional case of missing nightclub singer Helen Tremble, Wanderlost creates a tension between fact and fiction.*) [http://31down.org/performances/wanderlost\\_script.html](http://31down.org/performances/wanderlost_script.html) <http://31down.org/performances/wanderlost.html>

- **2005 \_\_ WJ-S**, Anne Roquigny (*WJ-S is a software and a flexible public device for web performances allowing WJ-S (webjays, artists, web addicts and web mutants) to play live with text, sound and visual content available on line. WJs take the control of a multiscreens environment and surf at distance in different browser windows simultaneously. WJ-S is a visible and collective experience of the surf. WJS is an immersive experience in the flux. Following the steps of DJ's and VJ's, WJ's (weejays, webjays, webjockeys ...) directly draw their sources from the Web and mix the network flow in real time. The WJs/essions are organized indoors or outdoors, in a public space, in front of an audience. The Wjs perform with a selection of urls and decide how to dispatch the chosen sources on the different screens provided for the event. One of the computers is the serveur machine , it functions like a webdeck. It controls at distance the client machines (multiscreen environment) telling each machine what to download from the Internet. From the serveur machine the Wjs mix and synchronize their different web sources on all the screens simultaneously.)*) <http://www.wj-s.org>

- **2006** \_\_ **2.4GHz Scape**, Sawako Kato ("2.4GHz scape" is the 2.4GHz spectrum ambient sound installation and performance. The audiences can enjoy the realtime sonification of 2.4GHz signal around the place, and the ambient sound becomes one part of the immediate soundscape. Also, people can join the soundscape using their laptop or bluetooth devices such as the mobile phones to make the signal interference. 2.4GHz spectrum is widely used for WiFi, microwave ovens, bluetooth, baby monitors, cordless game controllers and others in USA and Europe. The signal map varies in different places, and the activities of the signal usage are changing in the hour, day and year. It is like the seasonal changes of air. The Signals "(encoded in many different ways) that interfere with one another and signals that are cleverly multiplexed so that they don't interfere, jammed zones and Faraday cages, and the endless busses and bursts of electromagnetic noise." ("Me++" William J. Mitchell) Our world is resonating with various kinds of waves, and the waves make harmony in the air. Human beings can catch the very limited signals of waves with their ears and eyes and use them for their communication. Like some fishes living in the standing river communicates with electromagnetic wave, with radio frequency technology, people expand the ways of communication using signals and the range of the frequency used for the communication. Even though we don't realize, we are surrounded with the invisible signals like you are living in the invisible sound of ocean. With the experience of "2.4GHz scape", the audiences realize the invisible existence of 2.4GHz spectrum in the air. I'd like to create the composition of signal inside of air, just like I'm doing with sine tone and Super Collider. 2.4GHz Scape is originally the project for the Master Degree Thesis and Every Bit You Make class in Interactive Telecommunication Program, New York University. Then, the work is presented in CONFLUX festival, Brooklyn USA, in September 2006, and currently there is the plan to set it up as the office ambience installation of the Boston based technological design company, Synthesis Studios.) <http://homepage.mac.com/otos/ITP/EBYM.htm>

- **2006** \_\_ « **Ad Loc** » (Ad Loc is a system for mobile-device users to collaboratively tie persistent virtual notes to physical locations without the need for any servers embedded in the environment or accessed via the Internet. Instead, all notes are proactively cached solely on the mobile devices of passing participants and served up to others in the vicinity via ad hoc wireless protocols like WiFi. By making use of any of the increasingly ubiquitous positioning technologies, such as GPS, devices attempt to ensure notes remain cached at the physical locations they were published. Ad Loc takes its name from the abbreviation of the Latin phrase Ad Locum meaning "To/At the place/location." Which describes the approach of Ad Loc, aiming to cache data at the location it is relevant. Ad Loc can be categorised in the following ways: 1/ Localised: notes are specific to physical locations. 2/ Persistent: notes remain in the environment. 3/ Asynchronous: notes are published and retrieved without requiring the concurrent presence of both publishers and consumers. 4/ Collaborative: anyone can publish or read any notes. 5/ Infrastructure-free: no servers or Internet connections are required. (D. J. Corbett, D. Cutting ) <http://www.cs.usyd.edu.au/~dcorbett/papers/adloc.pdf> [http://www.jstage.jst.go.jp/article/ipsjdc/3/0/3\\_280/article](http://www.jstage.jst.go.jp/article/ipsjdc/3/0/3_280/article)

- **2006** \_\_ **Always ON**, Sonar'06, CCCB Barcelona (The concepts of place, proximity and distance are going to be substantially rewritten by the locative media evolutions. The origins of this process are not only related to the abstract digitalization or to the latest hi-tech gadgets, but they are more significantly rooted in social changes induced by the overflowing of the net space. The social access and the subsequent construction of net space started in middle nineties, so the perceived 'space', as a public, collective and shared dimension was slowly literary doubled in the digital dimension. The next step is the actual ongoing process of joining back these two halves (real and virtual space) in an augmented reality that is a real experience. If the man on the moon broke the 'external' boundaries perception of that time, the net integrated in the urban space has definitively broken the actual inner spatial boundaries outdating the established physical perception as the only possible coordinates to sense the space. The net is based on one hand on a subject (its IP) directly addressable from every (good or evil) point of view. On the other hand the same subject is able to add his own data and memory to his own space, building a digital environment piece by piece. These tough changes are investigated and enhanced in the impressive work made by the Sonarama 2006 curatorial team (José Luis de Vicente, óscar Abril Ascaso and Drew Hemment and Advanced Music). After Micronations (2004) and Randonnée (2005) the last part of this contemporary territory conceptual mapping has been accomplished through a selection that emphasize different "permutations of the mobile syntax" as de Vincente defines it. In the ground floor of the CCCB, the exhibited works were placed in dark corridors and rooms, that like a maze, was an ideal location. The most awaited project was undoubtedly Blast Theory's premiere of 'The day of the figurines', a social multiplayer game played via sms, reflected in a fictitious world of real figurines. With more than three hundred players in three days (actually it can hosts up to one thousand players) it shaped a small world that was reflected in a physical update. In fact authors moved figurines and forms by hand every twenty minutes, updating the representation of the online latest developments. Here again the usual 'virtualization' of reality structures was inverted. The process was the opposite of webcams: instead of taking a glimpse of a real space, the mapping of the online process was a slow update of a plastic scenario, much more attractive and meaningful to our instincts than a real-time colorful graphic on a screen. In the locative media horizon, many are the shades of the distance. Zexe.net was a project by The Golden Nica winner Antoni Abad with the same concept of giving mobile phone with cameras to special group of people and selecting their pictures/vision, focused on latin taxi drivers, gipsies and prostitutes. How far is their own landscape, represented through our shining technology? And changing perspective how far is our own home, if we can easily see it from a satellite view? Jeremy Wood's Meridians, a psychogeography text composed as a gps-draw on a very famous London area, remind us the shock of zooming on a photograph (not anymore an abstract color representation) of our own daily territory. This is impacting

our neighborhood vision, temporary establishing a center where we live (or we are at the moment) and considering the world as a surrounding. It's a sort of ego-geography, able to stunningly visualize as real what we've already seen as a zoomed out draw. Amongst the other showed (or performed) projects included Michelle Teran's classic Life's a User's Manual, Counts Media social platform Yellow Arrow, the last Transmediale software art award winner Socialfiction's .walk (article on Neural 23), another psychogeographical approach in Alejandro Duque's TTSM (Typewriter Tracklog sewing Machine), a new iPod version of the imaginative G-Player, the relationship between space and sensations in Christian Nold's Bio Mapping, the performance by accident, treasure hunt Geocaching practices and the RFID hacking of Preemptive media's Zapped! like the cockroach with an RFID on his back confusing a supermarket reader because of its unpredictable movements. The urban space is a collective memory mirror. And the memories of the last thirty years have been mediated more than any previous period. The process of easily juxtaposing personal memories, histories and territories would enable another new level of consciousness of reality, stratified on our mediated identity. [neural.it])

- **2006** \_\_ **Ambient Addition**, Noah Vawter (Ambient Addition is a Walkman with binaural microphones. A tiny Digital Signal Processing (DSP) chip analyzes the microphone's sound and superimposes a layer of harmony and rhythm on top of the listener's world. In the new context, some surprising behaviors take place. Listeners tend to play with objects around them, sing to themselves, and wander toward tempting sound sources. With Ambient Addition, I'm hoping to make people think twice about the sounds they initiate as well as loosen up some inhibitions. "As human civilization devises ever more powerful machines, living among them may become more and more difficult. People find themselves surrounded by incidentally created sounds and noises which are out of synch with their momentary needs. In order to avoid discordant noises they tend to use music reproducing devices with sound canceling headphones, isolating themselves from noise but also from each other. Does this mean that the 'i' in Apple's "iPod" stands for isolation? Three decades ago the sociologist Edward Hall introduced the concept of the 'space bubble' or the culturally conditioned distance that dictates how close we stand to another person and how much space we need around us to feel comfortable. The eighties Walkman has introduced another kind of bubble: a technological one of concentration and obliviousness to surroundings, a private space in public. This is the assumption behind Noah Vawter's final thesis at the MIT, a project called Ambient Addiction which tries to find a compromise between isolation and noise, integrating environmental sound into a personal soundscape. Consisting of a pair of headphones with small, embedded microphones, and a pocket-sized digital signal processing (DSP) system, it continuously records, analyzes, transforms and plays back environmental noise into more musical form. As Noah wrote in his thesis "Through its outward appearance and sonic-bridging capabilities, Ambient Addition reduces isolation". In this new context, in fact, some surprising behaviors take place. Listeners tend to play with objects around them, sing to themselves, and wander toward tempting sound sources in order to direct their own random soundscape in a proper environmental immersion. Is this the future of Ambient Music?" [Valentina Culatti] <http://web.media.mit.edu/~nvawter/thesis/index.html>

- **2006** \_\_ **The Anyang Singing Road** (Anyang, a suburb of Seoul built a 'Singing Road' in 2006 initially as an experiment in keeping tired drivers awake: Seung-Hwan Shin, manager of the Korean Highway Corp., said, "The road is located in a downhill, S-curved road, so there's been lots of accidents from dozing and speeding." (68% of Korean traffic fatalities are caused by tiredness, apparently) but has now become something of a tourist attraction. Approaching the road at 100km/h will give the sleepy driver a near accurate rendition of 'Mary had a little lamb'.) <http://www.youtube.com/watch?v=Vt5lxDMN-I8>

- **2006** \_\_ **Art's Birthday, TransDadaExpress** (On February 5, 1916, Cabaret Voltaire 8 opened in Zurich. It became a birthplace of DADA and so of Ars Acustica as well. During the First World War which destroyed lives and social values, artists and writers from different countries met in Zurich and created the first multilingual Avantgarde movement, which worked by international networking. Dadaism was an international movement from its very beginnings and spread across the world building centres and epicentres by creating events in New York, Paris, Geneva, Berlin, Barcelona, Cologne, Hannover, Zagreb, Holland, Austria, Czechoslovakia, Poland, Russia, Rumania, Hungary, Italy, and South America. Richard Huelsenbeck, one of DADA's founding members, noted: "The word Dada in itself indicates the internationalism of the movement which is bound to no frontiers, religions or professions.") <http://www.artsbirthday.net/2006/index.php>

- **2006** \_\_ **AudioTagger**, Eva Sjuve (audioTagger was started in January 2006, as a way to explore ubiquitous computing for audio applications in public space. audioTagger is a mobile-phone-sound-art-in-urban-space research project, or can be defined as, wireless phonography ("mobile sound writing"). audioTagger is a momentary exploration of urban space, to capture a sonic moment using mobile technology. Anybody with a data enabled mobile phone can participate and contribute to AudioTagger's exploration of the environment, using the mobile phone as a field recorder, "phonographic tool", ubiquitous and artistic. The mobile phone is used in this application, being the most ubiquitous tool at present, within wireless architecture; creating a seamless computing environment with the Internet. Today, the physical world, and the digital world have an established connection. audioTagger is a tool to explore the relation between physical space and its everyday presence, and its integrations into the mobile communication space. Urban space is here viewed both as a communication platform and the subject for exploration. What does mobility mean to the aesthetic expression, when making a field recording? The location of the field-recording can be viewed and the sound listened to, on a Google

map. A java application was developed in collaboration with Urban Units) <http://www.moolab.net/mobile/audioTagger.shtml>

- **2006 \_\_ Black Brain Radio**, Garrett Phelan (*Black Brain Radio was an unconventional and innovative radio artwork created by Irish artist Garrett Phelan with Temple Bar Gallery and Studios and in partnership with the Irish Museum of Modern Art (IMMA). The transmission was broadcast around the clock over a thirty-day period from 19 January 2006 to listeners within the greater County Dublin area on a frequency of 89.9fm to February 17. In addition, Black Brain Radio had the capacity to reach a wider global audience through its dedicated on-line presence, located at <http://www.garrettphelan.com/now.htm> from January 19th 2006. This service was available to 100 users at any one time and used Windows Media Player. Phelan's Black Brain Radio was a continuation of his most recent large scale drawing projects, which explore the processes through which ideas or values enter into society. In a similar manner to the drawing projects, the listener was presented with an onslaught of regurgitated information, in this instance, reprocessed through the artist's voice presented as a series of confusing, disjointed, sound works. Black Brain Radio provided the listener with the opportunity to access through their own radio the core of Phelan's current practice, which is an exploration into the 'formation of opinion'.) <http://www.garrettphelan.com/>*

- **2006 \_\_ CCRemix – CCMixer** (network-based collaborative music creation system under Creative Commons license) <http://ccmixter.org/>

- **2006 \_\_ Call**, Germaine Koh (*Intervention using vintage telephone modified with programmable microcontroller and custom circuitry. "A vintage telephone (resembling a direct taxi-line or service-centre phone) sits on a countertop in a public place accessible to a wide range of people. The phone's dial has been replaced with an LCD screen that informs the viewer that when he picks up the receiver he will be connected with a random participant. Each time the handset is lifted, the phone dials at random one of the project participants, who have agreed to receive calls and have conversations with strangers at all hours of the day. The volunteer participants, from a wide variety of backgrounds and communities, will have been solicited through a variety of local media and means. The interactions are not recorded or otherwise determined in any way, so the project is perpetuated and disseminated fundamentally through oral history."*) <http://www.germainekoh.com/selectedprojects.html>

- **2006 \_\_ Cellphonia: San Jose**, a karaoke cell phone interactive sound/video installation by Steve Bull, Scot Gresham-Lancaster, Tim Perkis (*People like you sing into the cellphone responding to the song lyrics provided by a robot voice prompt. Sing the five songs in Cellphonia: Local News, Hi-Technology, Sports, Religion and Classified Advertising. The song lyrics are taken from today's RSS newsfeed provided by the San Jose Mercury News. Open Source Opera that uses the Asterisk PBX to prompt users to speak or sing specific cues that are then mixed with a precomposed score using csound. Perl is used to coordinate all the actions that link phone calls to a MySQL database and allow participants to retrieve the finished rendition of their "scene" via the web, podcast, or over their phone.*) <http://cellphone.el.net/listen/>

- **2006 \_\_ City Sounds 2.0** (*CitySounds 2.0 is an interactive acoustic design resource, providing design information for architects, builders, developers and residents on acoustic design techniques for residential premises. The resource includes guidance on site and building layout, materials and construction techniques for all building components that influence the auditory qualities of a dwelling. CitySounds 2.0 features an interactive simulation of a virtual apartment where users can hear real city sounds and find information on acoustic design and construction to reduce the impact of internal and external noise.*) <http://sound.sial.rmit.edu.au/ADR/>

- **2006 \_\_ « Command Tones : Digitazion and Sounded Time »**, Jonathan Sterne & Emily Raine (*Keeping time is a crucial aspect of governance. Timekeeping orchestrates individual and collective activity and shapes relations between individuals and institutions, between institutions, and within networks of individuals. Though some aspects of time, such as time zones, are nationally and internationally regulated, the regulation of time is often a case where governance extends far beyond government. This "experiment in theory" provides an account of the role of sound in orchestrating social action, and then uses a long history of sounded time to situate a short history of sounded digital time. Though the project is deliberately speculative, it suggests an important hypothesis: Rather than splitting the world into "real" and "virtual" domains of perceived experience, digital technologies might better be considered in terms of the disconnect between the perceived and imperceptible modalities through which they organize social practice. This paper tells a story about the changing status of sounded time in the digital age. Casting this essay as what Theodor Adorno would call an "experiment in theory" (Adorno, 1941; see also Rothenbuhler and Peters, 1997), we provide an account of the role of sound in orchestrating social action, and then use a long history of sounded time to situate a short history of sounded digital time. Though the project is deliberately speculative, it suggests an important hypothesis. Rather than splitting the world into "real" and "virtual" domains of perceived experience, digital technologies might better be considered in terms of the disconnect between the perceived and imperceptible modalities through which they organize social practice. (...) Perception is an important path through the problem of sounded time, because the distinction between digital and analog technologies makes little difference in the ways they are perceived by listeners, though the differences may be important for understanding how time itself is regulated. Sound techniques that*

organize social space include manifold combinations of digital, manual and mechanical devices. Sounded time can become perceptible through uniquely digital technologies (such as car alarms); entirely manual or other non-digital technologies (such as police whistles or car horns); systems of ambiguous analog or digital origin (including some elevator signals and announcements on public transit routes); and, systems that have been adapted from analog to digital technology (alarm clocks, to which we will attend in greater detail shortly, being an eminent example). (...) Audible signals work well in orchestrations of public space that are synchronized by designating the relative timing of movements rather than coordinating actions to occur at a set time. The attention-grabbing capabilities of sound leave acoustic markers as the reserve fleet of social regulation, making it particularly well-suited for warnings, alarms and social-spatial actions that are temporally contingent. (...) Bodies that move through social spaces are essentially spatial territories in motion, which is what makes the timing of their interactions so important. Sound has a long history of use as a means of creating boundaries, one that continues in the present (Bijsterveld, 2003; Jones, 1993; Sterne, 1997). Deleuze and Guattari (1987) point to the importance of “sonorous or vocal components” in territorialization, that are able to articulate “a wall of sound, or at least a wall with some sonic bricks in it.”) [http://firstmonday.org/issues/special11\\_9/sterne/](http://firstmonday.org/issues/special11_9/sterne/)

- **2006 \_\_ Connecting Media**, International Conference, Hochschule für Musik und Theater, Hamburg (During the conference the e-learning project MUTOR (Music Technology Online Repository) will be publicly presented for the first time. Conference speakers include project partners David Wessel (UC Berkeley) and Anthony De Ritis (Northeastern University Boston) <http://mmm.hfmt-hamburg.de/index.php?id=117>

- **2006 \_\_ « Digital Art / Public Art : Governance and Agency in the Networked Commons »**, Christiane Paul (Digital art has expanded, challenged, and even redefined notions of public art and supported the concept of a networked commons. The nature of agency within online, networked “systems” and “communities” is crucial to these developments. Electronic networks enable exchange and collectivist strategies that can question existing structures of power and governance. Networks are public spaces that offer enhanced possibilities of interventions into the social world and of archiving and filtering these interventions over time in an ongoing process. Networked activism and tactical response as well as artistic practice that merges physical and virtual space and augments physical sites and existing architectures are among the practices that are important to the impact of digital public art on governance. This essay will examine how digital art has used electronic networks to redefine the notion of public space by enhancing possibilities of various kinds of interventions. These interventions can take the form of an archiving and filtering of public contributions; a merging of physical and virtual space; an augmentation of physical sites and architectures; social softwares, or collectivist and activist strategies and tactical response.) [http://www.firstmonday.org/ISSUES/special11\\_9/paul/index.html](http://www.firstmonday.org/ISSUES/special11_9/paul/index.html)

- **2006 \_\_ Digital Fringe**, Jon Pak, Michael Borthwick, Mark Walsh, Joseph Barrows, Josie Matthiesson, Isabel (Nemo) Mettler (Digital Fringe Festival was first run in 2006 in Melbourne and has been put together with generous support from Film Victoria and other Sponsors. Digital Fringe provides access to public screens and set up novel environments for artists to exhibit their work. Uploaded content will be moderated and tagged by the Digital Fringe team then popped in a video carousel that plays on hundreds of screens around the world. Digital Fringe is broadcast over the internet to thousands of computers and hundreds of fixed screens. No screen is too large or small to be involved in Digital Fringe - it may be in a back corner of a library on a computer monitor, part of a shop’s window display, a projector in a foyer, or a huge public screen. We are simply looking to get G rated artistic content into as many nooks and crannies of public space as possible. Digital Fringe plays on home computers and public screens, from grand urban screens to retail television displays, hospitality venues, galleries and other nooks and crannies. This extensive network of screens is seen by thousands of viewers. The amorphous nature of a web based call out means that entries come in from all around the world; from professional artists to those who have just completed a kindergarten multimedia project and everybody in between. The infamous Mobile Projection Unit is seen spasmodically throughout the year throwing pixels around the landscape. It operates with guest programmers from dusk around Melbourne projecting onto nearby buildings and structures often intertwining and interacting with local goings on. Although seemingly random in its schedule, MPU pilots are encouraged to choreograph their work with the happenings of the city. The MPU is connected back to the web : 1/ GPS map position of the van viewable on the Digital Fringe website, 2/ Video hookups to the artists in the van, 3/ Text interaction between the MPU and the Web, 4/ Real-time monitoring of what the MPU is projecting. Digital Fringe will cultivate and host a number of interactive digital art pieces, using mobile phones and the Internet. This will be operated through participating screens across Melbourne and the DF website. Interact is a phone interactive piece that will link data sent from phones directly into digital artworks. OverCast is a web based media delivery system being developed by Horse Bazaar to distribute content over the web to site specific locations. We are specifically interested in multiple screen environments and have a 3 projector system currently under beta testing. We are putting together a digital art bank for non narrative based digital works that we want to distribute over this system. We offer a non-exclusive license that allows us to publish your content to public screens with an attached royalty system.) <http://digitalfringe.com.au>

- **2006 \_\_ Ecos, International convention on eco-creation**, Apo33 (Eco-creation is the name given to the transversal practice through which an alternative economy and ecology are invented in the context of a micro-community and in a given environment. It involves the realisation of ecopoietic experiments through hybridisation and emulation of components. Modern technological and

scientific developments have radically changed our relation to the eco-system, leading us to redefine what we mean by "environment". Change in our relationship with the territory: through increased mobility, exchanges and cooperation over longer distances, increased and multiplied means of circulation, converging in a process of reterritorialization, shifting borders, reorganizing space divisions according to new political, economic, social and environmental coordinates. Change in the general economy of the capitalist system : involving digitalization and virtualization of trade exchanges increasingly disconnected from concrete reality, reducing the living to digital data (genetic codes) that can be bought and sold at will, blurring the limits between the real and the virtual, the living and the dead, what is "natural" and what is artificial. On the other hand, these changes also revolutionise creative practices, involving experiments across established fields, generating new links between different forms of practices : art, technology, science, architecture, urbanism, agriculture, culture, social action. These scientific and technological developments are diverted or recombined for other purposes by hackers, creators and inventors looking for eco-poïetic potentialities.) <http://ecos.crealab.info>

- **2006** \_\_ **escoitar.org**, Arte Sonora (Escoitar.org is an open, collaborative project that encourages the addition of recorded soundscapes onto online maps. Enabled by a hack of the popular Google Maps program, Escoitar.org (meaning 'Listen' in Galician language) was inspired by a particular desire to preserve the acoustic patrimony of Galicia, a region in the Northwest of Spain. Through the visual network between locations and accompanying sounds, Escoitar.org allows people to understand landscapes, not only visually as places, but also via their autochthonous sounds. In the 20th century we are living an increasing interest for the sonorous phenomenon, beyond the music and the acoustic physics, where the environmental sounds are revealed as an interesting object of interdisciplinary study (anthropology, sonorous ecology, bioacoustic, cognitive sciences, architecture, artistic creation ...). Natural or a construction product of the modern societies, the sounds that surround us are part inevitable of our lives and of our collective memory, appearing as an inestimable material for the comprehension of the cultures and the societies that generate, use or perceive these sounds. For this reason, the attitude towards the sound of a place must not be only positive, it must be studied to identify the components' worth to be preserved, or even restored. An approximation to the sound of a place is an approximation to its immaterial patrimony, which can be gathered with strictly documentary purposes, or, as in Escoitar.org, as raw material for cultural analysis, artistic creation and to promote cooperation and debate on net. To find the bioacoustic balance of a place, to create portraits or Sonorous Postcards, and to create a situation map (online) and a description of these places through its sonorous landscape helps the construction of a geographical zone identity; the sound as patrimony, the sound as historical document. All this is thanks to the possibilities that the net offers as an horizontal and democratic system. With this purpose in mind, a piece of software was developed for the free publication of sonorous landscapes (Social Soundscapes) that allows to any user to collaborate, uploading audio to the system and placing it automatically in the geographical place where it was recorded (the sonorous patrimony agreed by consensus). This is the main aim of this project whose space of documentation you are seeing.) <http://www.escoitar.org/> <http://www.artesonoro.org/>

- **2006** \_\_ **Exploration #5**, Michelle Teran, Tesla Berlin (Exploration #5 is a look into the daily activities of an office building environment and how role, function and personal history direct different people's movements and engagement with these spaces. The work takes the form of a series of live and pre-recorded video transmissions related to person and space that are distributed throughout the building. A visitor to the site is given special equipment to wear which allows this person to intercept and view wireless video transmissions. By wearing this equipment, the visitor assumes the performative role of 'The Explorer', entering into an exploratory journey of the strange corners of urban environs and encounters with the people that occupy these spaces.) <http://www.ubermatic.org/misha/projects.html>

- **2006** \_\_ **FeteMobile** (FeteMobile project, a prototype for a commons-based satellite for a world in which the digital public realm is increasingly controlled and surveillance is ubiquitous. A flying interactive sculpture debuted as part of the Interactive City Summit of ISEA 2006, FeteMobile is a 20-foot long blimp equipped with autonomous surveillance and communications capacities. Participants can remotely view their surroundings via an onboard camera as well as exchange media files through a wireless local-file server.) <http://fetemobile.ca>

- **2006** \_\_ **Finland-Alaska Improv**, National Computing Center, Ixi Software, Thor Magnusson (The resulting projects of the ixi workshop at UIAH and Sibelius Academy will be put into use with musicians from the Sibelius Academy and musicians in Alaska. This will happen at the National Computing Center (otaniemi - university of technology) where we improvise in real-time with people at the University of Alaska, Fairbanks) <http://www.ixi-software.net/>

- **2006** \_\_ **Frequencyliator**, SARC, Pedro Rebelo, Alain Renaud (distributing structures for networked laptop improvisation. Developed at SARC by Alain Renaud, the Frequencyliator acts as a hub for laptop improvisation providing cues, distributing bandwidth and facilitating negotiation between performers through a voting system) <http://www.sarc.qub.ac.uk/>

- **2006** \_ **Heart Chamber Orchestra** (The "Heart Chamber Orchestra", performed by 12 classical musicians and the artist team of TERMINALBEACH, consists of a computer-based composition and real-time data visualization show controlled by the performer's

heartbeats. While playing, each of the 12 musicians are hooked up to an ECG (Electro Cardiogram) machine where a computer then analyzes their heart rates. The acquired information is then collected and used to simultaneously compose a musical score. Also while they play, their heartbeats can influence and alter the music itself, similar to a feedback mechanism where the production gains in intensity as the performers continue to play. When they begin, there is no predetermined existing score that the musicians can follow. Due to this, there is no way for the musicians to rehearse their performance as it is dynamic and can change at any moment. Since every performance is unique, when experiencing repeated performances, onlookers will be able to gauge the stress levels of the performers and in turn receive a brand new show for every visit. [Jonah Brucker Cohen] <http://www.heartchamberorchestra.org>

- **2006** \_\_ **JamSpace**, Michael Gurevich (networked real-time collaborative music environment. JamSpace provides a simple hardware and software interface that allows novices to play music together anonymously from isolated locations connected by a local network. The low-latency conditions of a local network allow for real-time rhythmic collaboration. This in turn facilitates satisfaction of the design requirements of accessibility to novices as well as privacy and anonymity)

- **2006** \_\_ **Likn**, criticalartware (Ben Syverson, Jon Cates, Blithe Riley, Christian Ryan, Jon Satrom) (criticalartware is a collaborative art project that emerged in 2002 as a means to connect certain threads of discussion surrounding 1960s and 1970s video art to present-day new-media practice. Liken, a name designed to evoke the layering and hybridity of lichen as well as the associative nature of the software, investigates community-driven interfaces for social software. Liken is a Web interface (with various different manifestations) to criticalartware's database of shared resources that present themselves as self-connecting nodes to which users can contribute. The pathways connecting the nodes change on the basis of usage, with more "traveled" paths growing stronger and paths attracting less interest fading away. It served criticalartware well, but at the end of 2004, liken was taken off of the Web and work began on its replacement, likn. Criticalartware's approach is that of hybridization, a self-reflexive crossbreeding of interfaces and connected threads that becomes a social document in itself.) [http://www.leonardo.info/isast/articles/LeoEMS2006\\_likn.html](http://www.leonardo.info/isast/articles/LeoEMS2006_likn.html)

- **2006** \_\_ **LiveCoding** ('Livecoding' is the activity of writing a program, or part of it, while it runs. It thus deeply connects algorithmic causality with the perceived outcome and it allows code to be brought into play as an artistic process by deconstructing the temporal dichotomy idea of 'tool' and 'product'. BetaBlocker, <http://www.pawfal.org/index.php?page=BetaBlocker>, project made by software artist Dave Griffiths is a livecoding performance and a piece of software. It's a virtual acid techno machine which is live coded with a gamepad to create code and processes which modify and destroy each other in 256 bytes of memory. The machine's memory and processes are projected and integral to the performance. The software is written in 'fluxus', a small realtime rendering engine that generates animation from sound. The rhythm is a direct result of the process, the number of instructions and jumps. Livecoders propose a hardline approach to the understanding of software-based art: the code and the process of writing should be visible to the audience, and not hidden inside a 'black box'. However, as it written in TOPLAP Manifesto Draft "It is not necessary for a lay audience to understand the code to appreciate it, much as it is not necessary to know how to play guitar in order to appreciate watching a guitar performance". Livecoding allows the exploration of abstract algorithm spaces as an intellectual improvisation. As an intellectual activity it may be collaborative. And there is something peculiar in BetaBlocker specifically related to live performance. Beta-blockers are in fact cardiac medications quite commonly used by musicians to relax nerves before a concert. By blocking the action of adrenaline and other substances, these drugs mute the sympathetic nervous system, which produces fear in response to any perceived danger. The effect of the drugs does seem magical. Beta-blockers don't merely calm musicians; they actually seem to improve their performances on a technical level. Pointing out this 'live' aspect, the name seems to advocate the 'humanisation of generative music', where code isn't left alone to elaborate its own self-describing soundscape, but it is hacked collectively, chopped up and moulded to make live music. [Valentina Culatti])

- **2006** \_\_ **The LiveForm : Telekinetics**, Michelle Teran, Jeff Mann (The LiveForm:Telekinetics (LF:TK) project re-imagines the familiar objects and utensils of our everyday social spaces as an electronically activated play environment, capable of transmitting over distance the physical presence and social gesture that comprise such a vital element of human interaction. Furniture, decorations, cutlery, doodads, and bric-a-brac come to life as both kinetic art and telecommunication interfaces, building a complex arrangement of movement and gesture. Imagine a shared creation, a social ritual, a dance through objects, an electric dinner-table that is played. LF:TK creates these experiences in transgeographic temporary performance zones, centred around wireless Internet access points that are now ubiquitous in the urban landscape. No longer tied to a terminal screen and keyboard, nomadic groups pack mobile feasts of sensors, antennas, robotics, food, and music, and head out on the town. Networked telepresence picnic parties unfold in vacant lots, roadsides, cafés, alleyways, bars, and hotel lobbies - wherever bandwidth is plentiful and security guards scarce.) <http://www.lftk.org>

- **2006** \_\_ **Locosound**, Alain Bellet, Iris Rennert, Fabien Girardin, HansJakob Fehr, Oliver Friedli (LocoSound is a flux audio experience that is synchronized with the landscape viewed from a train window. Through a system of GPS tracking, the audience can

tune into a radio frequency when boarding a train wagon and become part of an audio visual experience that is based on: (1) a sound experience that has been created for a specific train visual (the landscape between Zurich and Basel for example); (2) a system that is sensitive and responsive to any delays, unexpected stops or other real-time changes in the train ride. The experience is therefore not linear but rather an interactive and responsive, taking into account the singular experience of a particular train ride. The audio concept allows for a new type of music composition, that can also include narratives.) <http://www.notdefined.net/locosound/>

- **2006** \_\_ **Locustream**, Locus Sonus (An evolving network of permanently open microphones producing multiple audio streams, relayed by the internet and by a specifically programmed server. These open microphones are spread around the globe and maintained by a large number of collaborators providing live sound material for subsidiary projects. Locus Sonus is a research group specialized in audio art. It is organized as a post graduate lab by the Art Schools of Aix-en-Provence (ESAA), Nice (ENSA Villa Arson) and Marseille (ESBAM) in the south of France. We have a partnership with sociology lab CNRS, LAMES Aix en Provence (who are interested by the way that practices related to new technologies are creating modifications in artistic production and the way that the public responds to these modifications), and we currently continue collaborations with the CRESSON, architecture lab CNRS in Grenoble (sonic spaces research centre), the School of the Art Institute of Chicago (SAIC), and other international partners. Locus Sonus is concerned with the innovative and transdisciplinary nature of audio art forms some of which are experimented and evaluated in a lab type context. An important factor is with the collective or multi-user aspects inherent to many emerging audio practices and which necessitate working as a group. Two main thematic define this research - audio in it's relation to space and networked audio systems. In the fall of 2005 the lab started work on a group project with the aim to involve the various different members of the group in a way, loose enough, to not stifle individual creativity, while still providing a firm basis for communal experimentation and exploration. It was decided to set up some live audio streams, basically open microphones which upload a given soundscape or sound environment continuously to a server and from there available from anywhere via the WWW. Our intention being to provide a permanent (and somewhat emblematic) resource to tap into as raw materiel for our artistic experimentation. A discussion that followed this type of presentation led us to believe that it was necessary to define the protocol (sound capture/network/local form) that we were employing more precisely. One of our problems was the choice of the stream emplacement - should this be made in relation to geographical location or sound quality or some kind of political or social situation... The decision was made to leave this up to other people, a partly practical and partly ideological choice. At this point we tidied up our Pure Data streaming patch so that other people could implement it without too much difficulty, boosted the number of streams which could be accepted simultaneously by our server, and started stripping down our ideas for installations, confident that the worldwide audio art community (with a little help from our friends) would respond to our call, which they did. Locustream Tuner (2006/2007) consists of a pair of wires stretched the length of the exhibition space with a small ball threaded on them. The position of the ball can be altered by the public acting like a tuner, an audio promenade where users slide their way through a series of remote audio locations. Multiple loudspeakers enable us to spatialize the sound of the streams creating so that each different audio stream selected on the wire emanates from a new position in the local space. In order to make the installation function efficiently we were obliged to incorporate a system allowing us to interrogate our server and update the list of current streams (people go away or use their streaming computer for a concert or a machine crashes...) we use the list to provide visual feedback by projecting names of the places the streams are coming from. Locustream SoundMap (2006/...) : At one point it seemed necessary to provide the "streamers" (as we have come to call the musicians and artists who've responded to our call) with the possibility to access the streams themselves, not only to hear their own stream but also those provided by other people. So we made this animated map which shows the location of all the streams and indicates those which are currently active with a blinking light. By clicking on a chosen location one can directly listen to the OGG Vorbis stream in a browser. Community of streamers : Another interesting development arising from the fact that we are involving other people to set up the microphones is that we have found ourselves with a network of people - artists, musicians and researchers, who are inherently interested by networked audio. This has led to use of the streams for art forms, outside of the lab itself (SARC in Belfast, Cedric Maridet in Hong-Kong, etc.). Much of our research concerns the emergence of listening practices which are based on the permanence, the non spectacular or non event based quality of the streams. We have found ourselves creating a sort of variation on Cageian (as in John Cage) listening, importing a remote acoustic environment in a way which can be chosen by the user, creates a renewed concentration on the local environment itself. This has led us to reflect on a form which adopts a permanent or semi permanent situation to present the streams publicly, and which involves a relationship between the local and the remote environment. Locustream Promenade (2007/2008) uses parabolic loudspeakers which focus sound into a beam beneath a suspended dish, only heard when the listener passes through it. We have equipped each parabola with a mini computer (actually a hacked wifi router) and sound card. Placed within a wifi network each dish connects to a specific stream, provided with electricity it can be placed anywhere. Locustreambox (2008/...) (embarked computer/ mini-pc (Linux, Pd, streaming)) : We are simultaneously developing a "streambox" - mini-PC equipped with a microphone and configured to connect to our streaming server as soon as it is plugged in. These boxes are equipped with a wireless connection, they use very little electricity, they are also silent. Given these improvements, we hope that by sending them to "streamers" we will be able to ensure the permanent functioning of the open mikes.) <http://locusonus.org/>

- **2006** \_\_ **Manchester Peripheral**, Folk Songs Project, Futuresonic (During Phase 1, we worked with communities in four wards across Manchester to create an interactive sound map of four wards across Manchester – Levenshulme, Clayton, Chorlton and

*Moss Side. In each ward, we asked local residents what sounds were most important to their area, who we should speak to, what musicians we should record and what issues were important to them. We'd like to use this opportunity to say thank you to all the people who worked with us. Go to the sound map to create, save and share your own compositions based upon the sounds and words we recorded during Phase 1.)* <http://www.manchesterperipheral.com/>

- **2006** \_\_ **Mapchester**, OpenStreetMap.org (Mapchester is a collaborative 'wikimap' project, generated and maintained by users in the same way as Wikipedia. Driven by OpenStreetMap.org, Mapchester offers a new type of Manchester map - produced by collective, community effort and completely free of traditional copyright restrictions on usage. The inaugural Mapping Weekend brought together a wide array of different people, transforming them into map hackers and citizen cartographers: people who walked / cycled / drove / bussed / trained / skated the city streets recording GPS tracks and road names. These tracks were then uploaded to the OpenStreetMap database and edited into coherent map features. From this data, an editable Manchester map has been created for Futuresonic 2006 - presented as a world-first test-case for producing a usable, functioning city map and festival guide via this open source, collaborative approach.) <http://wiki.openstreetmap.org/index.php/Mapchester>

- **2006** \_\_ **Micromedia**, Apo33, Píksel 06 (The Chaos Micromedias project is a new kind of medialab based on hacking & hijacking of electronics & FM/TV transmitters to make noise & images on the micro level . It is composed of workshop sessions to build electronic sound devices (microphones, mixers, oscillators, audio amplifiers, controllers...) and FM/TV transmitters etc., and performances and micro-installations diffusing sound on small and mobile radio receivers and different types of televisions. The sounds and images are collected in the space of the intervention and reintroduced in the context through the mobile diffusion systems. The sounds and images captured are also transformed by Pure Data automatons and sent by streaming on the internet. Micro versus mass, DIY electronics versus customer & factory addict, low tech versus high tech... the Chaos Micromedias project develops a space for creation of micromedia construction & action.) <http://www.apo33.org/cia/doku.php?id=micromedia>

- **2006** \_\_ **Moving Spaces** (for 5.1 surround sound), Pauline Oliveros, created for the 151st Acoustical Society of America)

- **2006** \_\_ **Net\_Derive**, Atau Tanaka (Net\_Dérive is an artwork in the domain of location sensitive mobile media art. It is an installation piece extending beyond the confines of a gallery, to include the urban environment. Conceived for participative use from advanced mobile telephones, they call upon techniques from interactive music applied to new contexts that include the interplay of sound and image, an exchange between participants in the gallery and participants in the streets, and the creation of an abstract narrative from audiovisual media captured on multiple mobile devices. Deployed on portable, networked, location-aware computing devices, we seek to create a kind of musical instrument, thinking of the city-as-instrument) [http://www.xmira.com/atau/net\\_derive/](http://www.xmira.com/atau/net_derive/)

- **2006** \_\_ **NYSoundMap Seeker**, NYSAE, New-York, Andrea Callard, Andrea Polli, Sha sha Feng, Edmund Mooney, Andrea Williams, Shiri Sandler, Jonny Farrow, Ricardo Arias and others (The NYSoundmap is an ongoing project by the New York Society for Acoustic Ecology (NYSAE), a membership organization that advocates listening and promotes public dialog about the urban sound environment. The NYSoundmap focuses on the NY sound environment and includes City in a Soundwalk, Protest Transport Celebrate and Sound-Seeker, a googlemap interface of sounds in NYC. SOUND-SEEKER: What kinds of sounds can you find in New York City? With sound-seeker, you can zoom, pan and search for sounds with interactive satellite photos or detailed maps. Click on hot spots to listen to the recorded sounds of a location pin-pointed by GPS. Sound-seeker was created using GoogleMaps and isn't viewable in all browsers) <http://www.nysoundmap.org/>

- **2006** \_\_ **On Everything**, Pall Thayer ("On Everything" generates a real-time audio/visual presentation of everything by appropriating material being shared by the worldwide public in the form of shared images and diaries. The source material is endless, thus the work goes on forever. Material is synthesized, mixed and, ultimately, abstracted, to allow for varied interpretation. "On Everything" knows nothing of the content of these materials. It reflects everything while reflecting on nothing. That is up to the viewer. "On Everything" gets its material from two online sources in ways that make the work non-discriminatory. The images are downloaded from Flickr.com. Instead of retrieving them based on tags or search terms, "On Everything" is working its way through the entire collection of non-restricted images in the order that they were uploaded. Since the rate of new image uploads exceeds the speed at which "On Everything" works its way through them, it will never reach the end unless people stop using Flickr.com. The text is acquired from blogs hosted at Blogger.com. "On Everything" accesses these blogs through Blogger.com's own "random blog" feature and then reads off the most recent post. The subjective hand of the artist is visible and audible in the aesthetic rendering of image and audio. However, that subjectivity ends in the coding process, before the work starts to produce results. From there on, there is no intervention in the automated processes that control the work. The artists involvement is based on a sense of "diluted subjectivity." Built with Processing and Java app) [http://pallit.lhi.is/on\\_everything/](http://pallit.lhi.is/on_everything/) <http://this.is/pallit/>

- **2006** \_\_ **Optofonica**, Maurizio Martinucci aka TeZ (*The impulse to employ technology in artistic creation, already present for decades, is steadily developing in the direction of mixed, crossed and interactive media. This has created a proliferation of artworks, projects and podiums worldwide. Looking at the production in this panorama, one can detect that the idea of space and perception is rather underrated, if not completely ignored, in favor of a merely aesthetic effect. The notion of sensory involvement, and the importance of the spatial factor connected to it, is deeply rooted in the history of art and architecture, and now, more than ever, it should doubtless play a prominent role in the development of meaningful creations, in line with significant research. With this conviction, Optofonica, created by TeZ - Maurizio Martinucci -, as a platform is engaged in an effort to stimulate, support and promote those artists and researchers who embrace this vision in spirit and practice and dare to experiment in the realms of synesthetic media and sound spatialization.*) <http://www.optofonica.com/>

- **2006** \_\_ **The Owl Project**, Dale Joachim, Eben Goodale, MIT Media Lab (*Sponsored by the National Science Foundation, this project seeks to understand whether owls respond to cellular-grade audio at a rate similar to that of high quality audio players. The Owl Project is a community space for interacting with owls in their natural habitat. Use your cell phone to call owls and listen to their responses, hear owl recordings, discuss your findings, and keep a blog of your experiences.*) <http://owlproject.media.mit.edu>

- **2006** \_\_ **Passing Beneath the Surface**, Scanner (*Online Project. This work explores the idea of place and identity of the city of Sunderland, working with archive recordings of local residents over the last decade, exposing threads of narrative, which reflect the changing nature of the city and the urban place. Each episode combines an interviewee with an atmospheric rumbling, dark canvas of sound, creating micro worlds of spoken word. Bits and pieces of people's minutiae are treated as if they were instruments, with each story capturing a piece of local history through the warmth, human frailty and humour of the often-elderly characters. Days when paper and ribbons were cherished items, days that began early and finished late, days in the railway, down the pit of the coalmine, 'the good old days.'* /sLab, is a new digital media research laboratory at the University of Sunderland based within the School of Arts, Design, Media and Culture involved with the commissioning, curation and production of digital media projects by artists. [Scanner]. One of a series of projects that re-imagine a City of Sunderland, in association with /sLab, is a new digital media laboratory at the University of Sunderland based within the Department of Fine Arts. This work explores the idea of place and identity of the city of Sunderland, seeking to expose a range of urban places which reflect the changing nature of the city and its environments. It will be experienced through the medium of sound, via broadband networks and Podcasts and present interviews and location recordings over a period of time that can be experienced both locally and globally. [J. Milo Taylor]) <http://www.scannerdot.com/art/2007/passing.html>

- **2006** \_\_ **PigeonBlog**, Beatriz da Costa, Cina Hazegh and Kevin Ponto (*One of the most interesting projects that combined science, environmental awareness and art was PigeonBlog, by Beatriz da Costa, with Cina Hazegh and Kevin Ponto. It was based on equipping pigeons with combined GPS and GSM open platform phones, interfaced with CO/NOx pollution sensors. The resulting data (retrieved on the ground and up to 90 meters altitude) is then mapped on a Google-based tool. Inspired by pigeons with mechanical cameras, expected to be used as spies during the early 20th century wars, this project uses a typical surveillance model: using apparently neutral elements (the birds) as nodes of data-retrieving network, finally turning them into a "grassroots scientific data gathering initiative." One of the projects goals is to raise public awareness about the invisible but very dangerous air pollution, typically affecting suburbs, and prototyping at the same time a new, independent and potentially popular method of self-checking important data on our urban neighborhood. Furthermore the project is based on the sharing of knowledge through a generated mapping process. This hybrid swarm obtained data enables people to take part (without institutional intermediaries) into the protection of environmental resources, and the used open tool is able to effectively monitor one of the most valuable commons we have. Definitively this is a must in the out-of-the-screen open source philosophy. [neural.it]) <http://www.pigeonblog.mapyourcity.net/>*

- **2006** \_\_ « **Processpatching** », Anne Nigten (*Processpatching, Defining New Methods in aRt&D investigates how electronic art patches together processes and methods from the arts, engineering and computer science environments. This investigation is positioned in the electronic art laboratory where new alliances with other disciplines are established. It aims to improve collaboration by informing others about one's artistic research and development approach. Processpatching, Defining New Methods in aRt&D, provides information about the practical and theoretical aspects of the research and development processes of artists. The thesis was submitted in fulfilment of the requirements for the degree of Doctor of Philosophy. Anne Nigten participated in the SMARTlab Programme in Performative New Media Arts, Central Saint Martins College of Art & Design, University of the Arts, London.*) <http://www.processpatching.net>

- **2006** \_\_ « **Qu'est-ce qu'un dispositif ?** » (*Che cos'è un dispositivo? What is a device?*), Giorgio Agamben (*Agamben is inspired by the meaning given to the term "device" by the French philosopher Michel Foucault during an interview in 1977: "What I endeavour to identify with this term is, firstly, an absolutely heterogeneous whole, which involves language, institutions, architectural structures, decisions in terms of regulations, philosophical propositions, in short: much of what is said and much of*

*what is left unsaid, these are the elements of the device. The device is the network which establishes itself amongst these elements (...)* By the term "device", I mean a kind of formation which, at a precise moment in history, had the essential role of satisfying an urgency. The device, therefore, has an eminently strategic function (...) I said that the device is of an essentially strategic nature, which implies that there is a certain degree of manipulation in the rapports of power, with the aim of either orienting them in a precise direction or fixing and using them." Bearing in mind the words of Foucault, we could point out how the term device has, first of all, a general meaning, insofar as it does not regard purely the world of technology or that branch of knowledge. Its fundamental characteristics regard: the heterogeneity of the whole (linguistic and non linguistic elements, issues, propositions, experience, mechanisms...) and the network of relations established amongst these elements; strategy (of which the device makes use) in order to respond to an urgency and to produce an immediate and direct effect; the manipulation of latent rapports of power so as to influence them (orienting them, re-balancing them, blocking them) in the intersection of rapports of power and those of knowledge. If we presuppose that each device is a group of elements, united through a network, we can more precisely redefine its strategic meaning – thanks to the help of Agamben – as "something that in some way has the ability to capture, orientate, determine, intercept, model and control the gestures, conduct, opinions and conversations of human beings. Not just prisons, schools (...) but also writing, literature, philosophy (...) computers, mobile phones and – why not – language itself, which is perhaps the most ancient of devices." [Alfonso Accolla] («J'appelle dispositif tout ce qui a, d'une manière ou d'une autre, la capacité de capturer, d'orienter, de déterminer, d'intercepter, de modeler, de contrôler, et d'assurer les gestes, les conduites, les opinions et les discours des êtres vivants». «le stylo, l'écriture, la littérature, la philosophie, l'agriculture, la cigarette, la navigation, les téléphones portables et, pourquoi pas, le langage lui-même, le plus ancien dispositif...»). <http://www.architetturadipietra.it/wp/?p=463>

- **2006 \_\_ Radio City 299-MW**, neuroTransmitter (Radio City 299-MW is a multi-frequency audio composition of archival, original, and found sound, which is transmitted from scale reproductions of abandoned WWII-era military forts located off the British Coast. "Radio City 299-MW refers to Radio City, a station based in abandoned military fortifications in the Thames Estuary off the British coast during this same era. The miniature models of the rampart-like towers contain the source of low-power transmissions relayed to the radios on the walls. The four-channel sound composition (also based on archival broadcast materials) occupies the gallery and replicates on a small-scale Radio City's unauthorized occupation of institutional spaces - the physical architecture as well as the radio frequencies. [The] pirate stations transmitted independent shows and rock music in defiance of the BBC's government-controlled broadcasting monopoly and the heavy corporate sway over music programming. By reflecting on the influential effects of these repurposed sites, neuroTransmitter proposes locating similar catalysts in our communities today. Their work, whether experienced in museums, over the airwaves, or in the public realm, suggests a reconfiguration of the broadcast spectrum as a space for communication and experimentation, where individual voice and locality take precedence over the homogenizing outcomes of regulation and corporatization.") <http://www.neurotransmitter.fm/radiocity.html>

- **2006 \_\_ re:draw:III**, Rob Lycett (Re:draw:III is the latest in an ongoing series of digital artworks that explores the graphic potential of GPS noise. Inverting the conventional use of GPS devices, a geographically fixed GPS device no longer records a physical journey, but the noise in the system - the changing signal strengths reflecting the position of the orbiting satellites, interference caused by local atmospheric conditions, a flock of birds flying overhead ... This recorded data describes imaginary journeys, events and impossible geographies. A series of texts are written by the artist, as a personal response to the location, becoming part of the material to be re-enacted in the gallery.)

- **2006\_\_ Re-Titled**, Paul DeMarinis (site-specific installation in a bridge tunnel over the Rhine. A series of 28 sound-sensitive lights responds to the acoustic pressure waves reverberating in the tunnel to display sound as light and shadow in motion.) <http://www.stanford.edu/~demarini/exhibitions.htm>

- **2006 \_\_ Rome to Tripoli**, Paul Demarinis (Based on a recreation of the 1908 radio transmitter of Majorana, high voltage and a stream of vitriolic acid convène to broadcast distorted sounds of western culture (Mozart, Verdi, Bavarian Waltzes and Futurist poetry) toward unwilling ears.) <http://www.stanford.edu/~demarini/exhibitions.htm>

- **2006 \_\_ Rogue Wave - Sight and Sound**, Steve Symons (Rogue Wave are a sound art collective bringing together a diverse range of practitioners in the North West of England. The concept for the group is one of collaboration, to share skills and ideas with a vision of creating work that is greater than the sum of its parts. The emphasis of our practice is strongly on the use of technology, both new and old, to make, harness and manipulate sound as a medium for artistic expression and to explore and expand the contexts in which it might be presented. First Wave: Site and Sound is a series of immersive, 3 dimensional, and interactive soundscapes in which the connection between sound and its function in our everyday environment is re-presented in an unfamiliar context. Spinal Fishtap: Based on the sonification of output generated by a single nerve cell in a fish spinal cord in response to a 1 sec duration excitatory stimulus in the presence of a neuromodulatory peptide (urotensin 1), which enhances bursts of nerve impulses, spinal fishtap represents a challenging sonic representation the inner working of this vital cell type. Kitchen Life soundscape and interactive performance : Implementing a set of tools developed during for the Rogue Wave project (sound.of.life), Kitchen Life

counterpoints multiple point simultaneous contact microphone recordings taken from the boiling of a kettle, with digitally synthesised sounds emerging from the classic artificial life experiment - Game of Life. The real and digital blur, doing the housework will never be the same again!) <http://stevesymons.net>

- **2006 \_\_ Satellite Jockey**, Rick Silva (*Lose yourself in the glitches as you glide over a desert landscape or urban metropolis. Brazilian Rick Silva VJs with Google Earth, just as a DJ uses turntables and a VJ a video mixer. Running in playback mode, Silva's VJ installation presents a mix of Google Earth's satellite imagery of pixellated landscapes and glitchy flyovers to his own minimal electronica soundtrack. Satellite Jockey transforms the novelty of gliding over distant landscapes into a sublime experience of ever shifting glitches and textures. Silva makes art and music with various collectives and identities including the djrabbi crew, abe linkoln, cuechamp, and going off. If music is about time, Satellite Jockey by Rick Silva is music sparked off space. The perceptive revolution enabled by Google Earth is the one of being able to visually navigate most part of the world (including your own neighborhood) through satellite photos. This overwhelming new perspective (a sort of 'God' omnipresent view) is rewriting in the users of this software the spatial coordinates, and the awareness of being in one place, that becomes the center of the universe of choice. Satellite Jockey is a performance that uses Goggle Earth navigating the world's surface through the Google's generated stream of data using it as a source material for audio visual performances. The represented territory, in the software various forms, is then the (infinite) stage on which the performance take place, zooming, flying over, turning around pixel corners or drowning into abstract minutiae. The music follows the visuals, strengthen the vague mood of being ubiquitous and lonely.)* <http://satellitejockey.net/>

- **2006 \_\_ Solar Listening Station**, radioqualia Honor Harger & Adam Hyde

- **2006 \_\_ SongBike**, Kelly Andres (*The concept of Songbike is to create mobile, urban, soundscape compositions to share through a website. The idea is that anyone can build a "Songbike" by throwing together whatever consumer electronics they can find to make a recording or broadcasting unit. Each time Songbike is performed it is different... never a prescribed set of components or objects. Songbike uses sound as a subtle activist gesture - narratives of current issues, noise pollution, the body extended, politics of space, time and movement arise through cues only available while listening. The live streaming, interactive website & recycled electronics components was developed in Banff. The Songbike is a mobile sound lab to record and upload aural compositions to a member based website. The website serves as a hub to host each member's soundscape "station". The site also provides members the ability to upload and download the recordings to share with others. Songbike connects individuals through a shared interest in community and aurality; self-produced content and piracy; connectivity and interaction.)* <http://www.songbike.com/>

- **2006 \_\_ Sotavento**, The Tilt - Carlos Sandoval, Oori Shalev (*We transform trees into biosphere-composers. Our installations are highly responsive to natural evolutions and interact between environments across the globe, over the Internet. The sounds of the trees are based on samples, or recordings made by purpose. The tree does not generate the sounds by itself, but only controls the way the sounds plays-back, mixes and spins around you. [Sensors on tree] > [Cat5 cable] > [Arduino] > [Max/msp] > [OscGroups] > (Internet via udp) > [Oscgroups] > [Max/msp] > [Audio interface] > [World]. Sotavento is an artistic sound abstraction of the passionate and endless relationship between millions of trees and one single, inexorable wind, a wind that we all share. We establish an Internet-based, real-time movement communication between moving trees located in different countries. The trees' "dance" is tracked down by two dual-axis accelerometers, each fixed to the tip of a branch. We use the complex branch movements to generate or to trigger sounds. In this installation a tree is a self-replicant sound maker of its own dance. The audience can perceive the relation between the "dance" of the tree and the music it produces. Even is there is no wind, the tree in Mexico can "ask" (via Internet) for movements to a tree in Italy and generate its sounds with this information. The sounds are to be listened thanks to a set of four speakers installed around the tree.)* <http://www.the-tilt.com/trees.html>

- **2006 \_\_ Sonification of You**, Martin John Callanan & Michael Rodgers (*Interactivity has become ambient. Individual people are no longer isolated resulting from the scaling up of networks and the scaling down of the apparatus for transmission and reception. Various communication devices always carried are continuously emitting and receiving information. This continuous data flow is both invisible and often, by the majority of people, unknown. Today's hand-held devices can be seen as extensions of the human body allow ubiquitous, inescapable network interconnectivity. The 'Sonification of You' aims to make this data flow 'visible' to those people carrying the active devices. Our equipment will passively scan the various radio spectrum frequencies used by mobile phone devices, Bluetooth, WiFi networks, and others used by mobile devices, within a given space. The data information then represented by assigned audio sounds that will indicate activity, distance, and strength of signals. Drawing on methods for monitoring large computer networks, the result is to create a background 'sound' for a space that is representational of the people, and their devices, present. The invisible become audible and therefore visible. Allowing individuals to become aware of their constant connectivity.)* <http://sonification.eu/>

- **2006 \_\_ Sound Jewelry**, Takuya Yamauchi (*This site describes a sound installation work supported by spatial sensing system with a Personal Area Network (PAN), which may be applicable for such areas as dance performances and mobile music. The term "Sound Jewelry" was coined by Iwatake, one of the authors of this paper. The original idea is to create interactive musical objects which are worn like necklaces by people. Each of the "Sound Jewelry" then automatically generates "melody" and according to the distance between the persons wearing it the sounds of "melodies" may be changed or exchanged. On the other hand, Yamauchi, the first author, has been researching into real-time localization systems for multiple agents in a PAN. So it was only natural for the 2 ideas come together. There are two "listeners" on the wall and eight "senders" to be held by the participants. The "senders" transmit supersonic waves to the "listeners" and the master server which is connected to the "listeners" measures the locations of the "senders" based on the distance estimation subroutine in the middleware. The results are sent using OSC protocols to the sound generating application, whose outputs are heard from 4 surrounding speakers in the environment. The actual "Sound Jewelry" turned out to be an environment that consists of two layers of sounds. In the foreground, "melodies" are dynamically generated by measuring the distances between the participants. In the background, ambient sounds are automatically generated using the distance data. When many people move in a 4-by-6 m space, the sound only changes based on the nearest relative distance. However, as the number of people increases, the sound changes become more complex. Sound complexity was used as part of the installation. Users recognized sound changes as they moved in real time in the space. "Merging music and mobile technology indicates promising future developments in a rapidly emerging field. The walkman, the mobile phone, and the iPod have already integrated music into users' social and geographic erratic locations and they have also reshaped users' urban landscape experience. With ad hoc networking, Internet connection, and context-awareness, mobile music technology offers countless new artistic, commercial and socio-cultural opportunities for creating, listening and sharing music. But which new forms of music interaction lie ahead in this context? Takuya Yamauchi, researcher at Keio University, with his professor Toru Iwatake, a well known electronic media composer, explores one of the possible paths with "Sound Jewelry", a sound installation supported by spatial sensing system within a Personal Area Network (PAN). Presented as "An Interactive Musical Installation through Spatial Sensing", the installation consists of an interactive sound system where all the participants hold a sensor in their hand (also wearable as a necklace, according to the title). Each sensor/participant has a peculiar sound that changes according to distance. Data are computed in real time reflecting changes and in the end producing two layers of sound. In the foreground layer, 'melodies' are dynamically generated measuring the distances between participants. In the background layer, 'accompaniments' are generated using the distance data and support the ambient environment. So users are finally able to originally experience the environment feeling the others' presence differently, in a totally immersive music experience.'*) (<http://web.sfc.keio.ac.jp/~yamauchi/sj/>)

- **2006 \_\_ sound.of.life**, Steve Symons (*I first came across the Game of Life over 25 years ago, an event that instigated my ongoing research/fascination with generative and adaptive systems and I have made several sample or note playing systems based on the rules over the last 6 years. It was only recently that I was able to return to the issue and take a new approach based on synthesis, building a system from scratch using SuperCollider. The technology for sound.of.life was developed during the Roque Wave : First Wave project ([www.roquewave.org.uk](http://www.roquewave.org.uk)), which explored the potential for multiple surround sound systems. During this period I started a project titled "Tools for Interaction and Performance" exploring how audio tools could change if they were able to be performed by the audience at the same time as the more traditional notion of a single user performer. Following metaphors of expanded keyboards where individual notes could be triggered by either the audience or the performer, it made sense to make the audience interface to be camera driven, as it easily allows for more than one user to engage with the system and requires virtually no physical intervention on a space.)*) (<http://stevesymons.net>)

- **2006 \_\_ Soundwire / XMess**, teleconcert CCRMA Stanford, SARC Belfast, Chris Jaffe, (<http://www.sarc.qub.ac.uk/>)

- **2006 \_\_ Tactical Sound Garden**, Mark Shepard (*A virtual space that sprouts from the inner urban fabric. An interface that let the users - equipped with iPods, mobiles and laptops - enter wifi networks and simply share sound files. This is the configuration of Tactical Sound Garden, literally an open source software kit for 'gardens' of intelligent sounds. It's a project with multiple authorship, supported by the New York State Council of the Arts and realized by Mark Shepard in collaboration with Fiona Murphy (Field Recording Sound Production). Navigating within a garden the users can download/upload the sound files on a common server accessible through the kit. It's undoubtedly a parasitic system, that exploit the urban areas with wifi access, infiltrating them. The basic idea of personalizing the almost anonymous urban space, making it more livable, makes the concepts of sharing and free knowledge access proliferate. A necessary and sufficient condition for this modus operandi is the mutual users' respect and a deep moral integrity, needed for the lack of protections that generate this (type of) networks intrinsic vulnerability. From 'flaneur' to 'datadandy' (as William Gibson defined it), we witness the birth of the sonic wardriver - somebody who spent its leisure time looking for wireless access point - a new metropolitan subject that tests his identity check in its own nomadism and precariousness. [Francesca Tomassini]. "Given the ubiquity of mobile devices and wireless networks, and their proliferation throughout increasingly diverse and sometimes unexpected urban sites, what opportunities - and dilemmas - emerge for the design of public space in contemporary cities? The Tactical Sound Garden [TSG] Toolkit is an open source software platform for cultivating public "sound gardens" within contemporary cities. It draws on the culture of urban community gardening to posit a participatory environment*)

where new spatial practices for social interaction within technologically mediated environments can be explored and evaluated. Addressing the impact of mobile audio devices like the iPod, the project examines gradations of privacy and publicity within contemporary public space. The Toolkit enables anyone living within dense 802.11 wireless (WiFi) "hot zones" to install a "sound garden" for public use. Using a WiFi enabled mobile device (PDA, laptop, mobile phone), participants "plant" sounds within a positional audio environment. These plantings are mapped onto the coordinates of a physical location by a 3D audio engine common to gaming environments - overlaying a publicly constructed soundscape onto a specific urban space. Wearing headphones connected to a WiFi enabled device, participants drift through virtual sound gardens as they move throughout the city.") <http://www.tacticalsoundgarden.net>

- **2006 \_\_ Taking Soundings**, Yolande Harris (a composition emerging from processes of navigation to create coastlines of sound. Taking Soundings is a series of pieces that are emerging from the investigation into landscape and navigation. Taking soundings is a traditional technique of determining the shape and depth of the sea or river-bed by means of a lead and line, and I find an obvious continuity in the gathering of information from satellites via a GPS receiver. Taking soundings of ones position relative to satellites orbiting the earth rather than relative to ones immediate environment, strikes me as a kind of blind guidance, which encourages feelings of security or insecurity. Certainly this giving up of something of ones own intentions and perceptions, being taken by the hand as it were, has parallels with an experience of art. My intentions, rather than taking away peoples ability to act, is to encourage an unfolding of experience, a drift.) <http://yolande.janvaneyck.nl/takingsoundings.htm>

- **2006 \_\_ Tavofono - Telepafono**, Crispin Jones (If the telephonic conversation is one of the frames of interaction where, according to Ervin Goffman, people play their identity, then the 'definition of the self' and the 'performance' are the founding concepts of Tavofono, the table/telephone created by Crispin Jones, with the help of Sara Manazza, for a children interactive workshop at the Telecom Italia Future Center. The tavofono is an installation whose user can record audio into one of the buttons that make up the table surface and then write on it the name of what he has recorded. He can make a telephone call without speaking directly with the person he is calling, but using the audio that others have created. Over time the table becomes an archive of calls. Telephonic conversation is one of the first social frames that kids play imitating adults. The frame of the performance is the game, where participants play the role of interlocutors following the rules of the prototypical phone call. The Tavofono amplifies the ludic attitude of this symbolic interaction changing its rules: the physical presence of the speaker is not necessary to activate the conversation; what one of the two participants says is a mash up of portions of registered speech, and the outcome of the exchange is surreal. Thus the Tavofono seems to be a 'Smile Machine' for the definition of the self. [Valentina Culatti]. " The installation consists of a table with a wooden board dividing the two ends. Participants take on the role of either the transmitter or the receiver. The transmitter is given an iconic printed image. The receiver is given a blank sheet of paper and a pen. Both transmitter and receiver don special helmets and for one minute the transmitter concentrates on the image in front of them, attempting to send it to the receiver. In turn the receiver must draw whatever he or she believes that are receiving. At the end of the minute the drawings are compared and then displayed side-by-side.") <http://www.mr-jones.org/telepafono/tavo-telepa.html>

- **2006 \_\_ Telephone Trottoire**, Mongrel (The aim of the "Telephone Trottoire" project was to engage the London based Congolese community in issues that affect our day-to-day lives. "Telephone Trottoire" is based on a new form of "contagious" telephone application developed by Mongrel and named after the Congolese practice of "pavement radio" or the passing around of news and gossip between individuals on street corners. In Central Africa people defy media censorship by sharing news and gossip using 'radio trottoire' or 'pavement radio'. Built in collaboration with the radio programmes "Nostalgie Ya Mboka" and "Londres Na Biso" ([www.nostalgieyamboka.net](http://www.nostalgieyamboka.net), [www.resonancefm.com](http://www.resonancefm.com)), "Telephone Trottoire" encourages London's Congolese community to pass around news stories and discuss them using a unique system of sharing content over the phone. The project engages the Congolese community on their own terms by using systems that draw from their own culture, beliefs and folklore – some stories are intended to provoke, some to entertain and some to educate. All allow listeners to record their own comments and pass the call on to a friend or family member by entering their phone number. Some are true and some are false – after all isn't this all about gossip – the "Telephone Trottoire"? This project was part of the NODE.London season of media arts taking place throughout March 2006 (<http://www.nodel.org>)) <http://www.mongrel.org.uk/trottoire>

- **2006 \_\_ Twitter** (Twitter is a free social networking and micro-blogging service that allows its users to send and read other users' updates (otherwise known as tweets), which are text-based posts of up to 140 characters in length. Updates are displayed on the user's profile page and delivered to other users who have signed up to receive them. Senders can restrict delivery to those in their circle of friends (delivery to everyone being the default). Users can receive updates via the Twitter website, SMS, RSS, or email, or through applications such as Tweetie, Twinkle, TwitterFox, Twittrific, Feedalizr, and Facebook. Four gateway numbers are currently available for SMS: short codes for the United States, Canada, and India, and a United Kingdom-based number for international use. Several third parties offer posting and receiving updates via email. Twitter had by one measure over 3 million accounts[1] and, by another, well over 5 million visitors in September 2008, a fivefold increase in a month. Twitter, founded by Jack Dorsey, Biz Stone, and Evan Williams, began as a research and development project inside San Francisco podcasting company Odeo

in March 2006. Twitter has been used as a "social justice tool" to connect groups of people in critical situations. On April 10 2008, James Buck, a graduate journalism student at UC Berkeley, and his translator, Mohammed Maree, were arrested in Egypt for photographing an anti-government protest. On his way to the police station Buck used his mobile phone to send the message "Arrested" to his 48 "followers" on Twitter. Those contacted UC Berkeley, the US Embassy in Cairo, and a number of press organizations on his behalf. Buck was able to send updates about his condition to his "followers" while being detained. He was released the next day from the Mahalla jail after the college hired a lawyer for him. Research reported in *New Scientist* magazine in May 2008 found that blogs, maps, photo sites and instant messaging systems like Twitter did a better job of getting information out during emergencies such as the shootings at Virginia Tech than either the traditional news media or government emergency services. The study—performed by researchers at the University of Colorado – also found that those using Twitter during the fires in California in October 2007 kept their followers (who were often friends and neighbors) informed of their whereabouts and of the location of various fires minute by minute. Additionally, organizations that support relief efforts are also using Twitter. In early 2009, news of a aeroplane having landed in the Hudson River, New York, after suffering birdstrike(s) after take-off from La Guardia Airport (all passengers and crew survived), was broken and/or spread by Twitterers onboard ferries in the area.) <http://www.twitter.com>

- **2006 \_\_ Waves** (In 2006 The "Art + Communication" festival, organised by the RIXC in Riga, celebrates its 10th anniversary and the 8th edition. For the first time the festival is conceived as a large-scale exhibition -- WAVES -- that looks at electromagnetic waves as the principle material - the medium - of media art. The WAVES exhibition brings together about 40 international works of (media) art by 70 artists from 18 different countries, in which electromagnetic waves are seen not just as carriers of information, but as the material and/or theme of the artwork. The artists of the Waves exhibition are challenging conventional knowledge about and perception of waves. Electronic media such as radio, TV and the internet are of defining influence on today's societies. Subsequently the information sphere is tightly controlled and subject to various artificially imposed political limitations. Yet artists with their electronic and digital DIY kits are exploring numerous ways of thinking outside the box, making their own waves, creating alternative networks and engaging with strange scientific phenomena -- which points at actually existing utopian potential.) <http://www.rixc.lv/waves/en/home.html>

- **2006 \_\_ WhisperBox**, Robbie Dingo (Second Life, one of the most populated MMORPG, is an important watching point to verify how the borderline between real and virtual tends to become more and more ephemeral. In the last months Second Life has seen many famous names and brands of the real world coming into its virtual spaces. The Reuters news agency has opened a virtual editorial office, IBM decided to test here its v-business (virtual business) idea. Many other events as lectures, talks (Lawrence Lessig), concerts (Susanne Vega) has packed the SL dwellers agenda. So an interactive audio installation couldn't be missed. A certain Robbie Dingo (this is the name of the homonymous British sound designer avatar) programmed his WhisperBox (a 21st Century Folk Song). The installation, hosted by the SL Phoenicia Center for Contemporary Art, captures words and pieces of the conversations that happens amongs the avatars inside its space (a circular space marked off by seven speakers) and translate these pieces in sounds. Tones and rhythms are directly influenced by the conversation progress. Furthermore WhisperBox provides also a visualization form of the spoken words, appearing near each avatar in a sort of 3D balloon. The displayed text then is an echo of the previous conversations. Clicking on different avatars with active balloons, their spoken words are played as music, and the previous conversations are immortalized, in a sort of inextricable and synaesthetic loop, made out of real and virtual, present and past, expression and representation. [Vito Campanelli]. "whisperBox is built for use within Second Life, however I really see this installation as the next logical step from my internet-audio experiments that began back in 2001 when I first started tinkering with 'SoundToys', the audio capabilities of Macromedia's Flash and with SDK's for online 3D game environments.") <http://digitaldouble.blogspot.com/2006/07/whisperbox-complete.html>

- **2006 \_\_ Wifio**, Adam Hyde and Aleksandar Erkalovic (WiFio is a radio which tunes through the internet. Wifio will manifest as a hardware device which allows users to 'tune' through the electromagnetic spectrum 'listening' to internet traffic. Wifio will make internet data transmitted via wireless systems audible, using text to speech synthesis. Wifio will behave like an ordinary transistor radio, but instead of picking up radio stations, it will detect internet data, transmitted via wireless systems. This internet traffic will be made audible, using text to speech synthesis, allowing users to 'listen to the internet'. Wifio is related to a police scanner or wireless 'sniffer' technology. It will scan the airwaves looking for information, and present the information back to the user, in sound. Wifio draws attention to the connections between wireless internet technology, and free radio and micro-radio. It shows how wireless technology using the radio band is an extension of radio, technically and conceptually. It uses the process of sonification to examine the kind of data which is being transmitted using wireless internet protocols. It will uncover the sonic character of the 2.3 GHz part of the spectrum, revealing tantalising fragments of information, as it moves through the airwaves. My work has always been about hybridizing the internet and FM radio. Linux, for example, was an online and on-air radio station, which distributed the of the Linux source code in audio. The sound transmission consisted of a computerized reading of the code used to create the operating system, Linux. Free Radio Linux made audible what is usually silent and hidden, and took Linux into the previously uncharted sonic realm. Wifio builds on the ideas represented in Free Radio Linux, this time making audible network

traffic, rather than source code. In my past work, I have also tried to illustrate the connection between wireless internet systems and traditional radio systems. *fm.thing.net*, for example, was an experiment in enabling mobile devices and laptops to receive internet streams from WiFi networks. This work was responding to the upsurge in wireless internet using the radio band, which catalysed new mobile social networks in cities all over the world. UK groups such as Consume and Free2Air were acting as hubs for research and data-sharing regarding methods to distribute wireless connectivity for cultural and not-for-profit use. The focus of these groups is on 'localising' the global medium of the internet, connecting neighbourhoods together in local area networks, using hundreds of radio antenna and wireless hubs. These networks are driven by a Brechtian ideal to 'mobilise the user and redraft him/her as a producer'. What we wanted to do with *fm.thing.net* and related work drew out connections between these kinds of new social networks emerging around wireless internet activities, and social networks which have historically developed around free radio and micro-radio. And key to all of this was to untether the computer. *Wifio* builds on this research, attempting to create a simple object which powerfully illuminates the connection between wireless internet and radio. *Wifio* will illustrate that accessing wireless internet data is as easy as tuning a radio dial. Radio and wireless internet are, in fact, the same thing. *Wifio* also asks questions about the open nature of the 802.11. Wireless internet transforms the user into a broadcaster. If everyone is a broadcaster, then what are 802.11 sniffers : tuners or spyware?) <http://radia.fm:9002/spectrum/soft/>

- **2006 \_\_ Wimicam**, Locus Sonus (Development of mobile, autonomous apparatus for the capture and interpretation of live sound, coupled with streaming interfaces for duplex or multiplex performance. Parabolic mike with audio HF and a Ipcam, controllers to sample, to create layers and to position of the sound in a sound spatialization system. Parallel to the setting up and development of the Locus stream project Locus Sonus lab started a simultaneous and complementary line of experimentation related to the capture and amplification of sound in relatively local space, an audio survey so to speak of a limited perimeter around the amplification point, the auditors position. The intention here was to experiment with making the sound flux mobile, as a counterpoint to the "Locustream" project where the capture position is fixed. Inverting the principal behind the open microphone proposal by linking the point of capture to the deambulation of a person (performer) the sound flux becomes a subjective selection and therefore a personal representation of that space offered by the person manipulating the microphone. The hypothesis being is that as we (humans) render our own personal sound space mobile, via the use of cellular phones, laptop computers, ipods etc. Could this very principal become the basis for an artistic practice ?) <http://locusonus.org/>

- **2006 \_\_ World Opera Project**, Academy of Music, Tromsø, Norway (The World Opera: When the Opera stage becomes worldwide: The creation of a distributed Opera stage. In order to develop a worldwide opera performance space, The World Opera will work on simulcasting productions from other opera houses around the world. The World Opera has joined as a partner in the Metropolitan High-definition broadcast project. We will bring World Class live performances from the Metropolitan Opera to a theatre in Tromsø, Norway, Paris of the North: namely the World Theatre. The broadcast will be sent per satellite from New York via England to Norway. There will be six live shows this winter/spring, beginning as soon as December 30, 2006, the day before New Years eve, with an English-language version of Mozart's «The Magic Flute». Premiere of creation of contemporary Opera plans to be in 2010/2011 as the first distributed opera. The World Opera plans to create a worldwide opera stage, a distributed opera stage, based (in the first run) on 7 pillars/locations in Europe and North America (Tromsø, Oslo, Copenhagen, Genoa, New York, San Francisco, and Montreal), to be ready for full performances in fall 2011. The artists in the opera performance, singers and musicians, are all placed in different locations on a local stage. Each of these local stages is partly a live stage, partly a virtual stage connected to all the other local stages, creating all together a worldwide distributed stage making one opera performance in common. This format for opera performance poses several challenges. Singers as well as musicians act together on a virtual stage that comprises virtual elements as well as all the real, local stages of each of the participating singers, and the virtual stage is concurrently projected into all of the real stages. A clear challenge to the artists is to react "naturally" to their remote peers, to cross the mediated line, in order to create a worldwide shared pulse. This leads to the huge challenge to create a technical infrastructure enabling this world opera stage working as one coherent stage. This requires dealing with delay, latency, reliability, synchronization etc. both in the very creation of the opera by the composer, librettist, set designer, director etc. and in the final performance. Last, but not least it will be a challenge to make it a convincing and promising format for opera, and to make it a worthwhile artistic experience for audiences around the world sharing this live opera stage in this global Opera house, connecting and supplementing existing regional and national opera houses around the world. In cooperation with Center for Computer Research in Music and Acoustics, CCRMA at Stanford University, preliminary tests have been made in March and June in 2007, with a co-performance in Tromsø and Stanford with two musicians in Tromsø and one singer in Stanford with a delay of only 123 mili seconds due to uncompressed transmission.) <http://theworldopera.org>

- **2006 \_\_ Xubuntu** (Xubuntu is an official derivative of the Ubuntu Linux distribution, using the Xfce desktop environment. Xubuntu is intended for users with less powerful computers or those who seek a highly efficient desktop environment on faster systems. The first official Xubuntu release appeared on June 1, 2006, alongside the Ubuntu 6.06 line (including Kubuntu and Edubuntu) code named Dapper Drake. The current version is 8.04 (Hardy Heron). A slightly customized version of Xubuntu is delivered with the Linutop. The main modifications are the inclusion of a kernel and an X.org driver that only supports the Linutop's

Geode LX CPU and its built-in graphic chip. eeeXubuntu is a variant of Xubuntu for the storage-constrained Asus Eee PC. A minimal Xubuntu variant called "UserOS Ultra" was produced for Australia's PC User magazine. Ubuntu uses the GNOME Desktop Environment as well as GNOME applications. Xubuntu uses the Xfce desktop environment which uses fewer system resources and therefore works better with older computers. Once installed, Xubuntu can run with 192 MB RAM, but it is strongly recommended to have at least 256 MB RAM. Related projects : Kubuntu, <http://www.kubuntu.org> - Edubuntu, <http://www.edubuntu.org> - eeeXubuntu <http://wiki.eeuser.com/ubuntu:eeexubuntu:home> - UserOS Ultra <http://ubuntuforums.org/showthread.php?t=708051> - Fluxbuntu <http://fluxbuntu.org> - Xfce <http://xfce.org> - <http://www.xubuntu.org>

- **2006 \_\_ YesNation**, Yes.net (One of the most fascinating challenges pushed by the gathering of huge amount of digital data is to find effective solutions of visualization. From green letters on a black background in the first terminals we've come a long way, so the current mapping software features make that early technologies almost belonging to a distant geological age. Amongst the most popular experiments, those who tries to establish a relationship between the source and its geographical position. It seems that we are lost in the universe of digital (or digitized) information and so we feel the need of recontextualizing ourselves in the real world. This need certainly underlies Yesnation, a Flash application developed by Yes.net. On a U.S. map (with states borders) in the background, the aired tune's titles by the vast radio stations networks pop up in real time. The titles appear, related to the particular place where the radio station is placed (on the map is a red dot), and then suddenly disappear without a trace. It could seem banal to underline that in California there are lots of titles in Spanish, and in Montana the multi-culturalism is still a utopia. But in the end the most interesting element of Yesnation is to give us a snapshot of U.S. radio universe. An ephemeral snapshot, indeed, because it is intended to disappear at once, making space for a new one. But this work is qualified by a density of meanings that only the transitory nature of instants is able to transmit. [Vito Campanelli]) <http://yes.com/yes-nation/>

## 2007

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- **2007 \_\_ 21 cities at once performed**: a performative, global network where participants create public intersections to occur simultaneously around the world, Conflux Festival (Invited multi-disciplinary participants from 21 cities around the world will contribute individual public projects that comprise one connected, simultaneous event. As a curatorial collective, we are interested in wireless network systems existing not only through the use of computers and the internet, but through a human awareness of simultaneous participation and collective consciousness. The invited participants experiment with anthropology, architecture, cartography, design, graffiti, kinetics, musical performance, sound and text. There will be walking tours through Seoul, silent meditation in Brooklyn, music in Helsinki, a parade in Chicago... We include these intersections not only as part of our investigation into psychogeography as a global phenomenon, but also to contribute to a networking system that exists within and without technology — public activity in which the experience is more heightened by being aware of its relationship to other simultaneous public activities. Linking all of these events is a prescribed date and starting time (i.e., all projects are committed to beginning at 18:00 EST and the equivalent moment in other time zones). Serving as an announcement tool, archive, and network, [www.21citiesatonceperformed.info](http://www.21citiesatonceperformed.info) is a blog that will complete the connections with maps, sounds and other documentation of performances.) <http://21citiesatonceperformed.blogspot.com/>

- **2007 \_\_ 60x365 - new music every day** - July 1, 2007 / June 30, 2008, David Morneau (Morneau, a doctoral candidate in composition at The Ohio State University, has been writing (and posting online) one 60-second piece of music daily during the past 12 months. Every day for the past year, Morneau has composed and posted a new sixty-second composition. That's just over six hours of new music in sixty-second installments. For this project, Morneau explored a wide variety of musical styles and techniques, including musique concrète, sine wave synthesis, digital sampling, 8-bit constructions, process music, acousmatic composition, and post-techno beat manipulations. He found the requirement to make a new, complete piece every day an exhilarating challenge, and reveled in the constant variety of ideas the project embraced. This project began as a challenge to compose more, and ended up as an audio diary of the past year. "For one year I composed a new piece every day. What began as an idea about composing for the internet became a lifestyle. Everything became a possible idea for a new piece. Friends and family were always offering suggestions and opinions. I was creating everyday and people were listening everyday. The entire six hours and five minutes of music created during this year remain online in this archive for you to explore. Don't be intimidated by the sheer number of pieces, jump in and see where you end up. There's no one way to begin listening. For your convenience I have provided three starting points—a chronological listing of dates (pick a birthday or anniversary and see what I was up to on that day), an alphabetical listing of titles (find something with an intriguing name), and an alphabetical listing of categories (see all the pieces labeled ambient or breakbeat)".) <http://60x365.com>

- 2007 \_\_ **A20 Recall**, Michelle Terran (*In the month of August, 2007 I spent three weeks walking through streets in the city where the perimeter fence formerly stood. While retracing the border lines, interviews were conducted, in parks, on sidewalks and benches, in city workplaces, private businesses and homes, from which memories, perspectives and opinions were shared. Images, text and tracings from this journey form a collaborative online map that are overlays of individual perceptions, experiences and consequences. This map, created through walking, is but one view, drawn from a much larger cultural memory of the FTAA Summit of the Americas and Quebec City (A20) protests, an effort to understand the different ways these global events impose on, transform and affect their local 'host' environments.*) <http://www.chambreblanche.qc.ca/documents/teran/>

- 2007 \_\_ **Always Something Somewhere Else**, Duncan Speakman (*The work is a GPS based soundwalk that builds itself as you experience it. To create it I worked with Hewlett Packard in Bristol and their new mscape software. In the work the listener is asked to locate various substances that form the contemporary urban environment (glass, stone, concrete etc.). As they mark the location of each one they begin to hear interwoven stories connecting them to remote locations around the world, soundtracked with a generative music score. The narratives are progressed and concluded as the listener returns to the locations they chose. The piece is reflective and sometimes melancholy, it touches on issues of climate change and global awareness, but ultimately encourages the listener to treasure the moments around them.*) <http://duncanspeakman.net/?p=180>

- 2007 \_\_ **Art's Birthday, The 100th Anniversary of Radio Broadcast** (*On December 24, 1906, Canadian engineer Reginald Aubrey Fessenden broadcast from Brant Rock, Massachusetts, a radio program featuring music (O Holy Night) and language (biblical quotations). This broadcast changed the notion of radio as a system of telegraphy (morse-code style signals) to a medium that could be used to deliver the voice of authority a mass audience. By the early 1930's, the contemporary notion of radio as a broadcast system for entertainment and propaganda was firmly established. For Art's Birthday 2007, artists around the world altered and deconstructed utopian ideas of network, radio, and the voice.*) <http://www.artsbirthday.net/2007/index.php>

- 2007 \_\_ **AOM – Avatar Orchestra Metaverse**, Andreas Mueller, Biagio Franci, Sachiko Hayashi, Leif Inge, Nathalie Fougeras, Björn Eriksson, Chris Wittkowsky, Jeremy Owen Turner, Pauline Oliveros, and others (*Avatar Orchestra Metaverse (AOM) performances feature virtual instruments designed specifically for each composition created for the Orchestra within the Second Life platform and are played by artists from all around the world making live music together. AOM began to work and to play in March, 2007. The Avatar Metaverse Orchestra is every bit as much a tool for performing as it is a vehicle for continued experimentation. The Orchestra works with its growing repertoire of compositions made especially for it and for the Second Life virtual environment. What is unique with the Avatar Orchestra Metaverse is a size that makes it possible for them to work with sound within virtual environments in a vastly more fluent and varied way than can smaller constellations. The Orchestra approach Second Life as an instrument itself. To play live within Second Life means to play in a spatial sound environment. As a listener to inworld performance you will hear the music according to where you place yourself; you will hear the performer close to you better than you do the performers further away. This audience experience is essential to the performances of Avatar Orchestra Metaverse. Many of the AOM performances, such as the one within 'Crosswire', are mixed reality performances in the sense that AOM presents to an on-site 'real life' and a virtual audience in Second Life simultaneously. OM's concert includes the beautiful and powerful THE HEART OF TONES (mixed reality version) by iconic composer Pauline Oliveros (aka Free Noyes), and the mesmerizing composition FRAGULA by sound artist Björn Eriksson (aka Miulew Takahe). Avatar Orchestra Metaverse (AOM) is a formation in the virtual online environment Second Life (SL). AOM explores its interactive possibilities with avatars. To play live within Second Life means to play in a spatial sound environment. As a listener to inworld performance you will hear the music according to where you place yourself, the performer close to you you hear better than you do the performer further away. This audience experience is essential to the performances of Avatar Orchestra Metaverse. Some of the AOM performances are mixed reality performance in the sense that AOM presents to a RL audience with screens or video projectors on the wall in parallel with us also having a virtual audience attending performance of us at the different SL rooms. Avatar Orchestra Metaverse is a group of composers, performers, and media artists living in Europe, East Asia and North America who explore together the interactive possibilities of the Second Life online virtual reality platform to create works with open, interactive and possibly "infinite" elements. The Orchestra works with ideas that challenge conventional practices of creating and performing music, and finds new ways to conceive of and erase notions of identity, place, social, cultural and sexual identity, and the roles of composer, performer and listener.*) <http://www.avatarorchestra.org/> <http://avatarorchestra.blogspot.com/>

- 2007 \_\_ **Arougate**, Apo33, Julien Ottavi (the noiser) (*Arougate is an installation that involves the environment of the space he is invited to hunt in. Arougate is a digital beast who hunts information, tracks it, feeds on it, and generally reacts to it. Arougate behaves like a wolf when he eats his 'preys'; no one can disturb him without consequence; the combination of a machinic system with the poetic-modelisation of animal reactions creates an uncontrollable noise activity in a specific place. Arougate is composed of audio, video, data sensor extensions which enable him to hunt in any situation; the bestial mechanism operates fast interactions on the hunted information which is then divided into two layers: the digestive mechanism of the beast's digital belly and his swift reaction to hunting in a dangerous steppe. The outcome of these interactions is redistributed in space with the help of video & audio signals,*

spatialized by different devices (speakers, TV radios, wall projection...etc). When people invade the digital den, they enter simultaneously the beast's belly and mind, or rather, a strong chaotic mixture of wires (electrical, networked, metal...etc), speakers, machines (mibox), radios and others unexpected objects, where vibrations (light and air) come to crash!) <http://www.apo33.org/arougate> <http://www.noiser.org>

- 2007 \_\_ **Audiodetour: Disco-nnect**, Maebh Cheasty (a project to be performed with the participation of thirty audience participants. An audiodetour is a walking mp3 tour. Having spoken on the telephone or via email to arrange the mp3 files or players, we all meet at a meeting point and press play at the same time. Audio instructions guide you through the city for about forty minutes. and ask you to interact with the space and your partners in a specific choreographed manner. Simple tasks, like a Mexican wave or a discreet hokey pokey prepare you physically and narratives prepare you mentally for the party that awaits you at your destination. You might be moving around rowdy rowdy in a group like a stag or hen party or strolling along with a partner.) <http://www.confluxfestival.org/conflux2007/audiodetour-disco-nnect/> <http://www.myspace.com/itsanaudiodetour>

- 2007 \_\_ **aura:the stuff that forms around you**, Steve Symons, premiered at the Enter Festival, Cambridge, April 2007. (A located sound project that explores notions of consumption and ownership within a space by allowing users to leave an audio trail as they move within the Real World. "Imagine a playing field after a fresh falling of snow. The snow lies evenly and untrodden. This represents an empty aura sound world and, if you wore an aura backpack, would sound like soft white noise. Someone walks across the field leaving footprints, the snow is sullied, eroded, the walker has left a patina in the world. In the aura world this patina is represented by filtering applied to the soft white noise. So a user walking with an aura backpack will hear soft white noise (virgin snow) then lower tones will emerge as they cross the path left previously by another aura user." There will be 4 backpacks available for people to rove Cambridge with. There will also be 3 recharge points where users can deposit their pack again, the recharge points will show an emerging cityscape based on the packs movements and each pack will be color coded. The images on the right show how the display will work.) <http://stevesymons.net>

- 2007 \_\_ **AutoTune**, François Parra (Autotune.tk is a program that composes its own pieces of music by pulling from a database containing pop(ular) songs performed and recorded by "you and I." To record these pieces, Francois Parra uses a recording studio booth (a van) in a passageway allowing each visitor to stop in, if he/she wishes, and record in everyday life situations, inducing an intimate connection with song. The program itself, after the recording and analysis of the file, will add each new song to the other voices, and blend it in an ongoing composition process. The result could be heard on [www.autotune.tk](http://www.autotune.tk) (where one may also connect from home to record a song.) <http://autotune.tk/> <http://autotune.eu>

- 2007 \_\_ **Bio-Tracking**, Anna Dumitriu (Bio-tracking is a mobile phone based exhibition using GPS (Global Positioning System) and a leading edge new smart phone software (suitable for Nokia Series 60) called Socialight downloadable via [www.socialight.com](http://www.socialight.com) which enabled the placement of virtual sticky notes around various locations in Brighton. The exhibition was part of Brighton Photo Biennial Fringe in 2007. Visitors could download the software and wander around the sites receiving text messages, sound files and images straight to their phones, in fact due to the nature of Socialight the exhibition is still live and can be viewed now. Also join the Bio-tracking channel on the Socialight website. Anna Dumitriu sampled and cultured various locations in the city of Brighton for normal flora bacteria and moulds, revealing this incredible, unseen and sublime world to us through a series of beautifully enhanced digital micrographs. Sound artists including Luciana Haill, Ian Hellivell and Juliet Kac created a series of sound works to accompany the images. Microbiologist John Paul wrote scientific text descriptions of the microbes.) <http://www.bio-tracking.annadumitriu.co.uk/>

- 2007 \_\_ **Black Room**, Niki Dhur (There are 2 rooms, completely dark: room A is very small; the visitor's movements in room A are measured by sensors, ultrasonic sensors for instance. The distance between walls and visitor is translated into acoustic signals. Room B is much bigger. The movements of the visitor in room B are evaluated as they would happen into the borders of room A. It means that the room B control system is giving acoustic feedback to the visitor as he/her would be moving in an other room. The acoustic translation is the chosen strategy in order to transfer space from a place to an other.) [http://www2.khm.de/mk/seminar/export/re-active/TRANS\\_GEN/index.html](http://www2.khm.de/mk/seminar/export/re-active/TRANS_GEN/index.html)

- 2007 \_\_ **BliK**, Roberto Osorio-Goenaga (BliK an interactive installation and networked musical composition method based on collaborative "Web 2.0" principles. The composer / participant types directives / keywords - referencing one of the LEMUR ModBots - into a blog post to create a musical score. The LEMUR ModBots are a set of single-function percussive bots that work as a percussion ensemble. They reside at LEMURplex in Brooklyn, New York. Some are scrapers, some are shakers, some strike different surfaces. They each have their own name, for instance, "bucket" and "shake." By typing "bucket shake shake shake," into a blog post, the user causes both bots to improvise algorithmically, with the shake being 3 times more present in the section than the bucket. The user controls the tempo by typing keywords such as 'fast', 'slow', and 'medium') <http://transition.turbulence.org/Works/BliK/>

- **2007 \_\_ Brain Avatar**, Martin Schöne, Concert & Resonance Experiment, Part 1, Mario Diaz de Leon, Zeljko McMullen, Doron Sadjja (*Musicians in Hang Zhou, Bangkok, Durban, Brussels, New York, and Braunschweig will each begin a solo concert, transmitting the music real-time to each city. During the concerts, brain activities of each musician will be recorded by the Brain Avatar which, created by Martin Schoene, is the first analogue visualization of real-time brain activity. The brainwaves, in their direct form as sound are projected as resonance in water and light. Emerging shapes and processes allow for visualization of mental states and movement of thought. In the second part of this world concert, the musicians will play together in realtime. Their brainwaves are connected - a "Global Avatar" is composed from six solo Avatars.*) [http://www.sonambiente.net/en/05\\_laboratorium/5M3\\_sch.html](http://www.sonambiente.net/en/05_laboratorium/5M3_sch.html)
  
- **2007 \_\_ Broadway**, Jacob Kirkegaard (*five-channel sound installation comprising the columns that run through the gallery space and the entire building. Although elements of the building's architecture, the columns also transmit subtle vibrations generated by movement on the street and subway below. The internal sound of each column was recorded with accelerometers and is played back into the columns by means of sixty small exciters. Thus the five columns are transformed into loudspeakers, each of which plays out the sounds of Broadway in its individual resonant frequency.*) <http://fonik.dk/works/broadway.html>
  
- **2007 \_\_ Call <-> Response**, tEnt (TANAKA Hiroya + CUHARA Macoto), Silent Dialogue NTT ICC Tokyo (*Software modeling the syrinx, a bony organ birds use to produce vocalizations, continuously generates various simulated bird calls. When a response is heard from a natural bird, the software initiates a self-teaching process, subtly changing and refining its calls. As this process is repeated and birds and computer influence each other, this installation attempts to create the opportunity for a new kind of communications that goes beyond the human word.*) <http://www.ntticc.or.jp/Archive/2007/SilentDialogue/Work/callresponse.html>
  
- **2007 \_\_ Cellphonia: WET**, a karaoke cell phone interactive sound/video installation by Steve Bull, Scot Gresham-Lancaster, Kalin Mintchev, and Terese Svoboda (*Participants repeat lyrics—or add to the Drip Chorus—by singing into their cellphones. The result is mixed into an instant 24/7 looping opera performance. Visitors will experience a 20-minute 5-song looping vocals of naiads lamenting the loss of the world's fresh water with projected video accompaniment.*) <http://cellphone.el.net/NIME/>
  
- **2007 \_\_ Cell Tagging**, Brooke A. Knight, turbulence.org (*In both the gallery and online venues, viewers/users will utilize their cell phones as the only interface to interact with Cell Tagging. The cell phone, seemingly ubiquitous in our culture, has become increasingly powerful -- first phone, then PDA, then browser, now camera, etc. In this case, the cell becomes a remote control that will allow the user to dial, speak, and draw. The mobile phone occupies a space that is both connecting and distancing. The normal interfaces of the gallery and the computer are removed, replaced by another technology that is familiar, but not as a drawing tool or art artifact. By calling a number, viewers will be asked to dial in a zip code that means something to them. The aerial map of that place will pop up on the screen. They will then be asked to speak into the phone and say why that place is meaningful. Then they will use the keypad as a kind of pencil, drawing in a continuous line that moves depending on the number key pressed. For example, the number 2 will draw upwards. They can then save their piece, and others will be able to view it as well. I am interested in making the viewers aware of the control that cell phones give them by requiring their use to enact the piece. I feel that cell phones redraw space and our relationship to it. As opposed to the land-line phone, which exists in one place, the cell exists every place we are. Cells are disruptive to those around, as the cell-speaker ignores where s/he is, and is transported into his/her conversation. The cell-speaker makes every place his/her own, graffitiing the sound-space of an area. I am attempting to literalize that act of marking.*) <http://www.brookeknight.com/turbulence/>
  
- **2007 \_\_ COMEDIA**, IRCAM Paris, SARC Belfast, UNIGE Università degli Studi di Genova (IT), Center for Art and New Technologies (CZ), Institute of Electronic Music and Acoustics (AT), Hochschule für Musik und Theater Hamburg (GE), Hungarian Computer Music Foundation (HU) (*CO-ME-DI-A's three primary goals are : - Doing and learning networking through public events, workshops and residencies. - Creation of a common platform for efficient communication and expression. - Organization of residencies in order to develop the technical and artistic content. The CO-ME-DI-A project is supported by the Education, Audiovisual & Culture Executive Agency (EACEA) of the European Commission for the period 2007 – 2010. The CO-ME-DI-A project began by defining together some scenarios ("use cases") that the partners would like to explore collectively. This is a first draft of the scenarios which will evolve, be refined etc. as they are implemented. Scenario 01 : "Comedia Bus". Scenario 02 : "Technology Lecture/Training Network Event (NE)". Scenario 03 : "Robotic Ensemble Remote concert and/or installation". Scenario 04 : "Multi-way performance with remote avatars". Scenario 05 : "Provokalia Choirs" Scenario. Scenario 06 : "Remote performance". Scenario 07 : "Distributed ensemble & real time composition". Scenario 08 : "Two Way Interactive Musical Performance". Scenario 09 : "Motion-Enabled Live Electronics (MELE)". Scenario 10 : "The Network as Acoustic Medium". Scenario 11 : "Networked mediated social interaction among different remote audiences" (audience-only driven remote performance).*)

Scenario 12 : “Multiple-way performance in a virtual environment”. Scenario 13 : “Playing together one CM-application”. Scenario 14 : “Active Listening Over the Network”.) <http://www.comedia.eu.org/>

- **2007 \_\_ Concert with co-located telepresence** (Ensemble between Northwestern University and RPI (Jonas Braasch, soprano saxophone, Luke Noonan, Guitar, Bobby Gibbs, clarinet, Sarah Weaver, Trombone, Anne Guthrie, French horn): Program: Kontraste (soprano saxophone solo), Limited Connectivity for small co-located ensemble and live electronics, free improvisation. Presented at the Second Annual Conference of the International Society for Improvised Music (ISIM), December 14-16, 2007.) <http://symphony.arch.rpi.edu/~braasj/JonasBraaschMusic.html>

- **2007 \_\_ Concerts in LIMb0 #3 - janoide1, oe3+yaco+computo** (A dual sound art concert in Second Life and the real world. A live concert in buenos aires’ museum of modern art and vibration institute’s secondlife headquarters presenting sound textures by santiágo peresón [yaco] and works by oe3, a prototype non-human composer, performed in real time. visual installations and video performance presented by los angeles audio/visual artist computo. oe3 is a non-human composer prototype developed by Santiago Peresón as part of oveja eléctrica (electric sheep), an ongoing project with the goal of creating an artificial composer: a system that, through processes spawned inside one or more computers, will be able to write music in a non-random, independent way, and with the least possible influence by the programmer/meta-composer’s tastes or aesthetic criteria. Oveja Eléctrica received the first prize in the Multidisciplinary Experimental Project category (2003 LIMb0 Prize) from the Buenos Aires Museum of Modern Art.) <http://yaco.net/oe/intro-en.php> <http://slurl.com/secondlife/Kitsune/32/112/681/>

- **2007 \_\_ Concert Sympathique Mondial**, Locus Sonus, GMEM, Sabrina Issa, Björn Eriksson (Le Concert Sympathique Mondial se déroule dans un moment et espace performatifs, ce dernier étant composé de huit diffusions sonores spatialisées. Des sons en flux continus proviennent de huit microphones ouverts dans différents lieux par les streameurs (complices ayant répondu à l’appel du laboratoire Locus Sonus pour maintenir le dispositif de microphones autour du globe). Quatre flux permettent aux streameurs de se rencontrer à distance, de s’entendre mutuellement, de communiquer, d’apporter des témoignages sur leur expérience de streameurs, et de performer en direct. Simultanément quatre autres sources (captations de paysages sonores / Locustream) sont spatialisées selon une logique comportementale à partir de règles simples: attraction/répulsion et/ou orientation/réorientation. En temps réel tous les sons interagissent au sein d’un même espace. Une interface graphique vidéo-projetée dans l’espace de diffusion (également visible simultanément sur Internet) donne une vision globale de la position de chaque protagoniste et du déplacement du son dans l’espace. Il s’agit alors de laisser libre cours à la pérégrination des voix réagencées en permanence dans l’espace de diffusion. Les rencontres virtuelles entre streams et streameurs se spatialisent et s’inventent au fil du temps, et de la même manière l’auditeur est amené à inventer sa propre scénographie d’écoute dans l’espace physique en fonction des déplacements des sons) (Technically, participants will be provided with a control interface allowing them to displace their audio stream according to XY coordinates. A visual monitor of the different participants “movements” will be made available via the web and each performer will have a audio monitor stream which will transmit sound according to his/her position. An algorithmic rule system of attraction and repulsion will also influence the spatialization of sound during part of the performance (developed with the help of GMEM – Groupe de Musique Expérimentale de Marseille, Charles Bascou.) <http://locusonus.org/>

- **2007 \_\_ Convergence**, Deep Listening, Guelph Jazz Festival Colloquium, Pauline Oliveros, Scott Graham-Lancaster (The Deep Listening Convergence took place with a five-month virtual residency for forty five musicians from January 15 to June 10, 2007. Using SKYPE, a VoIP application, the musicians were invited to form new ensembles in a kind of musical dating game to prepare for a private concert and three public concerts. Musicians from Switzerland, Canada and across the United States participated in SKYPE jams, discussions, rehearsals and creations of improvisational pieces.) <http://www.deeplisting.org/site/convergence>

- **2007 \_\_ Core Sample**, Teri Rueb (Core Sample is a GPS-based interactive sound walk that evokes the material and cultural histories contained in and suggested by the landscape of a very unique island environment. Spectacle Island was recently transformed into a publicly accessible landfill park after serving the city of Boston as a dump for nearly a century. Visitors take the 15 minute journey to Spectacle Island via the Harbor Islands Express Ferry from Long Wharf and borrow headsets free of charge at the Spectacle Island Visitor Center. Sounds play back automatically in response to each visitor’s unique itinerary. Thematic sound content shifts with the changing elevation contours of the path system suggesting the vertical layers of a metaphoric core sample. Abstract sounds and spoken word blur surface and core, natural and artificial, industrial and organic, past, present and future.) [http://www.terirueb.net/core\\_sample/](http://www.terirueb.net/core_sample/)

- **2007 \_\_ Dancing in Second Life**, - Mixed Reality Performance in Second Life & Real Life - part of The International Society for Improvised Music (ISIM) Second Annual Conference: Building Bridges (Second Life avatars will dance with improvised music from Real Life at ISIM at Northwestern University School of Music. Real Life performers are Pauline Oliveros - electronics, harmonica & small instruments with spoken word artist Ione & dancer Heloise Gold. Second Life performance will

feature animations and choreography by Josephine Dorado, John D. Mitchell, Edo Paulus, Christine Benham, Lauren Watson and Sean Nevin - performing from Arizona, New York, and Amsterdam. Images and sounds of the performers from Real Life will be projected into Second Life and vice versa, creating a mashup of real and virtual improv for both audiences.) <http://funksoup.com/isim07.htm>

- 2007 \_\_ **A day without the mobile-phone**, Eve Arpo & Riin Kranna-Rõõs, Plektrum Festival (“A day without the mobile-phone” is an installation in public space that is made up of one hundred cell-phones collected from the people in the city. The phones are hanged on a tree next to St. John’s church (Jaani kirik) where they create a light- and sound-installation. To participate in creating the installation you may give your cell-phone to be hanged on the tree and you may call your friends who have done the same. It is also possible to call public mobile-phone numbers that have been opened specially for the installation.) [http://www.plektrum.ee/festival/?page\\_id=61](http://www.plektrum.ee/festival/?page_id=61)

- 2007 \_\_ **Deezer** (Deezer is a free French music streaming service. Deezer has negotiated rights to make 165,000 songs available for streaming legally via an agreement with Sony, as well as some of Universal’s catalogue, however all the other tracks they provide appear to be used without the permission of the copyright holder. There are also issues of legality relating to the uploading and sharing of music on Deezer. Deezer was the first music site in France to sign an agreement with a publisher rights’ organisation to reimburse artists through advertising revenue. There are 3.7 million songs available on Deezer. In May 2008, Universal Records agreed to release a large portion of its catalog through the site. As of September 2008 the media player was co-branded with Microsoft Xbox 360 livery.) <http://www.deezer.com>

- 2007 \_\_ **Disparate Bodies 1.0** – network performance, Stanford (CCRMA) / New York (NYU) / Belfast (SARC), Pedro Rebelo (Mark Applebaum, Tom Davis, Alain Renaud, Franziska Schroeder) (*Disparate Bodies* is a network performance that explores multi-modal remote presence. The performance happens simultaneously in three sites (Belfast, NY and Stanford, California). The stage performance in NY features a laptop musicians and two Remote.bots. These are robotic entities that host the physical and musical gestures which are performed by the remote participants in the various locations. They consist of reflective elements which move according to the analysis of each audio stream and project glimpses of 3D rendered imagery around the performance space. The performance is based on the notion of performance entities as reflected by telepresence, robotics and sound systems. As such, each performer (local and remote) has a specific sound diffusion set up and a chosen 3D avatar which consists of abstract representations of movement and gesture. The performance is improvised with reference to strategies that intend to explore the relationship between sound and movement. The performance uses high quality audio streaming software developed by CCRMA and gesture, robotic and 3D rendering technologies developed at SARC. Within the context of EU Culture 2007 project COMEDIA, Belfast, NY and Stanford as part of NIME 2007, this work relies on the development of performative and improvisational strategies which take advantage of network performance scenarios through graphic notation and temporal structuring. The work itself is a clash of disparate approaches which form the basis of an investigation into relationships with musical potential (between performers, performers and audiences, composition and improvisation etc...). Help shape the performance by distributing scores over space and time using the online db\_editor. The db\_editor invites to public to shape the performance of Disparate Bodies by manipulating various graphic score sources. The changing position of each symbol is reflected in the order and duration of each score element during the performance. By dragging the symbols over the map you are editing two aspects of how the final performance score will be put together and displayed to audiences and performers on the three sites. The time of edit (shown on the right column) determines the relative duration and order (most recent first) of score elements. Disparate Bodies will be also be streamed into Second Life. This unique event showcases strategies for performance over the network including instrumental, audio-visual and laptop work. The event features music by John Cage, a network piece by Pedro Rebelo and structured improvisations with a distributed instrumental sextet and a laptop trio.) <http://www.sarc.qub.ac.uk/pages/db>

- 2007 \_\_ **Disparate Bodies 2.0: A three-way Network Performance**, SARC Belfast / Hochschule für Musik und Theatre Hamburg / Institut für Elektronische Musik und Akustik (KUG Graz), Pedro Rebelo (Alain Renaud, Franziska Schroeder, Elisabeth Harnik, Wolfgang Tischhart, Clemens Frühstück, Alexander Schubert, Andrej Koroliov, Nora-Louise Müller, Turo Grolimund) (Within the context of EU Culture 2007 project COMEDIA, Disparate Bodies / Belfast (Sonic Arts Research Centre) Hamburg (Hochschule für Musik und Theatre) Graz (Insitut für Elektronische Musik und Akustik) / SARC presents a programme of new music performed simultaneously in Belfast, Hamburg and Graz. This unique event showcases strategies for performance over the network including instrumental, audio-visual and laptop work. The event features music by John Cage, a network piece by Pedro Rebelo and structured improvisations with a distributed instrumental sextet and a laptop trio) <http://www.sarc.qub.ac.uk/pages/db>

- 2007 \_\_ **Divertimento Ritmico for Two Synthesizers** - Two Locations, and One Acoustic Network of Four Channels by Net vs. Net (Juan-Pablo Cáceres @ Center for Computer Research in Music and Acoustics (CCRMA) & Alain Renaud @ Sonic Arts Research Centre (SARC) (This piece is a structured improvisation that explores multi-channel feedback delays on the

network. The delay path between Stanford (California, USA) and SARC (Belfast, Ireland) is used as a variable feedback comb filter for each of the four channels.) <http://www.sarc.qub.ac.uk/>

- 2007 \_\_ **Dump**, Alberto Gaitán (*Dump forages amongst a growing Internet field of sound files contributed by the artist and others. His computer program will chew, ruminate, and digest these sonic raw materials in real-time to bring forth the audio atmosphere inside a repurposed portable latrine.*) <http://selforganizingsystem.org/dump.html>

- 2007 \_\_ **Dynamic Spaces - Minding Mining Morphing** (*This project explores the relationships within an acoustic and electronic performing ensemble for improvised music in virtual environments with deliberately varying characteristics. Variations in acoustics provide a new dynamic parameter of music in addition to harmony, melody, and rhythm. The performance is enhanced by dynamic visual elements with interwoven artistic images and views of the performers in a shared virtual space. For this performance Bart Bridger Woodstrup adapted the software Woodstrup designed for the ICAD conference. Woodstrup is masking the performers with abstract visuals (videos). As the performers move, the part of their body that moves becomes visible "through" the abstract imagery. A "distance performance" or "telepresence" is "the act or process of performing in two or more places simultaneously - usually through an apparatus that is some form of human/machine system." Tintinnabulate were joined by Curtis Bahn and Tomie Hahn. We performed in NY and were broadcast to San Diego for the prestigious Siggraph2007 conference. Tintinnabulate Ensemble (Pauline Oliveros, Musical Director; Jonas Braasch, Technical Director) and SoundWIRE Ensemble (Chris Chafe, Director): Dynamic Spaces (musical concept Pauline Oliveros) with Curtis Bahn (Dalruba), Jonas Braasch (Soprano Saxophone, Technical design, realization and coordination), Chris Chafe (Celetto), Alex Chechile (Electric Guitar), Bobby Gibbs (Clarinet), Tomie Hahn (Shakuhachi), Pauline Oliveros (Accordion), Elizabeth Panzer (Harp), Dan Valente (Violin), Bart Woodstrup (Video Design and Live Processing), SIGGRAPH 2007 conference, CALIT Auditorium, University of California, San Diego with two remote locations at RPI and CCRMA Stanford (Aug. 5) and Banff Centre (Aug. 6), Aug 5. and 6, 2007.) <http://www.vodstrup.com/2007.htm>*

- 2007 \_\_ **Ear on Arm - ENGINEERING INTERNET ORGAN**, Stelarc (*Having constructed a Third Hand (actuated by EMG signals) and a Virtual Arm (driven by sensor gloves), there was a desire to engineer an additional ear (that would be speak to the person who came close to it). The project over the last 12 years has unfolded in several ways. The EXTRA EAR was first imaged as an ear on the side of the head. THE 1/4 SCALE EAR involved growing small replicas of my ear using living cells. And recently, THE EAR ON ARM which began the surgical construction of a full-sized ear on my forearm, one that would transmit the sounds it hears. The EAR ON ARM has required 2 surgeries thus far. An extra ear is presently being constructed on my forearm: A left ear on a left arm. An ear that not only hears but also transmits. A facial feature has been replicated, relocated and will now be rewired for alternate capabilities. Excess skin was created with an implanted skin expander in the forearm. By injecting saline solution into a subcutaneous port, the kidney shaped silicon implant stretched the skin, forming a pocket of excess skin that could be used in surgically constructing the ear. The body is a living system which isn't easy to surgically sculpt. And recovery time is needed after the surgical procedures. There were several serious problems that occurred: a necrosis during the skin expansion process necessitated excising it and rotating the position of the ear around the arm. Ironically, this proved to be the original site that the 3D model and animation was visualized. Anyway, the inner forearm was anatomically a good site for the ear construction. The skin is thin and smooth there, and ergonomically locating it on the inner forearm minimizes the inadvertent knocking or scraping of the ear. A second surgery inserted a Medpor scaffold and the skin being suctioned over it. The Medpor implant is a porous, biocompatible polyethylene material, with pore sizes ranging from 100-250 micrometers. This can be shaped into several parts and sutured together to form the ear shape. Because it has a pore structure that is interconnected and omnidirectional it encourages fibrovascular ingrowth, becoming integrated with my arm at the inserted site, not allowing any shifting of the scaffold. We had originally considered mounting the ear scaffold onto a Medpor plate thinking that this might elevate it more, and position it more robustly to the arm. But this wasn't the case and this solution was abandoned after being tested during surgery. Now, implanting a custom made silastic ridge along the helical rim would certainly increase helical definition but also would make room for later replacement of that ridge with cartilage grown from my own tissues. The helix would need to be lifted enabling the formation of a conch and make the ear a more 3D structure. The ear lobe will most likely be formed by creating a cutaneous 'bag' that will be filled with adipoderived stem cells and mature adipocytes. In other words the ear lobe would be partly grown using my own adult stem cells. Such a procedure is not legal in the USA, so it will be done in Europe. It's still somewhat experimental with no guarantee that the stem cells will grow evenly and smoothly - but it does provide the opportunity of sculpturally growing more parts of the ear- and possibly resulting in a cauliflower ear! During the second procedure a miniature microphone was positioned inside the ear. At the end of the surgery, the inserted microphone was tested successfully. Even supported with a partial plaster cast, the arm fully wrapped and the surgeon speaking with his face mask on, the voice was clearly heard and wirelessly transmitted. Unfortunately it had to be removed. The infection caused by the implanted microphone several weeks later proved to be serious and heroic efforts were undertaken to save the scaffold, after the microphone was surgically extracted. The final procedure will re-implant a miniature microphone to enable a wireless connection to the Internet, making the ear a remote listening device for people in other places. For example, someone in Venice could listen to what my ear is hearing in Melbourne. This project has been about replicating a bodily structure, relocating it and now re-wiring it for alternate functions. It manifests both a desire to deconstruct our evolutionary architecture and to integrate microminiaturized*

electronics inside the body. We have evolved soft internal organs to better operate and interact with the world. Now we can engineer additional and external organs to better function in the technological and media terrain we now inhabit. It also sees the body as an extended operational system- extruding its awareness and experience. Another alternate functionality, aside from this remote listening, is the idea of the ear as part of an extended and distributed Bluetooth system - where the receiver and speaker are positioned inside my mouth. If you telephone me on your mobile phone I could speak to you through my ear, but I would hear your voice 'inside' my head. If I keep my mouth closed only I will be able to hear your voice. If someone is close to me and I open my mouth, that person will hear the voice of the other coming from this body, as an acoustical presence of another body from somewhere else. This additional and enabled EAR ON ARM effectively becomes an Internet organ for the body. « The body now performs beyond the boundaries of its skin and beyond the local space that it occupies. It can project its physical presence elsewhere. So the notion of single agency is undermined, or at least made more problematic. The body becomes a nexus or a node of collaborating agents that are not simply separated or excluded because of the boundary of our skin, or of having to be in proximity. So we can experience remote bodies, and we can have these remote bodies invading, inhabiting and emanating from the architecture of our bodies, expressed by the movements and sounds prompted by remote agents. What is being generated and experienced is not the biological other - but an excessive technological other, a third other. A remote and phantom presence manifested by a locally situated body. And with the increasing proliferation of haptic devices on the Internet it will be possible to generate more potent phantom presences. Not only is there FRACTAL FLESH (bodies and bits of bodies, spatially separated but electronically connected, generating similar patterns of recurring activity at different scales); there is now PHANTOM FLESH (Phantom not as in phantasm, but as in phantom limb. Haptic technologies generating tactile and force-feedback that results in a more potent presence of remote bodies). The biological body is not well organ-ized. The body needs to be Internet enabled in more intimate ways. THE EAR ON ARM project suggests an alternate anatomical architecture - the engineering of a new organ for the body: an available, accessible and mobile organ for other bodies in other places, enabling people to locate and listen in to another body elsewhere. ») (L'oreille implantée dans son bras est une structure poreuse qui permet aux cellules de la peau de pousser à l'intérieur, l'oreille finissant ainsi par faire biologiquement partie de son bras. Lors de l'intervention chirurgicale, il a également implanté un micro dans l'oreille, connecté par blue tooth. « Ainsi, on aurait pu se connecter à distance à mon oreille via internet et écouter ce que mon oreille entend », explique l'artiste. Malheureusement, suite à une infection qui l'a cloué à l'hôpital pendant une semaine, le micro a été retiré. Avant cela, l'artiste a fait pousser sept oreilles en laboratoire à partir de culture de cellules vivantes de donneurs humains, de cellules cancéreuses et de cellules de souris, plongées dans un bain de nutriments. Les cellules poussaient sur un modelé d'oreille en polymère qui se biodégradait au fur et à mesure. Mais cette technique ne permet d'obtenir qu'une petite oreille instable, à la durée de vie très courte. (...) « Tous mes projets et performances se penchent sur l'augmentation prothésique du corps, que ce soit une augmentation par la machine, une augmentation virtuelle ou par des processus biologiques, comme l'oreille supplémentaire, ce sont des manifestations du même concept : l'idée du corps comme architecture évolutive et l'exploration d'une structure anatomique alternative, explique l'artiste. Dans le cas de l'oreille, on a répliqué une partie du corps, on l'a relocalisée, on l'a reconnectée. » « A partir des cellules souches, totipotentes, on peut faire en principe pousser n'importe quel organe, mais pour l'instant on n'a pas encore été capables d'identifier les marqueurs qui correspondent au foie, au poumon. Nous avons essayé d'en constituer une à partir de cellules vivantes de donneurs humaines, de cellules provenant d'une tumeur cancéreuse et de cellules de souris. On avait façonné une oreille en polymère d'après mon oreille. Les cellules, alimentées par des nutriments, poussaient sur le modèle qui se biodégradait au fur et à mesure, ce qui reste, c'est un bout de tissu vivant qui a la forme d'une oreille. Le problème, c'est qu'on n'arrive à obtenir qu'une petite oreille, qui fait le quart de la taille d'une oreille normale et sa durée de vie est très courte, une semaine maximum, ensuite elle s'infecte. Ça ne correspondait pas à ce que je voulais, c'est-à-dire une oreille plus grande, stable qui peut être construite sur mon corps. L'oreille que les chirurgiens ont implanté dans mon bras est une sorte de structure poreuse qui permet aux cellules de la peau de pousser à l'intérieur, l'oreille finissant ainsi par faire biologiquement partie de mon bras. » [Marie Lechner]. L'artiste partagera avec les auditeurs du monde entier ce qu'il entend, ou plutôt, ce que son bras entend. En effet, l'oreille greffée dans le bras de Stelarc sera augmentée à l'aide de dispositifs électroniques, de sorte qu'il sera possible de connecter cette oreille sur le réseau Internet. Les sons qui seront captés, du pavillon à l'oreille interne, seront diffusés sur le Web. Qu'est-ce qu'une oreille implantée dans un bras peut bien entendre? Car le résultat de la captation du son sera également une découverte pour Stelarc qui ne perçoit pas ce que cette oreille entend -si l'on peut dire qu'elle entend quelque chose puisqu'il n'y a pas de perception pour en témoigner. Les sensations auditives du corps sont toujours à la fois internes et externes, peu importe la provenance du son. Qu'est-ce que l'oreille entend par un bras? Qu'est-ce qu'un son qui ne vibre pas tout près du cerveau, mais à l'orée du coude? Stelarc peut lui-même chuchoter à son oreille en levant le bras à la hauteur de son visage. Les réflexions de l'artiste s'articule principalement autour de l'idée d'obsolescence du corps humain (Peach blog). Le corps est une interface dont les "senseurs" sont ouverts au monde, il nous permet de nous orienter, de prendre conscience de notre être au sein d'un environnement. Mais pourtant, cette conscience est justement un signe que le corps est défaillant, voire obsolète. Certaines expériences sont voilées à notre perception parce que notre corps, tel qu'il est "naturellement" conçu, circonscrit de manière très restreinte l'univers des expériences possibles. Nous pouvons modifier cette interface et découvrir des sensations imperceptibles selon la physiologie du corps humain. Si le corps est une interface, l'esprit est pensé en termes de multiplicité. Selon l'artiste, nous ne possédons pas un esprit qui nous est propre, ni une volonté qui vaille la peine de s'exercer. Cette absence de volonté devrait avoir ses répercussions jusque dans les réflexes physiologiques : « a body directly wired into the Net, that moves not because of its internal stimulation, not because of its being remotely guided by another body. » L'oreille de Stelarc, c'est une oreille qui

possède autant de consciences qu'il y a de gens pour percevoir ses sensations auditives. Le corps, en philosophie, est généralement considéré comme le support de la présence humaine. Même chez Husserl, à qui l'on a souvent reproché d'avoir occulté la dimension corporelle pour sa phénoménologie, le corps est ce qui permet la conscience d'une autre présence humaine. Il agit un peu comme un miroir. J'ai un corps et une conscience, il y a un corps devant moi, donc il y a une conscience également qui, elle aussi, perçoit un corps avec une conscience de la même manière et ainsi de suite. Le corps de l'autre n'est pas le mien parce qu'il se trouve, au moment présent, dans un là-bas qui pourrait être, à un autre moment, un "ici pour moi. C'est ainsi que l'intersubjectivité s'érige dans la conscience telle que théorisée par Husserl. Le corps, chez Stelarc, est le lieu de la multiplicité. Selon l'artiste, les sensations ne devraient pas appartenir à une conscience humaine, à une subjectivité. L'oreille transplantée est une fiction (ou une chimère, comme l'appelle l'artiste), bien réelle me diriez-vous, mais elle engendre tout de même une forme de contamination du reste du corps et de ses perceptions comme fiction. C'est une fiction de la conscience également puisqu'elle devient entièrement aléatoire. Le corps ne se pose plus comme présence humaine incontestable, mais comme "effet de présence" : un indice de la présence, mais qui, en pointant l'artifice du corps, nie la présence en même temps qu'il en est animé. L'oreille transplantée, à la fois corps et corps étranger, parle sans émettre de sons. On l'écoute en voyant, sur le corps de Stelarc, ce qu'elle entend par sa présence même. Par une telle expérience de l' "effet de présence", pour laquelle le corps est à la fois présence humaine et fiction de cette présence, nous percevons l'obsolescence du corps. Celle-ci fascine ou rebute ou produit ces deux sentiments en même temps. [Paule Mackrous] <http://www.stelarc.va.com.au/earonarm/index.html>

- 2007 \_\_ **Echologue**, Orkan Telhan (This is a public interface for sensing and displaying socio-cultural characteristics of a place based on its sonic features. The goal is to build a medium that can reflect its surroundings like a smart mirror, highlight the salient details and patterns in the environment and contribute to our understanding of the perception of social places. This interface senses ambient sound, records deliberate user input and displays a visualization of the activity in that space as its output. The design explores the utility of sound for envisioning new social, cultural and entertainment uses of public places and help us shape our relationships with each other with new social interfaces embedded in urban settings. This medium informs the audience by visualizing the different aspects of the crowd that is otherwise anonymous to each other. The audience listen a sound collage made of the voices of people telling where they are from and if they can go back or not. As users of the system, we hear words as they are explicitly spoken to the system. The information is used to create a visual representation (based on audio analysis) for designing visuals that display patterns of activity at these locations: When are these places more active? When are they quiet? What kind of sounds can be detected? (Individuals, crowd, machine, sound and silence). <http://web.media.mit.edu/~orkan/projects/echologue/>

- 2007 \_\_ **eJamming** (A startup called eJamming claims to have solved some of the problems that have plagued musicians who jam together online. According to the company, its software, called eJamming AUDiiO, is able to let musicians collaborate in near real time with musicians halfway across the world. Additionally, the software simultaneously records each musician, combines and synchronizes his or her input, and creates files with CD-quality tracks, says Alan Glueckman, president and chairman of eJamming. Since the early days of the Internet, says Glueckman, musicians have been excited about the prospect of sharing their music online, and even playing with fellow musicians over the network. "But they have always been kept out because of bandwidth constraints," he says, because music contains "a lot of data to shove through the pipes." Nonetheless, musicians have had access to a number of different kinds of online collaboration software. A popular open-source tool, called Ninjam, lets people play together over great distances, although to do so, they must adjust to a sound delay of a couple of seconds. Stanford researcher Chris Chafe has created software that can avoid bandwidth limits altogether. He and his collaborators use an extremely high-bandwidth network called Internet2--available to researchers at universities and companies--to share files and virtually eliminate any sound lag heard by collaborating musicians. EJamming is a newcomer to the field, and its software seems to fall somewhere in between Ninjam and the Stanford research. The company is promising to reduce the delay experienced over the network to, at most, hundreds of milliseconds (depending on upload speed and geographic distance between musicians)--a delay to which, Glueckman says, most musicians can adjust with practice. EJamming's technology focuses on the problem of latency. On the standard Internet, it takes a nontrivial amount of time for data to travel from one person to another. And the larger the files, the more travel time it takes, as anyone who has watched video online can attest. EJamming tries to minimize latency on a few different fronts, Glueckman says, although since the technology is proprietary, the company would only provide overviews of its approach. First, the eJamming software decreases the file sizes sent over the network. To do this, the company's engineers developed their own compression and decompression algorithms that shrink the file size, yet still maintain an audio quality higher than MP3, a common compression scheme, says Glueckman. Second, each musician is directly connected with the other musicians in a jam session, instead of being routed through a server. This peer-to-peer configuration "results in a lower latency by routing the audio stream directly to your jam mates rather than, on average, doubling that transport latency by directing the audio stream through a remote server," says Bill Redmann, chief technology officer of eJamming. But even with these latency-reducing tricks, there can still be unexpected delays on the network. EJamming's software tries to minimize these blips, says Redman, by "time stamping" the audio from each individual, marking the time, down to the millisecond, that a sound is produced. Additionally, the software synchronizes the clocks on each musician's computers so that the time stamps have a common reference point. When a musician initiates an eJamming session, the software connects her directly to

her jam partners (up to four in a session). The musician who initiates the session becomes the host to which the other musicians' clocks are synchronized. Each eJamming musician must wear headphones because his or her sound, as well as the audio from jam partners, is played back at a delay of about 30 to 100 milliseconds. "The whole point is to focus on the music" that one hears, as opposed to on the sounds coming directly from one's instrument, says Glueckman. [Kate Greene] <http://www.technologyreview.com/Infotech/18783/?a=f> <http://www.ejamming.com>

- **2007 \_\_ Field-Recordings\_by\_Phone** (Meanwhile, there are ten thousand other potential uses for a voicemail account and a weekly radio show... For instance, there'll be a field-recordings - by - phone project - where someone standing on the Oregon coast can call +1 (206) 337-1474 and record two minutes' worth of coastal ambiance, which will later be played live on the radio - and a sound - of - your - favorite - bus - stop - as - recorded - by - a - cell - phone project, and a sound - of - your - empty - office - elevator project, and any number of other possibilities. The sound of migrating geese, recorded by cell phone. The sounds of 5th Avenue, recorded using every public phone booth on that street - a kind of sonic history of public space. "I then suggested that someone should go around New York interviewing people who have had this dream - or asking people who have never had this dream to ad lib, describing what sorts of extra rooms and spaces they would most like to find, tucked away behind the limited square-footage of walls and apartment living. You'd then edit all the responses up into a radio show - and broadcast it live at rush hour, without explanation. We, in this case, is BLDGBLOG and DJ /rupture (who spoke at Postopolis! last month); we'll be putting your extra room fantasies on the air." weekly radio show on WFMU - 91.1 FM in New York City.) <http://bldgblog.blogspot.com/2007/07/to-delete-this-building-press-3.html>

- **2007 \_\_ Flock**, Georgia Tech, Jason Freeman (In Flock, music notation, electronic sound, and video animation are all generated in real time based on the locations of musicians, dancers, and audience members as they move and interact with each other.) <http://music.columbia.edu/~jason/flock/>

- **2007 \_\_ Friluftskino: Experiments in Open Air Surveillance Cinema**, Michelle Terran, Urban Interface Oslo (The city of Oslo provides the source and the projection surface for an open-air urban cinema. Using a powerful video beamer and video scanner, live surveillance intercepted from wireless CCTV cameras is captured and then rebroadcasted upon the city walls. The live transmission ideally lasts as long as a feature length film and also takes it's title from a cinematic source, according to the scene created by the surveillance camera. The extended time of the intervention is intended to allow one to contemplate the live image which, contrary to being titillating and action-filled, is actually empty and still, a place of non-action. They are spaces to be filled, through subtle shifts that take place within the observed scene, or through the viewer's own physical or imagined intervention. Spatial boundary conventions of private and public, inside and outside are challenged by the reality of the radio transmission which moves beyond walls and onto the street. By accessing these images one is also offered a view into how the public depicts and represents itself through surveillance and a glimpse into the ways the city itself is defined and structured.) <http://www.ubermatic.org/misha/projects.html>

- **2007 \_\_ Google Earth Sounds** (Sounds bring Google Earth to life. As well as homing in on visual feasts around the globe, users of Google Earth may soon be able to listen to the sounds that accompany them. A Californian company has created software that can layer relevant recorded sounds over locations in Google Earth, New Scientist reports. Wild Sanctuary has over 3,500 hours of soundscapes from all over the world. The firm is in talks with Google, although no official agreement has yet been made. Its director, Bernie Krause said: "A picture tells a thousand words, but a sound tells a thousand pictures." Dr Krause has spent the last 40 years collecting sounds, and his recordings include more than 15,000 animal noises, and sounds from a huge array of habitats, including cities, deserts, mountains and the marine environment. It is the largest library in existence of natural sound, he said. He said the idea would be to zoom-in on a particular area and then have the option to listen to the accompanying sound. "It could be a real beneficial add-on," he said. If the project is successful, he would also like to use Google Earth show how sounds change with time. He said: "People will be able to get a sense of before and after. For example, people are talking about how selective logging is an appropriate way of not harming the environment. But we have evidence that from the sound perspective, selective logging has a profound effect on the natural world. The pictures of before and after look exactly the same, but the sound is completely different." [BBC News]) <http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/6639977.stm>

- **2007 \_\_ GridJam**, Artslab (Gridjam is a real-time, geographically distributed, networked multimedia event. It is an experimental project that brings together a visual artist, composer, musicians and computer scientists, while using the new high speed international LambdaRail network. Gridjam will demonstrate real-time, low latency, interactive, distance computing through the complexity of the live, partly improvised, 3D visualized, musical performance, being both a world-class work of art and a research project into high performance collaborative network computing. Gridjam will utilize Jack Ox and David Britton's Virtual Color Organ™, visualizing Alvin Curran's music performed by musicians located in four distant locales but connected via next generation networking technologies. The Virtual Color Organ™ (VCO) is a 3D immersive environment in which music is visually realized in colored and image-textured shapes as it is heard. The visualization remains as a 3D graphical sculpture after the performance. The

colors, images, shapes and even the motions and placement of the visualized musical shapes are governed by artist-defined metaphoric relationships, created by hand as aesthetic and symbolic qualities rather than algorithmically. The VCO visually illustrates the information contained in the music's score, the composer's instructions to the musicians, and the musicians contributions to the score as they improvise in reaction to each other's performances and to the immersive visual experience. Illustrative of synesthesia and intermedia, the VCO displays the emergent properties within the meaning of music, both as information and as art.) <http://www.jackox.net/pages/gridjamIndex.html>

- **2007 \_\_ HandyDandy** (The Handydandy consists of five Media-artists from Austria (Bauch Bernhard, Gross Luc, Kirisits Nicolaj, Savicic Gordan, Waldner Florian) making music on their mobile telephones instead of using usual Music-instruments. The mobile Telephones are used only as interfaces and they are connected, via Bluetooth, to a computer network, a virtual opposite to the "human network" music-band. The entire instrument served by the musicians, is thus divided into the mobile telephones, the Bluetooth connections and the laptops acting together over WLAN. Thereby different Feedback systems on social and digital level, which are used for the compositions, develop. The selection of this configuration makes possible to use not only the movement in space as temporally acousmatic category but also to connect the powerful aesthetics of a Rock performance with the intellectual requirement of the electronic music. The Handydandy is at the same time a RocknRollband and a computer network – music group.)

- **2007 \_\_ Help Carry a Tune, LoVid** (The LoVid performance Help Carry a Tune includes audience participation. This synthesizer produces electrical signals on stage, which are sent on long wires passed through the audience. Members of the audience help hold the wires aloft and carry the signal of the music. The other end of each wire is passed back to the stage, connecting and controlling the music being made. LoVid is the New York-based interdisciplinary artist duo Tali Hinkis and Kyle Lapidus) <http://www.lovid.org/performances/tune/index.htm>

- **2007 \_\_ HKM+**, Bremen, NYC, Ludger Hennig, Christof Knoche, Markus Markowski (the ensemble extends musical improvisation with electro-acoustic instruments that are connected to a network based on audiosignals and network-communication. the aim of this project is to create transient- and spatial situations in this musical network through improvised musical articulation. the musical material of each of the performers is distributed to each of the clients of the improvisation-network. the transformation of the sounds is realized by self-programmed electro-acoustic instruments. an electro-acoustic language arises in which the musical vocabulary and musical gesture is affected, influenced, and manipulated by each of the part-taking soloists. for concerts, the ensemble is positioned in the middle of the space. a multiple loudspeaker-setup is positioned around the ensemble or sited acousmatically within the space. by spatialisation of the sounds through multiple loudspeaker-configurations, each soloist is enabled to use different methods to project the sounds into the space. spatialisation becomes part of musical improvisation & improvised spaciousness) <http://www.strommusik.org/>

- **2007 \_\_ inclusiva.net**, Medialab Madrid, Juan Martín Prada (Inclusiva-net is a platform dedicated to the research,documentation, and circulation of network culture theory. Its mainstudy and documentation focal point is the processes of social andcultural inclusion in telecommunication networks and their effects inthe development of new artistic practises and critical knowledgeproduction. First Inclusiva-net Meeting: [New art dynamics in Web 2 mode] · July 2007. Second Inclusiva-net Meeting: Digital Networks and Physical Space · March 2008) <http://medialab-prado.es/inclusiva-net>

- **2007 \_\_ Interactive Chronology (1991 - 2005)**, Open Space 2007 NTT ICC Tokyo (This interactive chronology presents key works and exhibitions of media art after 1991 in conjunction with social and technological trends. As viewers see titles of events floating in virtual 3-D space and randomly connected to one another, they can realize that Media Art is not a closed field of art but has changed in close connection with society. Viewers can also experience history through active participation, e.g. by selecting events in which they are interested.) [http://www.ntticc.or.jp/Archive/2007/Openspace2007/art\\_technology/interactivechronicle.html](http://www.ntticc.or.jp/Archive/2007/Openspace2007/art_technology/interactivechronicle.html)

- **2007 \_\_ Interplay #4 - Collaborations in 4 Cities** (For its 4th installment, Interplay is heading outward, presenting 4 shows in 4 cities. Over 4 nights in June 07, touching 4 cities, catch Thomas Koner vs Max Eastley, Iris Garrelfs vs si-cut.db, local artists plus a selection of sound related film and video works. Confirmed cities are Amsterdam (in collaboration with Steim), Bristol, Dublin (in collaboration with Darklight Festival), and London.) <http://www.sprawl.org.uk/INTERframe.html>

- **2007 \_\_ Juum-Auro - Net-concert**, Juum Duet (DXARTS Audio Studio → Grande auditório do Colégio Espírito Santo :: University of Washington → Universidad de Évora :: Seattle USA → Évora, Portugal :: Juum duet will perform a set of three improvisations in Seattle USA. The musical material will be analyzed and the parameters will be send over the Internet in real-time. The values will be used by the Auro duet for reconstructing the material at the Grande auditório do Colégio Espírito Santo, at the Universidade de Évora :: Hugo Solís, electronics + Mauricio Rodríguez, electronics; Gabriela Villa, viola + Laura Puras, flute.) <http://duojuum.net/>

- **2007 \_\_ Kiln**, Philippe Faujas (a multi-form sound artwork presented as downloadable software, online flash composition and presumably as a physical installation (?), composed with sounds from SoundTransit.nl, where selected cycles of audio interspersed with silence, play back from multiple speakers in a darkened room with concert seating. The sounds are all creative commons licensed. Included are: Derek Holzer (Binaural Tunnel Study, Binaural rainstorm, Seto song) \* Yannick Dauby (Bats-Echolocation) \* Planktone (Industry 2, Windmill) \* Cedric Peyronnet (Fences And Wind) \* Dallas Simpson (Binaural Environmental) \* Nick Mariette (Wisdom Tooth Extraction In Binaural) \* John Tenny (Desert Wind In The Hall) <http://www.philippefaujas.net/> <http://www.philippefaujasartesonoro.net/>

- **2007 \_\_ Listen to that Soundscape** (The basic idea, if you're curious, is to open up the artistic possibilities of field recordings to anyone with a telephone – whether that's a mobile phone, a public phone, or even a phone attached to the wall in your kitchen. The results should prove that you can acoustically experience a landscape through the telephone. Tele-scapes. As it is, mobile phones in particular present us with an untapped microphonic resource; these roving recorders encounter different environmental soundscapes everyday – the insides of lobbies and elevators, cars stuck in traffic, windy beaches – yet we're so busy using them for conversation that we overlook (overhear?) their true sonic possibilities. The telephonic future of environmental sound art is thus all but limitless – and putting some of that on the radio is just fun.) <http://bldgblog.blogspot.com/2007/08/planet-of-sound.html>

- **2007 \_\_ Meipi.org**, Colectivo Meipi (Meipi is a map (wikimap) on which the user can leave multimedia files associated to a particular place in the city, so that the images, the personal impressions, the sounds, the stories and the landscapes as they are perceived by the inhabitants may be shared on an immediate and everyday basis with the neighbours themselves. The intention is to develop processes by which the network becomes a catalyst and propitiates social relationships that allow us to get to know our neighbours better, thus strengthening the community and the sense of belonging to it. It defines a new type of user that has another characteristic quality that differentiates it from the users of all the other web pages: a user that is interested in a real space, an actual physical space, which is what is represented in MEIPI. His/her possibilities and actions will always be linked to this place (neighbourhood, city). To date, various different projects have been set up. The highlights are the Todo Sobre Mi Barrio (All About my Neighbourhood) project ([www.todosobremibarrío.com](http://www.todosobremibarrío.com)), carried out in collaboration with the Laboratorio Urbano group and with the support of the new centre Intermediae and two others that have been enabled with the collaboration of the architecture studio Ecosistema Urbano: one in Madrid, in the Universidad neighbourhood (<http://barriouniversidad.meipi.org>) and another in Santiago de Compostela (<http://santiago.meipi.org>), supported by the Galicia Centre of Contemporary Art (CGAC). We are working on creating a package with a Creative Commons license with the code used on the page so that those who know about programming can create their own customised meipi. Until now, and without the need to know anything about the code, it is possible to use meipimatic: a meipi creator. With meipimatic ([www.meipimatic.org](http://www.meipimatic.org)), any user can assemble a collaborative map (meipi) simply and on an instantaneous basis (as if it were a blog). <http://meipi.org>

- **2007 \_\_ Music in Global Village**, September 6-8, 2007 in Budapest (the first international conference dedicated exclusively to network music composition and performance. The focus is on real-time composition and notation, which constitute an important ingredient of network music performance. The ability to compose music in real-time according to given rules and to have the result immediately displayed in standard notation on computer screens adds a new dimension to this recent art form that relies on advances in network technology as much as on successfully integrating musical ideas, and hence, gives traditionally trained musicians the opportunity to partake in performances ordinarily geared towards geeks and technophiles. To this end, the Music in the Global Village project has commissioned a new Max object from Nick Didkovsky, New York-based composer, guitarist and programmer, who has developed JMSL, the Java Music Specification Language. This powerful music environment also contains JScore, a sophisticated and idiosyncratic music notation package which now has been fully integrated into Cycling '74's MaxMSP graphical programming environment via the MaxScore object. With this object, MaxMSP possesses powerful notation capabilities which brings it up to par with other composition environments such as OpenMusic and PWGL.) <http://globalvillagemusic.net/en/>

- **2007 \_\_ Network Art Timeline**, Aether9, <http://societyofalgorithm.org/networktime/>

- **2007 \_\_ Network Sonification**, Zach Layton (In Network Sonification, a program written in java crawls across the Internet, grabbing as many related URLs as possible and analyzing their contents. Using Max/MSP, the data coming from the webcrawler program is translated into sound. The frequency and range of words, images and links on these pages create a kind of aural snapshot, giving each page a unique sonic character that is written in real time. Layton offers us a range of sonic portraits, from Boing Boing to the New York Times, enabling us to experience them as networked sonic entities rather than discrete visual/semantic pages.) [http://turbulence.org/works/net\\_sonification/](http://turbulence.org/works/net_sonification/)

- **2007 \_\_ NINJAM** -- Novel Intervallic Network Jamming Architecture for Music (Realtime Music Collaboration Software. NINJAM is a program to allow people to make real music together via the Internet. Every participant can hear every other

participant. Each user can also tweak their personal mix to his or her liking. NINJAM is cross-platform, with clients available for Mac OS X and Windows.) <http://www.ninjam.com/>

- 2007 \_\_ **Noisefold**, David Stout & Cory Metcalf (NoiseFold is an interactive visual-music-noise performance that draws equally from mathematics, science and the visual and sonic arts. This networked performance duet explores the use of infrared and electromagnetic sensors to manipulate and fold virtual 3-D objects that emit their own sounds. The work integrates multiple techniques including; real-time 3-D animation, mathematic visualization, recombinant non-linear data-base, A-life simulation, image to sound transcoding, complex data feedback structures and a variety of algorithmic processes used to generate both sonic and visual skins. The result is a theater of emergence and alchemical transformation existing within an intricate cybernetic system. The endlessly folding objects, synthetic life forms, vortices and oblique spirals defy easy anthropomorphic projection - images of crumpled paper, nerve ganglia, dendrites, organic architectures, impossible animals, seed-pods and fungi may come to mind.) <http://nfold.csf.edu/Pages/Noisefold.htm>

- 2007 \_\_ **Opera Calling - Arias for all !**, !Mediengruppe Bitnik and Sven König («Opera Calling» is an artistic intervention into the cultural system of the Zurich Opera. By means of a audio-bug placed within the auditorium of the local opera house, the outside public is given access to the performances on stage. The performances are retransmitted to the public not through broadcasting, but by telephoning each person in Zurich individually. «Opera Calling» is the first of three parts of a six-month-long exhibition at the Cabaret Voltaire in Zurich called «appropriate – manipulate – feed back!». It stands for the «appropriate»-part so to speak. By detaching <Hacking> from its original context in digital culture the project aims at proving its more general viability as a means of redirection and criticism. As soon as the Opera starts performing a machine calls every phone number listed in Zurich. Zurich residents then enjoy the pleasure of listening in on a live performance at the opera from the comfort of their home. With the use of the telephone for the dissemination of the opera transmissions a virtual auditory space is opened not as blanket coverage (as with broadcasting media) but as a home-delivery service: Every person is individually connected and can eaves-drop at their leisure from the comfort of their living room. The installation represents and displays the different operations of the performance: 100 telephones are directly connected to the computer calling the people at home and thus connecting them with the opera performance. The machine constantly monitors to see if the bug is still emitting its signal. As soon as the bug detects <opera activity> the machine switches into LIVE mode and starts to automatically call the phone numbers listed in the Zurich telephone book. In the installation the telephones start ringing in time with the phone of the person called. As soon as someone at the other end of the line picks up the phone, the telephones in the exhibition, like the telephone at the persons house are connected to the opera. The monitors show the number being called, the opera played and other such output information. During the day, while there is no opera performance going on, the exhibition machine switches into LOG mode: It replays random calls it has made during previous opera nights. Following Bell's original notion for the telephone «Opera Calling» makes use of the telephone as a broadcasting media. Bell promoted the idea of the telephone as a central source for transmitting music, news, Sunday sermons to a paying network of wired-up subscribers for a couple of years. The idea was put into practice in Budapest, where for decades from 1893 onwards there was a government-run information system called "Telefon Hirmondo". In Paris there was the "théâtrophone", the first electrical media for the dissemination of cultural content. London had a similar system called the "Electrophone". In «Opera Calling» this discarded use of the telephone is hacked and thereby revalued: re-evaluating and celebrating long forgotten technologies and uses by putting them back into practice permit a new and more thorough understanding of the cultural systems they generate. The Opera is a cultural system that has played a central role in societies over the centuries. From the French to the Belgian and Italian to the Chinese, the opera has repeatedly proven political brisance. «Opera Calling» reconnects the Opera with the people.) <http://www.opera-calling.com/about> <http://www.bitnik.org/en/>

- 2007 \_\_ **Orpheus**, William Duckworth & Nora Farrell (The hundreds of performers, comprising university students and citizens of Brisbane (children and adults), include a core group of 64 iPod players; moving groups of performers on iPods, cellphones and laptops; soloists and ensembles; participants in cyberspace in Flickr, MySpace, YouTube and Second Life; and park visitors. « The intent of this public opera, based on the myth of Orpheus and Eurydice, is to create guided moments where park visitors — using their everyday digital devices — may interact artistically with parallel worlds as they move through the events of their daily lives ».)

- 2007 \_\_ « **Paysage technologique — théories et pratiques autour du Global Positioning System** », Andrea Urlberger, CIREN Univ Paris 8 [http://www.ciren.org/ciren/laboratoires/Paysage\\_Technologique/index.html](http://www.ciren.org/ciren/laboratoires/Paysage_Technologique/index.html)

- 2007 \_\_ **PSOs, Public Sound Objects**, Music Technology Group (Pompeu Fabra University), Álvaro Barbosa, Jorge Cardoso, Günter Geiger, Martin Kaltenbrunner (Public Sound Objects (PSOs) is an experimental system, originally developed at the Music Technology Group of the Pompeu Fabra University in Barcelona. It is a web based Shared Sonic Environment, available to the general Public without previous music knowledge requirements. Join a collaborative performance using a "Bouncing Ball Java Interface" and manipulating Sound Objects in our central soundserver) <http://www.abarbosa.org/psa/index.html>

- **2007 \_\_ Quasimodo The Great Lover** (Alvin Lucier), Transnational Ecologies, Sounds Travel, Matt Rogalsky, Laura Cameron (*Alvin Lucier's 1970 composition Quasimodo the Great Lover engages with bioacoustics, particularly the sounds of the humpback whale, and its ability to communicate great distances underwater. At the core of the piece is the idea that a live performance is made using one or more microphone-amplifier-loudspeaker systems to lengthen the distance over which the sounds may be sent. For any number of widely separated spaces, sound is transmitted from one space to the next. Lucier describes, for instance, using the spaces of a three-story American high school connected by a four-stage system in which the performer's first stage is placed as far from the listeners' last stage as possible and in which the microphone-amplifiers of each stage are placed as far as possible from their respective loudspeakers. In this way, the sounds which are transmitted acquire the acoustic colouration of each space through which they pass. In Transnational Ecologies realisation, sounds are passed from site to site via internet audio streams. The streaming URL allows the public to listen in to the end of the chain.*) <http://www.mrogalsky.net/transnational>
- **2007 \_\_ Radioactive Radiophony**, Festival Radiophonique Brussels, Knut Aufermann & Sarah Washington (Resonance104.4fm, Mobile Radio), Dinahbird, Jean-Philippe Renoult, Anton Aeki, Paulo Raposo (Lisbon), Udo Israel & Ralf Wendt (Halle), Tante Hortense & Eddy Godeberge (Marseille) (*From New York to Lisbon, the radio stations of the creative network RADIA will make a live broadcast of the performances taking place at the festival's venue. The contributions from abroad will be «contaminated» by artists on stage, in Brussels. Mobile Radio is the travelling radio and sound art project of Sarah Washington and Knut Aufermann. Their mission is to seek out new forms of radio art by taking radio production out of the studio environment.*) <http://www.radiophonique.org/program/radioactive-radiophony/>
- **2007 \_ Radio Flirt**, Brandon Labelle in collaboration with James Webb (*Working with sound and the specifics of the location is the main interest of artist and writer Brandon LaBelle. For his project Radioflirt (2007) he has worked together with artist James Webb, whose work explores the realms of magic, exoticism and alienation and impossible environmental phenomena. Radioflirt lets the user hear the secret narrative of the building. Utilizing a series of mini-fm radio transmitters located throughout the building, visitors are invited to follow traces of incomplete messages, hidden whispers or trembling static that appear as an ambiguous and secret narrative. Radioflirt is an intimate radio experience that aims for the heart and explores the emotional geographies of listening [Jo-Anne Green]. "Sound is inherently and unignorably relational: it emanates, propagates, communicates, vibrates, and agitates; it leaves a body and enters others; it binds and unhinges, harmonizes and traumatizes; it sends the body moving, the mind dreaming, and the air oscillating. It seemingly eludes definition, while having profound effect. Sound teaches us, by always being temporal, spatial, and relational, that space is more than its apparent materiality, that knowledge is festive, alive as a chorus of voices, and that to produce and receive sound is to be involved in connections that make privacy intensely public"*) <http://www.errantbodies.org/labelle.html>
- **2007 \_\_ Resonating with Second Life Wind**, Edo Paulus (Edo Autopoeisis) (*Resonating-With-secondlifeWind is a permanent, large scale, generative sound-installation in Second Life, "a 3D online digital world imagined and created by its residents". When roaming the world of Second Life one might not immediately be aware of it, but everywhere in this world there is wind, constantly changing and twisting air streams. Resonating-With-secondlifeWind works and responds to this wind. Above the clouds there are floating 100 windmills, ordered in a grid. Each windmill shows us the direction and speed of the wind at that specific position. Together, they give a visual representation of how the wind behaves on a larger scale, over a larger area*) <http://www.eude.nl/soundinstallations/rwslw/>
- **2007 \_ A Rose Heard At Dusk**, Adam Nash (Adam Ramona) (*Using many of the possibilities unique to the Second Life medium, A Rose Heard At Dusk is a participatory artwork that turns visitors into performers. It was designed specifically for the cavern space under the Opera House on Big Pond Island. The work is designed to be "played" by visitors avatars. Walking, flying and jumping through the space, avatars create a unique audiovisual composition, different every time. Colours and sounds combine to create a spatially immersive musical and visual experience. The work can be played by single avatars, but it really comes alive when friends play it together. It blends the different meanings of "play". By playing in the space, visitors are actually playing the space like an audiovisual instrument, creating endless variations of sound and vision. It looks different at different times of day, the light reacting differently with all of the translucent colours. It sounds different from different positions - all sounds are attached to shapes in the space, some sounds stay still while others move, some sounds are triggered by avatar proximity, while some are constantly sounding. Combined with the movements of visitors avatars, this creates an endlessly changing immersive audiovisual experience.*) <http://slurl.com/secondlife/Ponderosa/145/54/32/> [http://yamanakanash.net/secondlife/rose heard at dusk.html](http://yamanakanash.net/secondlife/rose%20heard%20at%20dusk.html)
- **2007 \_\_ Routes**, Thadeus Frazier-Reed (*routes is a community web sound art piece in which visitors download software for recording / creating sound. The software, which can run on any Apple computer, records sound into a buffer that loops continuously, recording new sounds on top of the old sounds. The user should run this software on a laptop and record as they go, giving an aural picture of their day. Visitors to the website can listen to up to thirty recordings. Each visit or page refresh will choose a random set of*

thirty recordings from the list) <http://routesandmethods.org/>

- **2007 \_\_ RXT Radio Tower XChange** – Networked Sound Performance Event (Sound artists from various countries and Xchange network were invited to contribute their audio art works in relation to “radio towers”, “antennae” and “waves” thematics. The main live stream will be provided by the RIXC from Riga, featuring artists’ contributions by Martin John Callanan (UK), Jan-Peter E.R. Sonntag (DE), Horia Cosmin Samoila / Spectral Investigations Collective (FR), Nils Edvardsson (SE), Superfactory(TM) (DE/LT), Martins Ratniks and Clausthorne (LV), rx-tx (SI) and others. In parallel, there will be live streams from Bratislava, Brussels (provided by OKNO), Orleans (by Ellipse) and pre-recorded contribution from Ljubljana (by Projekt Atol.) <http://rixc.lv/waves/rtx>

- **2007 \_\_ Semorphonic Orchestra**, Mike McInerney, Duncan Chapman (Multi-location orchestra of analogue synth players led by semaphore. Semorphonics is a combination of the three Greek roots sema (sign), morphe (form) and phone (sound). The semorphonic orchestra uses semaphore flags to communicate between musical stations so that its performers can sculpt sound over a large area. Hand-held flag semaphore provides a set of 28 signs, arranged as a series of seven subsets of diminishing size (seven members, six members, five members and so on to a final set with only one member). These 28 signs form the basic ‘score’ of the semorphonic orchestra – each sign, or pair of signs, refers to a singular analogue electronic sound texture, or mode of transformation or a correspondence between individual sonic stations. The work consists of a number of sonic stations distributed across a large space of performance. The size of the space is variable and depends upon the number of performers; it wants to be sufficiently large that two performers at opposite sides of the space are not within hearing distance of one another, yet small enough that any one station can hear what its immediate neighbours are doing. Each sonic station comprises between one and three performers armed with analogue synthesis equipment, independent speaker and flags. Each performer also has a copy of the score – a code book detailing the modes of communication, but the textures are devised in rehearsal.) <http://www.analogorak.co.uk/semorphonicorchestra.htm>

- **2007 \_\_ Seventeen Unsong Songs**, Adam Nash (A major solo installation for Second Life by Adam Nash (Adam Ramona) presented by the Odyssey Art Simulator, curated by Sugar Seville, located on East of Odyssey. One monumental immersive, interactive columnar audiovisual sculpture, accompanied by sixteen smaller, intimate immersive audiovisual interactives. Nash has installed seventeen sculptures - Unsong Songs – in the Odyssey Island landscape, inviting avatars to be collaborators and explorers of the virtual unknown. These fascinating kinetic devices invite us to linger and play while probing the role of the avatar within the complex 3D space. Each Unsong Song is like the product of an ethereal instrument, fresh from another planet where synaesthesia is the dominant mode. Nash explores the formal qualities of color and rendering; of texture and sound which extend and expand our understanding of physics in the virtual world. He veers from an almost reverential approach to modernist abstraction toward tongue-in-cheek po-po-mod irony, where form is formless; sound becomes silence and colour ranges from deep intensity to transparency depending on the lifecycle of the piece and the mood of the avatar. Pieces like Carillon and Rarer Air are instruments the avatar “plays” to trigger complex feedback. In Carillon (a 3D version of one of Nash’s 2D Pretty Noise Toys), a ball roams randomly around a 3D maze of tropical and dayglo candy colours. When it hits a cube, we hear sounds friendly and pastoral, like a cowbell. In Disaccumulator, the avatar can delete and reconfigure shapes and sounds as red gravity balls bounce downward from a mysteriously suspended platform, hitting on red planks or tines which “clang” and “bong” sonorously as the avatar touches the work. As in all of the Unsong Songs, aural and architectural forms collide in a funky conglomerate of random and rhythmical elements.) [http://yamanakanash.net/secondlife/unsung\\_songs.html](http://yamanakanash.net/secondlife/unsung_songs.html) <http://slurl.com/secondlife/East%20of%20Odyssey/37/89/32/>

- **2007 \_\_ The Silence of the Lands**, University of Colorado at Boulder (The Silence of the Lands enables participants to map and annotate the soundscape of urban and natural environments. Participants can record and collect ambient sounds, create and share acoustic cartographies, and use them as conversation pieces of a social dialogue about the places and communities in which they live. The result is an affective geography that changes over time according to participants’ perceptions and interpretations of their environmental settings. From July to September, 2007 the outreach program ‘Community of Soundscapes’ has encouraged participants from the City of Boulder to capture and share their sonic experiences by geo-coding and mapping urban and natural sounds by means of the Sound Camera mobile application and the web application TheSilence.org. The program was supported by the CU-Boulder Outreach Committee and was a partnership with the City of Boulder Open Space and Mountain Parks (OSMP) and the City of Boulder Water Quality Department. Silence of the Lands raises and addresses a series of theoretical issues and design opportunities, concerning: the concept of museum; the new relationship between physical and digital, natural and cultural, which is engendered by new media (here in the context of the cultural production of soundscapes); the potential of novel technologies and interfaces in supporting processes of subjective perception, collective interpretation, and public authoring (here in the context of the co-creation of a museum of natural quiet); and finally, the design approach capable of comprising all these aspects in a coherent framework (which we call metadesign). Silence of the Lands is a sociotechnical architecture. It combines multiple interaction spaces and social practices by means of locative media and tangible social interfaces. Goal of the sociotechnical architecture is to engage

participants from local communities in the recording and mapping of their own, experienced soundscapes and in the collaborative construction of an ideal soundscape of natural quiet. This activity is called data description. After being collected, ambient sounds are stored in a MySQL database, visualized on a GIS map, and made publicly available for audio-streaming in the web community as individual soundscapes. In addition, participants can access, manage, and eventually modify their own individual soundscapes, associating to them several descriptors (from color-coded attributes to texts and images). Besides individual soundscapes, both registered and unregistered users are able to visualize and listen to the collective soundscape resulting and growing from the overlap of all individual soundscapes. The current version based on OpenLayers.) <http://www.thesilence.org>

- 2007 \_\_ **SimTrans - Simultaneous Translator**, John Roach & Willy Whip, turbulence.org (*The Simultaneous Translator*) (SimTrans) is a Windows based audio interface that enables anyone to load audio streams and manipulate them in real time on the Internet. SimTrans makes the delays and fluctuations of the Internet visible and audible. The Internet becomes your collaborator as you create your mix, and the instability you usually try to avoid becomes a tool for creation. Distance and delay are manifest within the interface numerically and as a series of sliding heads; there is also a link to Google Earth where you can watch the dynamic flight of data travel between yourself and the audio source. The Simultaneous Translator uses traceroutes to measure the distance and delay between the user and the source of the streaming audio. This project grew out of our still-active live networked performance project called Simultaneous Translation. The project was developed as a means to stage live performances that capitalize on the delays of the medium and the indeterminacy that can occur when events move continually out of synch.) <http://transition.turbulence.org/Works/simtrans/>

- 2007 \_\_ **Singing Website Wallpaper**, Ursula Endlicher (*A Web Driven Installation with Wallpaper and Sound* by Ursula Endlicher — gives voice to html by re-interpreting code as a musical score and by visualizing the musical scales as printed patterns on wallpaper. While the sound component of the installation is influenced by the actual “flow” of activity on yahoo.com, msn.com and google.com, the wallpaper pattern is inspired by the “frozen” source code from each site translated into a visual set of functionality-related symbols.) [http://www.ursenal.net/sing\\_web\\_wallpaper/](http://www.ursenal.net/sing_web_wallpaper/)

- 2007 \_\_ **smSage**, Tim Redfern & Ralph Borland (*smSage is a device to plant a murmur in the city; a mad murmur, a voice that moves between sense and nonsense, loudness and quiet, accepting and repeating words and phrases, and progressively scrambling them. Mimicking a piece of faceless urban infrastructure, it murmurs to itself and to passersby, and seems to come from nowhere, a blank spot on an ordinary wall... Or which ubiquitous urban object is producing the sound? Which alarm-box, conduit, or... security camera? smSage receives SMS text messages, which are converted to audible speech, using a text-to-speech engine with a synthesized voice. It speaks these messages coherently at first, but which each repetition, starts to mix them with previous messages it has received, producing a concrete poem. The voice becomes quieter ... A new message wakes it up again, for brief lucidity, before sense begins to dissolve again. smSage can sense the ambient sound level and adapt its volume accordingly. When the project isn't receiving any messages, it advertises its presence by quietly reciting its phone number. The device is contained in a security camera housing, which contains a parabolic speaker to throw the sound at a nearby surface. The sound appears to come from a point on a wall where the speaker is directed. The security camera acts as disguise for the source of the voice, making it more spectral and mysterious. It takes the function of a security camera and turns it around rather than capturing information from the environment, it projects onto it, voicing and remixing participants comments and observations in a transient, ephemeral way.) <http://confluxfestival.org/conflux2007/smssage/>*

- 2007 \_\_ **Sobralasolas !**, Jérôme Joy, Kaffe Matthews, Björn Eriksson, Gregory Whitehead, Dinahbird, Caroline B. (nujus.net) (*Sobralasolas ! is a collective radiopera project, which involves streaming and broadcasting (net, web, 2.0 and hertzian) technologies in the framework of a kind of an everyday opera/co-opera with operators. The first step/episode sets up a networked playing configuration, with all involved questions concerning live and instant composition by many remote players / composers / improvisers. Let's imagine a band playing without seeing each other, being located in her/his own context or environments, combining with live selected and composed sound, and the result is listened by an audience in a specific space without present players or on air. The live co-composition and co-improvisation by distributed players is the objective. SOBRALASOLAS! - is a radio opera for live, streamed and recorded sounds. This project, which begun in 2007, gathers a group of sound artists who, through develop a series of episodes. Sobralasolas! does not have preestablished scenario, nor is there a story to be told. It is neither a documentary nor a radio testimony. It is a place for glossolalies and echolalies, field recordings and collected audio data, to be experimented with, to be recontextualised and perhaps heard in new ways. The challenge was and still is to cross and to cross-pollinize personal styles and involvements in a real co-writing and co-playing. Built on a system that combines traditional studio practices (montage/mixing), live and remote performances (improvised parts) and networks (the streaming techniques used for the remote sound recordings and performances), Sobralasolas ! aims to condense and slow down the process of listening and, by extension, our way of grasping surroundings in everyday life (our common and 'social' activities as art involvement, constitution and extensions). Broadcasting is conceived as a large and broad live scenography of memorised and live sounds, an inversion of the stage and the studio that reveals the undescrivable and amplifies the forgotten details of our everyday lives, mishaps, adventures, narratives and imagined*

soundscapes, which are interlaced in a slowing-down of time. Future episodes will explore various combinations using composition, improvisation, and live, remote and local performances. Conceived as a series or a collection of episodes, this 'radiopera' combines improvised, composed, streamed, and mixed sounds in open and continuous structures. Each episode is the occasion to create a live mix of remote protocols performed by the six participants who, whether physically present or not, feed off one another's audio environment and sonic reactions. The group of artists are currently working and developing different methods of using remote sound recording and collection via streaming using a remote platform of sound contributions, open microphones (or 'webmikes', a concept first used in the Locustream project by Locus Sonus) and file exchanges. Each episode is built on feedback between us (and others). Next episodes in 2008/09 will develop realtime multi-players streaming configuration and will be live built at the same time of the performance. In the case of a concert situation or of an event, the listening place will be the place of the listening mix by the audience, moving in the space. We could easily imagine a space populated by loudspeakers, each pair corresponding to a player at distance. Other listening systems are previewed such as the use of Sonic Beds and Sonic Bench (developed by Kaffe Matthews), or of mobile systems of sound diffusion (like radio, embarked streaming boxes, etc.). The central node of this project is the question of live composition in various spaces context at the same time.) <http://jeromejoy.org/>

- **2007 \_\_ Sonic Graffiti**, Chia Ying Lee (Chia Ying Lee's Sonic Graffiti invites urban artists to collaborate and create music together, while allowing the passersby to enjoy it as well. A system of devices enables graffiti artists to create and geo-tag music in the urban space with real spray cans: - The sound cap has to be snapped on the top of spray cans to spray out sounds and do simple sound manipulations with gestures. Users create music by overlaying/remixing various paint/sounds from the caps. Each cap can store up to 4 sounds in its memory card. They can be loaded from computers or portable devices like iPod, mobile phone, etc. Gestures to manipulate sound include fade in/out and scratch. Several artists spraying at the same time can create a sound composition. - The controller is used for listening to the music with earphones when creating, and positioning sounds. It also comes with a recording part can be used for collecting sound samples from the city. - The Boom box provides a shared listening experience for a group of creators in the public. Collaborations can be achieved both synchronously and asynchronously. - Audiences can download a dedicated software player to install in mobile devices. Each graffiti is a small radio station. The player tunes into the music of the nearest sonic graffiti automatically while you go through the city. You can also mark the locations of music you like, hence make a personal sonic graffiti map.)

- **2007 \_\_ The Sonic Map of Battersea Park**, Gaya M. Gajewska (Web based piece of audio art, created in search for new and innovative ways of using audio on the Web. It integrates the technology of Flash and a notion of soundscape navigable in a Web browser. It aims to transport an Internet user to the London park to experience its complexity, cosmopolitanism, vibrancy and sense of enjoyment, using sound clips and minimal graphics. It also challenges the user to explore new ways of navigating a web space, by using a sense of hearing instead of vision.) <http://www.speakerson.net/>

- **2007 \_\_ Sound Art Museum** (Lodged in a spacious apartment in an unassuming 19th-century building on Rome's busy Piazza Vittoria, the new Sound Art Museum is both a public venue and the realized dream of Dora Stiefelmeier and Mario Pieroni, the founders of Zerynthia, a not-for-profit organization created in 1991 to promote exhibitions and performances in Italy and abroad. Inaugurated Feb. 26, the Sound Art Museum is a project of Zerynthia and its subsidiary, RadioArteMobile (RAM), an internet radio station launched in 2002 to explore—and expand—the territory shared by the visual arts and sound research. The Sound Art Museum's premiere exhibition is "Inaudita" (meaning both "unheard" and "unprecedented") and features installations by the Vito Acconci studio, Markus Huemer, Donatella Landi, Stephen Vitiello and Achim Wollscheid. The organizers are Lorenzo Benedetti, an independent curator, Riccardo Giagni, a composer and musicologist, and the artist Cesare Pietroiusti. Initially funded by grants from the European Union, RAM sponsored an online archive of performances, interviews and other recorded events as well as a traveling archive prior to opening the Sound Art Museum. Over the entire enterprise presides the spirit of John Cage, who decades ago charted the borders of sound art with such compositions as *Silent Prayer* (1948) and *4\_33\_* (1952). Pioneering initiatives in the field include the musical ventures of the Dia Art Foundation during the 1980s; *Tellus*, the New York audio magazine founded in 1983 by Claudia Gould and Joseph Nechvatat; Berlin's *Gelbe Musik*, run by Rene Block; and Maurizio Nannucci's Florence-based *Zona Archives*. The online radio station of P.S.1 in New York debuted in 2004. Rome's Sound Art Museum now adds a stable and welcoming home for this dimension of art. The Sound Art Museum is an initiative promoted by ZERYNTHIA and RadioArteMobile (RAM), one of the first internet radio stations to discuss the field in between the so called visual arts and sound research. The Sound Art Museum will operate on several different levels: 1. Permanent archive of audio works - Artists who work or have worked with sound are invited to submit their material (on cd, dvd, vinyl or audiocassette) to the archive. The archive will be open to the public and constantly updated with new contributions. A database containing information about the pieces and the authors will also be available. 2. Internet archive - The audio works will be methodically transferred to the website [www.radioartemobile.it](http://www.radioartemobile.it). 3. - Travelling Archive (in cooperation with Nomads & Residents) A series of appointments in institutional locations all over the world is scheduled, where the archived materials will be available for public use. 4. Installations RAM's headquarter in Rome, given its spatial characteristics, offer a variety of possibilities for different listening modalities. Through installing pieces by artists who work with sound, as well as context-specific projects, we want to explore the relation between architectural space, conceptual aspects of sound art, technological

possibilities and visual art. The curators of the Sound Art Museum are LORENZO BENEDETTI, free lance curator, RICCARDO GIAGNI, composer and musicologist, and CESARE PIETROIUSTI, visual artist.) <http://www.soundartmuseum.net>

- 2007 \_\_ **The Sound of Mercadolibre**, UBERMORGEN.COM (MercadoLibre is the largest online trading platform in Latin America, market leaders in e-commerce in each of Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay and Venezuela. The Sound of Mercadolibre transforms mexican Mercadolibre-User account-data (ratings, comments) into unique synthetic mariachi-jazz-songs! The Mercadolibre user-values are represented acoustically, generating a pattern from the signature-data-file. By doing so we choose a swell, affirmative approach towards the Mercadolibre Corporation and its wonderful latin american marketplace.) <http://www.sound-of-mercadolibre.com/>

- 2007 \_\_ **The Sound of Vatnajökull**, Katie Peterson (An underwater microphone inside Jökulsárlón, an outlet glacial lagoon of Vatnajökull filled with icebergs calving from the glacier, connects to an amplifier and mobile-phone on land, which creates a live phone-line to the glacier. The numberx + 4 4 ( 0 ) 7 7 5 7 0 0 1 1 2 2 can be called from any telephone in the world, the listener put through to Vatnajökull.) <http://www.katiepaterson.org/>

- 2007 \_\_ **SoundPockets**, HC Gilje (Soundpockets is a series of intimate sound interventions in public spaces. By using FM radiowaves, soundbeams and miniature speakers to create local pockets of sound, the different projects create private listening rooms, change the soundtracks of locations, and/or displace time and space. Soundpocket 1 — created for Urban Interface, Oslo (2007) — was installed in a narrow passageway connecting two parts of the city. The soundbeam, which can be as narrow as 50 cm in diameter, was mounted on a pan/tilt head which made it possible to place the sounds very precisely in the passageway.) <http://hcgilje.wordpress.com/2008/03/06/soundpocket-1/>

- 2007 \_\_ **SoundTrack**, Gokce Kinayoglu (Soundtrack brings together the bird's-eye experience provided by a satellite map with an immersive and intimate feeling of a stereo sound recording. The technique that is employed involves outdoor sound recordings made on the move ie. 'soundwalks', and GPS track-log generated during the walk. Soundwalk recordings are synchronized with relative GPS-time series coordinates taken from the track-log. This makes it possible to present the soundwalks as 'tracks' on the map, letting the user explore and interact with the sounds of a place freely through the map interface. soundtrack is an exercise that plays on the contrast between the distanced and two-dimensional character of the map with the intimate and temporal flow of the soundscape. It breaths life into the once dead and static map, by overlaying it with the liveliness and dynamism of the soundtrack. In the meantime, it imposes a dimension of rationality onto the soundtrack by laying it bare and flat on the Cartesian grid of the map. In this paradoxical duality, the user is immersed in the place of the map by hearing it, while maintaining the all-seeing and ever-present 'God's-eye' mode of vision that works against this subjective and ephemeral presence. soundtrack is open to user contributions. Please click on the 'Contribute' link if you want your sound recordings to appear on this site.) <http://www.stoparchitects.com/terrasound/soundtrack/>

- 2007 \_\_ **SoundWire / JMess** (A New Software/Utility to save audio connections in Jack. Basically you can save all your audio routings (in qjackctl for example) in a file, and then load it automatically, something that we needed especially for more-than-two-sites collaboration, where a jack setup looks like spagetti) <http://ccrma.stanford.edu/groups/soundwire/>

- 2007 \_\_ **My Space Sound**, Sawako Kato (My Space Sound is an audio popup book about the village called MySpace. The story starts like this: "Once upon a time ... there was a village called MySpace. It is the era when so-called 'Web 2.0' is still a novelty..." Users can participate in the story by entering their MySpace URL, as well as by just browsing the story. In a world composed of both facts and fictions extracted from the database, the audience gets a chance to rethink the chaotic social network space.) <http://turbulence.org/works/MySpaceSound>

- 2007 \_\_ **Stationary Aemotion**, Aether9 (The æther9 group is interested in exploring the performative aspect of the infosphere. They make use of existing 'lo-fi' communication tools to experiment with the integration of dramaturgical elements linked to the constraints of working with a delocalised group to develop an audiovisual performance. The æther9 group taps into the aether as a medium which facilitates transmission through the global atmosphere. A utopian concept that constantly inspires the development of a set of narrative directives which guide the performance. The æther9 group presents stationary æmotion: 4 remote performers from 4 different locations united in a real-time broadcast. Remote performers: N3krozoft Group Brussels (BE), Paula Vélez (CO), N3krozoft HQ Geneva (CH) :: Live audio: Christiaan Cruz (California) :: Original screenplay: Nicola Unger & Audrey Samson.) <http://1904.cc/aether/>

- 2007 \_\_ **Strings Apart**, Soundwire CCRMA Standford, SARC Belfast (CCRMA/SARC present a network piano duo in which Applebaum and Rebelo, playing 7000 miles apart explore improvised responses to "being there" and "being apart". The event uses software developed both at CCRMA and SARC for audio transfer and graphic visualisation. Pedro Rebelo - Piano and Instrumental

*Parasites (Belfast), Mark Applebaum - Piano (Stanford, CA), Alain Renaud, Juan Pablo Caceres, Chris Corrigan - Technical Support.)* <http://www.sarc.qub.ac.uk/~prebelo/stringsapart/>

- **2007 \_\_ TBA, PLOrk**, The Princeton Laptop Orchestra (19 May 2007 - PLOrk Ge conducts the first known instance of *Orchestral Live Coding in a piece called "TBA" - 15 live coders split into three squadrons, directed by a central live coding conducting via text and code. Audience observes commander screen and experience ensuing soundscape and music.*) <http://plork.cs.princeton.edu>

- **2007 \_\_ Tele-Colonization** (*Virtual/Acoustic Performance Redefined featuring Tintinnabulate & SoundWIRE Tanna Schulich Hall, McGill University Jun 26 2007 : a concert featuring seven performers in four locations. "Tele-colonization occurs when a group of people virtually populates a new area. During this process, both the new and old inhabitants will have to get to know each other through communication. Eventually they will have to adapt their cultures to share their habitat in harmony. During this concert, the audience has the opportunity to experience the perspective of the co-located site at Rensselaer Polytechnic Institute through binaural rendering (dummy head reproduction via headphones) of this site, which is characterized by its individual sound scape environment."* [Jonas Braasch 2007]. Telepresence is "the act or process of performing in two or more places simultaneously - usually through an apparatus that is some form of human/machine system." This project, Tele-Colonization, will explore a new environment where musicians virtually populate an aural space via Internet 2. For this performance we used INET2 to simultaneously transmit audio and video from 4 different locations (Troy, NY; Montreal, Canada; Stanford, California; and Korea). The images were generated in realtime by a software program that I designed to "mask" the performers using a motion-subtractive technique - this means that whenever a musician would move, that motion would cause them to appear from the surrounding image. For this performance we were using images of caves and clouds. While the musicians share a joint virtual space, the co-locations will maintain their own acoustic environment based on environmental soundscape recordings. The Montreal audience will have the rare opportunity to switch between the remote acoustic environment at RPI using headphones, and the acoustics at Tanna Schulich Hall which will be spanned by acoustic instruments and loudspeaker projected electronic sounds. This project draws from the technical support of several research groups: CARL, RPI; CIRMMT, McGill University; CCRMA, Stanford University. The transmission was realized using Jacktrip, Audio Transmission Software (CCRMA), and the Ultra-Videoconferencing System (CIRMMT). Tintinnabulate directed by Pauline Oliveros with technical direction by Jonas Braasch is an RPI multi-media ensemble featuring musicians and visual artists. SoundWIRE directed by Chris Chafe is an ensemble of musicians developed at CCRMA at Stanford University. Tintinnabulate and SoundWIRE have collaborated on a weekly basis since fall 2006 using Internet2 with CD quality audio in 8 channels supported by Jack Trip software (Chris Chafe) and ViMiC (Jonas Braasch) and Pauline Oliveros' Expanded Instrument System (EIS). Their concert together with two other co-located sites March 22, 2007 brought four distant ensembles together in concert. JackTrip is an open source software that runs on Linux and enables low latency high quality audio transmission in multi-channel configurations. ViMiC is a software in MAXMSP that allows for shaping virtual room environments that can be performed in real time changes. The Expanded Instrument System for live multi-channel processing was conceived by Pauline Oliveros in the 1960s to help her control sound transformations using foot pedals when she played her accordion. Over the years, the EIS evolved from simple tape delays to an elaborate digital signal processing system. Performed at International Conference on Auditory Display, ICAD 2007 in Montreal) <http://www.arts.rpi.edu/index.php?eventID=100000290&egid=13&pageid=179&siteid=3&category=&item=>

- **2007 \_\_ Telematic Concert**, SoundWire Ensemble, CCRMA Stanford, Tintinnabulate RPI NYC, VistaMus CRCA UCSD (*During ICAD 2007 Conference, it's going to involve four locations and two ensembles, Tintinnabulate and SoundWIRE. Tintinnabulate will be located at RPI at Troy, NY and McGill at Montreal, Canada. SoundWIRE will be at CCRMA, Stanford (Juan-Pablo Caceres in Synth+laptop) and Seoul, Korea (Chris Chafe in Celletto). The second one concert was a duo between Chris (Seoul) and Juan-Pablo (Stanford). This is part of the International Symposium on Culture and Technology 2007*) <http://ccrma.stanford.edu/groups/soundwire/>

- **2007 \_\_ Ten-Hand Piano**, Alvaro Barbosa (*The project of a public interactive installation using the PSOs system (Public Sound Objects) was commissioned in 2007 by Casa da Musica, the main concert hall space in Porto. It resulted in a distributed musical structure with up to ten interactive performance terminals distributed along the Casa da Musica's hallways, collectively controlling a shared acoustic piano. The installation allows the visitors to collaborate remotely with each other, within the building, using a software interface custom developed to facilitate collaborative music practices with no requirements in terms previous knowledge of musical performance.*) <http://www.abarbosa.org>

- **2007 \_\_ Time Out – 100 Meeting Places**, Soundwire CCRMA Stanford, 4-way concert Chicago/NY/Santa Cruz/Stanford, Chris Chafe, Juan Pablo Caceres (*4-way concert that involves four venues across the United States: RPI at Troy, New York / UCSC at Santa Cruz, California / Loyola University in Chicago, Illinois / CCRMA at Stanford, California. Performing ensembles are the Weave Soundpainting Orchestra in Chicago, Pauline Oliveros' Tintinnabulate Ensemble in NY, Cynthia Payne's*

Ensemble in UCSC, and the SOUNDWire Group at CCRMA (including Chris Chafe's 4-channel Celletto). This is the first 4-way concert done by the SoundWIRE Group. The audio streaming will use exclusively JackTrip. We will use 4 channels of audio at CD quality) <http://ccrma.stanford.edu/groups/soundwire/>

- **2007 \_\_ Tintinnabulate**, Pauline Oliveros (Tintinnabulate is a multimedia ensemble of graduate students and faculty of Rensselaer Polytechnic Institute created and currently directed by Pauline Oliveros with technical support by Jonas Braasch and Dan Valente of the Architecture department. Tintinnabulate performs in interesting acoustic spaces with acoustic and electronic instruments and has participated in many co-located telepresence performances via the INTERNET. Currently Tintinnabulate is involved in weekly networked rehearsals with CCRMA at Stanford University and other locations.) <http://www.myspace.com/tintinnabulate>

- **2007 \_\_ Tomato Quintet**, Chris Chafe (This rapid and diverse development is particularly evident in the emerging field of sonification. Data sonification – as described by Wikipedia – has long been viewed as a valuable tool for studying complex sets of scientific data by allowing researchers to perceive variations and trends invisible to other analysing techniques; it has not been used extensively by artists until recently. Today, however, sound compositions created by the translation of data to sound are legion. In August 2007, for instance, composer Chris Chafe let five vats of different varieties of tomatoes from his garden ripen to perfection. He and his collaborator Nikolaos Hanselmann recorded the ripening process by tracking the changes in CO2 that the ripening produces. Music was generated in real time by computer algorithms influenced by CO2, temperature and light readings from sensors in each vat. After the ripening, time was speeded up and a stand-alone computer music piece, Tomato Music was created. Tomato Music is then a sonification of seven days of ripening that takes place in the course of 49 minutes. [Helen Thorington]. "Five vats of tomatoes were ripened for 10 days in the Tomato Quintet exhibition. Greg calls it a "New Media Still Life." During the ripening process music was generated in real time by computer algorithms influenced by CO2, temperature and light readings from sensors in each vat. After the ripening, time was sped up and new music created at different time scales. A stand-alone computer music piece, "Tomato Music," captures the spirit of the whole thing. At dinner time, a (human) trio accompanied one of the movements during the closing pasta-fest.") <http://www-ccrma.stanford.edu/~cc/shtml/tomatoQuintet.shtml>

- **2007 \_\_ Tone23 - Second Life** Mabinogion (190, 43, 63), Jay Hardesty, Drazen Bosnjak and Harris Skibell (Jay Hardesty, Drazen Bosnjak and Harris Skibell are developing tone23, a musical ecosystem where music is the primary agent defining interactions between users. Music evolves in this environment based on the musical preferences and encounters of users. Implemented at hive23 in Second Life, it creates original music variations and hybrids based on association among avatars. Music Rooms: The hive23 environment contains three rooms. Each room is associated with a separate musical stream that is determined by the avatars currently within that room. Each avatar is "tagged" with music they have chosen from a list of musical pieces, available outside the entrance to the three rooms. When an avatar enters or leaves a room, a new sequence of musical variations is produced for that room. These variations combine and rework parts from the songs identified with those avatars then inhabiting that room. Music Analysis and Remixing: Each musical variation embodies harmonic and rhythmic manipulations that impose musical coherence on each combination of parts drawn from the songs worn by avatars within a particular room. These manipulations introduce variety into the note structure within each part, and the contrapuntal structure across parts, in order to make each remix unique. Scenario: Each avatar will start by exploring each of the three rooms, encountering shifting populations of other avatars that are also exploring those spaces. Eventually each avatar would presumably spend increasing amounts of time within the room that most consistently produces musical output preferred by that avatar. This preference develops collectively as other particular avatars also increasingly spend time within that space. The shifting population of avatars in each room potentially evolves into a collective musical author with discernible musical preferences. Other Applications: The rooms in Second Life could potentially be implemented as physical spaces in a club or art installation, where persons (each tagged with a particular song) take the place of the avatars. Or the rooms could be implemented as channels in a location-based multi-user application, tied to something like GPS navigation systems in cars. A driver following approximately the same route at roughly the same time each day would gradually settle on a particular channel, as other musically compatible drivers do likewise. The rooms could also be seen as publishing spaces, for example, web pages where several advertising jingles coexist in the form of ongoing remixes that evolve increasing compatibility over time. The necessary ingredient for each of these applications is a music software engine that can create coherence and variety, on-the-fly, among unexpected combinations of musical inputs. Implementation and Hosting: The music engine is a Smalltalk/Seaside/C++ based process that runs on a separate server. It receives requests via http from Linden scripts attached to Second Life objects. The server process calculates new remixes, renders MIDI-based scores into audio results via Quicktime, and streams the audio via Shoutcast servers to SL land parcels underlying each shared musical space. The music engine / web server is currently hosted on a four-core Intel Mac Pro. Location in Second Life: The hive23 environment is located on the Second Life mainland at Mabinogion (190, 43, 63). Or it can be found within Second Life by searching Places for "hive23". The software is currently in testing mode. The list of musical inputs currently available will be augmented over time, including the addition of musical results generated within the environment itself.) <http://tone23.org/>

- **2007 \_\_ TopLap** (20-22nd July 2007 - LOSS Livecode festival - about 25 livecoders meet up in Sheffield. Friday evening they rig up a pub with headphone distribution amps and projectors and hear meditative live patching by Ross Bencina, and well practiced beer influenced SC livecoding by RedFrik. PowerBooks UnPlugged then distributed themselves around the pub and did some classic network based livecoding. Saturday evening they play into the night in a local club with livecoding to silent films by Modern Times, desiredata patching by Robert Atwood, surrealist live coding by Les Duchamps, ChucK melodies by Graham Coleman, livecode backed IXI UI soundscapes with Thor Magnusson, Yee-King livecoding with one hand and triggering drums with the other, Andrew Sorenson making live funky techno with Impromptu, rounded off with a rousing gabba set by Slub expanded with Sick Lincoln.) <http://www.toplap.org/index.php/HistoricalPerformances>

- **2007 \_\_ Touch**, Oslo School of Architecture and Design (Touch is a research project that investigates Near Field Communication (NFC), a technology that enables connections between mobile phones and physical things. We are developing applications and services that enable people to interact with everyday objects and situations through their mobile devices. Touch consists of an interdisciplinary team involved in social and cultural enquiry, interaction/industrial design, rapid prototyping, software, testing and exhibitions. RFID is currently regarded as the replacement for barcodes in logistics and supply chain management. It is also becoming widely used for contactless ticketing, credit cards, animal tracking and e-passports. But a new set of applications and services are opening up as NFC (a new standard based on RFID) is integrated into mobile phones. But Touch is not just about incremental innovations to existing infrastructures; the technology offers many unexplored opportunities. The simple integration of tags into everyday things and places, the low-cost of NFC components and the adaptiveness of the NFC specifications are all examples of the ways in which this technology promises to be ubiquitous. These opportunities suggest that many other applications and services will be built around the technology, and that 'touch' may well become part of everyday life in unexpected ways.) <http://www.nearfield.org/about>

- **2007 \_\_ transTerritoriale Generation**, Paço das Artes de São Paulo, Universidade Católica de São Paulo (PUC), Goethe-Institut São Paulo, Kunsthochschule für Medien Köln (KHM) (O projeto proporciona a possibilidade para os artistas de discutir experiências e aprender uns dos outros, distinguindo com segurança as visões variadas do mundo. O objetivo é interconectar uma geração que já não pensa em fronteiras nacionais e distâncias provenientes da comunicação mas sim propõe refletir as diferenças culturais e as diferenças entre tradições através de seus trabalhos artísticos.) O projeto "Geração Transterritorial" compreende três fases que consistem em mostras, workshops e seminários nas cidades de São Paulo e Colônia. Os trabalhos dos artistas constam de diferentes posições estéticas e formatos. Entretanto, o tema dos projetos é sempre centralizado no transterritorial, com seus efeitos na infraestrutura urbana e global, com fragmentos acústicos e visuais de cidades porém provenientes de espaços culturais diferentes, e o tema do controle social e da transparência.) [http://www2.khm.de/mk/seminar/export/re-active/TRANS\\_GEN/index.html](http://www2.khm.de/mk/seminar/export/re-active/TRANS_GEN/index.html) <http://www.khm.de/~carsten/transterritorial/>

- **2007 \_\_ Ubuntu Studio** (Ubuntu Studio is aimed at the GNU/Linux audio, video and graphic enthusiast as well as professional. We provide a suite of the best open-source applications available for multimedia creation. Completely free to use, modify and redistribute. Ubuntu Studio is an officially recognized derivative of the Ubuntu Linux distribution, which is explicitly geared to general multimedia production. The original version, based on Ubuntu 7.04, was released on May 10, 2007. The kernel included with Ubuntu Studio is modified for intensive audio, video or graphics work. The scheduler allows applications to request immediate CPU time, which can drastically reduce audio latency. There is currently no live version available of Ubuntu Studio, and consequently, no graphical installer. In addition, the disk image is 1.1 GB, too large to fit on a standard CD, and as a result, Ubuntu Studio is often installed from a DVD. Ubuntu Studio can also be installed via the Internet from an existing Ubuntu installation via APT.) <http://ubuntustudio.org>

- **2007 \_\_ Why can't you go back home forever and let me be?**, Kieren Reed, Ritter Zамет, London (Kieren Reed has a multifaceted practice, encompassing research, sculpture, performance and installation. Fundamentally it addresses a personal engagement with the construction process. Recent artworks take an interest in the relationship between functioning and non-functioning objects – the real and the fabricated. He is also interested in methods of display adopted from museology and in how the selection of objects for reproduction or display can elevate their status and importance, yet purposely suppressing their functionality. Kieren has been interested in simulating the traditions of making craft objects and the use of historic techniques, as well as enabling the audience to participate through mechanisms. Referencing folk traditions and rites of passage he built an Irish seafaring boat – a curragh, during a recent residency. Fascinated by the research and correctness of this undertaking, the boat itself had to function successfully as a boat as well as an art object and was launched as part of a public event. The curragh was intended to act to develop a rhetoric and a relationship with the experience of both making and using the boat and the communication this creates with the audience, which itself forms part of the work. The installation, 'why can't you go back home forever and let me be?' differs from earlier works in that although it appears to be a functioning space, it acts simply as a pastiche or copy of an original 1960's working recording booth. All the elements are in place, but the workings have been removed and it now only functions purely on a visual level. The booth has a nostalgic presence in a created and controlled environment of a white cube architectural space, surrounded by

background research and a collection of related ephemera – including original blank vinyl discs and recordings made in similar booths over the last 50 years, as well as documentation of the Graham Greene novel, Brighton Rock and Jean-Luc Godard's Masculine Feminine - within both of which similar recording booths are featured. The very fact that these objects and recordings themselves are displayed under glass, removes much of their original function too and reduces them to a visual comment and only a possibility of listening, watching or reading. As much as the recording booth is a non-functional object and therefore is restricting to the audience who expected it to record, Kieren sought to complete the understanding of it as a nostalgic object. Appearing on a BBC Radio programme, he requested original recordings, stories and nostalgic memories about this and similar recording booths and as a result various listeners self-made records were played live on air. Kieren's drawings explore his themes further and link his process of making to his thought process of future works. Referencing lamps and modernist design, they are mathematically and technically correct to establish scale and dimensions towards decoding potential sculptures.) <http://www.kierenreed.co.uk/statement.html>

- **2007** \_\_ **Worldwide Tuning Meditation**, Deep Listening, Pauline Oliveros, Damrosch Park in the South Plaza, NYC (In cooperation with Deep Listening Institute in Kingston New York, Lincoln Center Out of Doors will host over 1000 voices to perform noted composer Pauline Oliveros' World Wide Tuning Meditation. The World Wide Tuning Meditation is an interactive "sound-a-long" in which the audience becomes an instrument. The audience voices at Lincoln Center will blend together with a broadcast of voices from 8 additional locations around the world to blend together to make beautiful music informed by Oliveros' score. The Tuning Meditation is a unique sonic event which Oliveros describes as "a gesture of sonic peace." Oliveros supplies the score, you supply your tone. Voices from remote locations will be broadcast via free103point9's online radio transmission. Through following the instructions given below there will at first be clouds or clusters of sounds. Eventually the clouds and clusters transform into harmonies, with common tones moving through the sound field as tuning takes place on many levels, actually and metaphorically. In 2008 : "A recent performance of my piece "The Tuning Meditation" had musicians and audience at Stanford University performing together with musicians and audience at Beijing University 6000 miles away on May 2, 2008. The audio was beautifully clear. My image projected on screen greeted both audiences via Skype from Cassis, FR. My low tech video presence was within the high tech CD quality audio transmission facilitated by JackTrip - software developed by Chris Chafe at CCRMA -. High definition video was streamed using VLC video, Video Lan streaming software". [Pauline Oliveros] <http://www.deeplisting.org/site/projects>  
<http://www.deeplisting.org/site/tuningmeditation2007>

- **2007** \_\_ **Yokohama Soundscape '07**, Tokui Nao (A sound installation, in which visitors can listen to various "soundscape" recorded in Yokohama by shining on a miniature model of the city with flashlights. The location of lights on the miniature are detected by a hacked infrared web-camera and a Max/MSP patch, then sounds recorded in the corresponding area are played.) <http://www.naotokui.com/2007/04/yokohama-soundscape-07-2007/>

## 2008

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- **2008** \_\_ **Internet** (The Internet comprises 541.7 M hosts (in fact, 541,677,360 hosts) (Internet Software Consortium 2008).)

- **2008** \_\_ **The Internet Archive** (The Internet Archive ([www.archive.org](http://www.archive.org)) continues to keep on file about 85 bln archived copies of the WWW pages from the mid 1996 onwards (Internet Archive 2008).)

- **2008** \_\_ **2.4Ghz**, Benjamin Gaulon (The new project by RECYCLISM™ is hitting, as many media artists are doing yet, the prosperous muse of wireless technologies. 2.4Ghz™ exploits wireless netcams populating the urban space in a very simple but interesting way. BNJMN™ GAULON (alias Benjamin Gaulon) has been riding the streets of a few European cities with a wireless video receiver, like the ones used by parents to remotely watch over their babies. His aim was to detect and record the floating video signals emitted by those network cameras like in the historical work Life's a User's Manual by Michelle Teran. GAULON's project also points out how an increasingly spreading technology of surveillance can be smartly used to acquire data from other surveillance technologies. The detournement as a way of creating conflict within society was a practice widely experimented by the situationist movement (whose theories directly inspire RECYCLISM). But actually the theories of Michel De Certeau and his 'practices of everyday life' are maybe more appropriate to interpret 2.4Ghz experience. It changes usage patterns whose consumption is normally assigned to, converting an establishment tool into a weapon potentially useful for our daily practice of liberation. Surveillance cameras were also at the core of the Interception performance, where the cameras' physical hijacking and its use in other more explicit contexts pushes people to easily realize their privacy invasion. But 2.4Ghz tries to make more explicit those signals freed in the air, claiming their accessibility by anyone with a wireless video receiver being not only an observation target but also a more conscious observer. It's interesting the way the whole RECYCLISM™ project is publicly presented: the device is attached to street lamppost, to reveal live the presence of cameras around broadcasting video signals. The project is somehow making a statement about the open

*economy of the trash (defined as material without owner), which allows people and artists to acquire new stuff and transform it into something with a value. Nevertheless, this position is sarcastically contradicted with all the ™ symbols accurately added to any project's name, establishing a private property claim that trash had originally lost. [Tony Canonico, neural.it])* <http://recyclism.com/twopointfour.php>

- **2008 \_\_ Aqua-Scape**, Shinichi Takemura (Shinichi Takemura is a designer who uses technology in an attempt to enable creativity. He believes technology should not be used to stop people thinking, but rather to enable potential in humanity. Aqua Scape is one such example. This website invites the viewer into another world, where they can be involved in situations across the globe. The viewer can listen to various sounds of water from around the world, in real time. Takemura believes that listening to sounds in real time can change peoples emotional responses, and that the Internet is a platform to unite global citizens. This website becomes a unique dynamic experience, that can never be the same, rather than a static source of information. Takemura has transformed the function of a website and is working at using the internet to facilitate change.) <http://www.aqua-scape.jp/>

- **2008 \_\_ Are We There Yet ?**, Dee Hibbert-Jones & Nomi Talisman (Are We There Yet? maps internal states in real space on the Yokohama subway system. The project produces an emotional sound map of the city, illustrated through the lines of the subway system. Stories will be collected in person as the artists travel the subway system, which will then mapped on the website and the interactive map in the exhibition space, re-creating the experience for exhibition visitors who can travel the subway lines visually, and click on any subway location to hear each story, and see images of the journey. Visitors traveling the subway inhabit another person's significant emotional memory at the exact physical location where it took place. Are We There Yet? is a part of Dislocate 08's international festival for art, technology and locality 30th Aug-20th Sept. 2008 Tokyo/Yokohama, Japan <http://www.dis-locate.net>) <http://deehibbert-jones.ucsc.edu/DISLOCATE08.html>

- **2008 \_\_ Audible Realities - iPhone Art Project**, Tokui Nao (iPhone Apps transforming your monotonous daily life into something special. Don't you remember the first time when you went out with your walkman? Didn't you feel like you were in a movie? Your iPod doesn't only play music, but also changes your environment. Yes, it does stimulate your imagination. Audible Realities is an Art Project / Unit formed by four people, artists, researchers and programmers, who have been interested in "Sound" and "Environment". Our main goal here is to develop softwares and systems, which help to build new relationship between us and our urban environment using sound. We found that Apple iPhone is very versatile and useful as a platform to pursue such objectives. We develop sound-oriented iPhone apps to excite your imagination and transform your ordinary life into something special.) <http://www.naotokui.com/2008/08/audible-realities-iphone-art-project/> <http://audibles.jp/>

- **2008 \_\_ Between Two Plates**, Networked Sound Installation SARC Belfast (Ormeau Baths Gallery Belfast / University of Limerick) Pedro Rebelo, Michael Alcorn (The installation is an interplay between physical and imagined space. The space between Belfast and Limerick is articulated through two resonant metal plates which act as a way of inviting local interaction and at the same time rendering remote presence. The plates are notionally two nodes in a large resonant network; exchanges, connections, disruptions, loops are heard through the vibrating plates. As visitors are enticed to touch the plates, they become an interface which is both localised in its interactions with the site and dispersed in their role as network nodes) <http://www.sarc.qub.ac.uk/pages/2plates/>

- **2008 \_\_ BLISS**, SARC Belfast / Siren Festivalen för ny music (SARC BLISS A distributed laptop performance between SARC's own BLISS (Belfast Legion for Improvised Sights and Sounds) and Göteborg's Academy of Music and Drama laptop ensemble, Sweden. This networked performance explores techniques and strategies for improvised electroacoustic music over the internet. The Legion does not prescribe its sights or sounds; they are the product of digital and contra-digital networks of gates, tables, switches, speaker objects, cabling and data... The Legion is not a band – we don't play weddings – but we like playing in the network! The performance included works by Justin Yang and Alain Renaud)

- **2008 \_\_ Bloom**, ambient music app for iPhone, Brian Eno & Peter Chilvers (Developed by ambient pioneer Brian Eno and musician/software designer Peter Chilvers, Bloom explores uncharted territory in the realm of applications for the iPhone and iPod touch. Part instrument, part composition and part artwork, Bloom's innovative controls allow anyone to create elaborate patterns and unique melodies by simply tapping the screen. A generative music player takes over when Bloom is left idle, creating an infinite selection of compositions and their accompanying visualisations. "Bloom is an endless music machine, a music box for the 21st century. You can play it, and you can watch it play itself." [Brian Eno]. Part instrument, part composition and part artwork, Bloom's innovative controls allow anyone to create elaborate patterns and unique melodies by simply tapping the screen. A generative music player takes over when Bloom is left idle, creating an infinite selection of compositions and their accompanying visualisations. This app is completely interactive and offers you the ability to create your own ambient noise as well as let it do the work for you. There are nine different music moods that this app offers you. You can either set them manually or allow them to shuffle through. When you press the listen mode, it will do it's own thing and play sounds at random in what seems more enjoyable then

you would think. You can also interact with the listen mode by adding your own sounds by tapping on the screen. When you want to make your own sound, just shake the screen to clear it. After that, tap away to make your own sound. Depending on the settings you've chosen, your sounds will repeat faster or slower. This way, you can make your own beat combination to suit your mood. Bloom is an excellent addition to the ambient sound apps for the iPhone. While some people may just want to turn on a specific sound and let it play, or even let it rotate through sounds, Bloom offers something different. If you're more interested in having a hands on approach to your ambient sound, skip the other apps of this variety and head straight to bloom. [AppVee]. Unlike most music-creation apps, it doesn't take an existing musical instrument and cram it awkwardly into the iPhone's interface. Instead, it creates a completely new "instrument" designed specifically for the iPhone. Essentially, you're provided with a colored screen and a quiet drone. As you tap the screen in various places, different tones play depending on where you tapped. They then loop, creating a unique piece of music on the fly, one that changes gradually on its own once you stop tapping.) <http://www.generativemusic.com/bloom.html>

- 2008 \_\_ **Bot**, Apo33 (Le BOT composent une communauté virtuelle qui s'inscrit dans la continuité du projet du POULPE de créer un ensemble d'entités venant se greffer sur un lieu pour l'étendre à plusieurs. Le BOT constitue une nouvelle approche des phénomènes liés aux numériques : le réseau, la multi-géocalisation sans déplacement, l'inter-connection de données produites en temps-réel ainsi que leur traitement, l'automatisation des manipulations sur le réel et surtout dans le cas du BOT un chantier d'expérimentation accessible en permanence et depuis n'importe quel endroit de la planète. Le BOT est une excroissance du réel. Il y a une condition machinique qui s'instaure dans le BOT, un appel d'inter-dépendance, de relations et de discussions entre des éléments hétérogènes concernant autant le découpage du réel et son auto-poïétique, langage utopique d'un diktat électronique, autant que les relations que nous entretenons à cette altérité, à travers nos corps, nos actions, nos activités et notre environnement à la fois urbain et « naturel ». Les BOT s'envoient dans une construction à long terme d'un réseau machinique vivant et exponentielle, les BOT s'étendent de villes en villes, de campagne en montagne, ils envahissent nos espaces de vies, nos placards, nos bureaux, nos balcons... . Tout le monde peut potentiellement contribuer au BOT, chacun peut créer un BOT et le connecter à la communauté, et ainsi le féconder, le nourrir, l'accompagner dans son développement, chacun peut l'éduquer, le rendre autonome, le rendre plus ou moins sociale, pourrait-on dire : «l'humaniser»? « Il y a tant d'histoire sur ces homme-machines , l'humanité tend vers sa propre multiplication, les machines se trouvent à mi-chemin entre nous et l'immortalité ». Il y a dans le BOT une sorte de jeu avec le temps, avec les notions d'infini, il se joue de nos lieux et de notre présent, il capte et mâche cet instant pour le faire devenir autre, il y a une essence au delà de la matière? . A travers ses nombreux capteurs (audio, data, vidéo?) le BOT transmet ses informations pour être traité de manière multiples, à la fois sur le réseaux des BOT (via des connections temps-réel d'inter-échanges de données numériques) autant que par la manipulation de chacun des individus qui participe à la programmation des BOT.) <http://www.apo33.org/dokapo/doku.php?id=bot>

- 2008 \_\_ **Buffer Breakdown Orchestra**, Marc Chia, One Man Nation (What Does Your Network Sound Like? Using 8 sine waves at various frequencies, uploaded on to 8 different mountpoints on a network, and streamed back on to my computer using the same network, the resulting composition will be the composition of the network in question. A new way of generative music, this time the random number generator is the network itself. As 8 streams will never upload and download the same speed and time, this delay creates the breaking down of rhythms which is determined by network traffic at any given time. The live performance will include be a duet with the performers being me and the network itself.)

- 2008 \_\_ **Cellphonia: Tempo Variabile**, a karaoke cell phone interactive sound/video installation by Steve Bull, Scot Gresham-Lancaster (Tempo variabile is Italian for "changable weather" and a memorial concert for John Cage and David Tudor. This cellphone interactive sound/video performance installation takes place at Stevens Institute of Technology) <http://cellphone.el.net/>

- 2008 \_\_ **China Gates - Mobile Music Piece for Gongs and Satellitest - Sister Cities**, Art Clay & Erratum Ensemble Shanghai-Basel (The work China Gates is technically based on possibilities of synchronizing a group of performers using the clock pulse emitted from GPS satellites. Aesthetically, China Gates is rooted in works for open public space and belongs to a series of works, which celebrate the use of innovative mobile technologies to explore public space and public audience. A series of tuned gongs are used to perform the work. Tuned to an Eastern musical scale, these gongs give the piece a touch of the orient on the horizontal, melodic side and a western type dissonance on the vertical, chordal side. In addition to having the gong and beater to create the music, each player wears a custom built GPS interface on the wrist. The interface acts as a "conductor", indicating when the gongs are to be hit. By using a delay between the satellite clock pulse and the LED that indicates when to strike the gong, a harmolodic effect is obtained as the players gradually shift from a chordal to a melodic structure (and vice versa) dependent on geographical coordinates. The performances of the "Sister Cities" version of China Gates will take place in Shanghai and in Basel. After undergoing a short briefing and demonstration of how the Wrist-Conductor works and the composition is to be performed, it is possible for the public (up to twenty persons) to participate as an ensemble members.) <http://www.digitalartweeks.ethz.ch/web/DAWPlus/SisterCities>

- 2008 \_\_ **City+**, Chris Chafe (*for network music ensemble. A piece for multi-site improvising musicians*) <http://ccrma.stanford.edu/~cc/shtml/city+.shtml>

- 2008 \_\_ **Commonalities Between Tape Machines and Network Streams**, Marc Chia (*The idea is to use multiple mount points on a network to upload and download the same source sound sending it back and forth on to multiple mount points. The inherent delay in sound conversion plus the upload/download latency is the way of showing the resemblance to early tape delay experiments of Brian Eno and slavish audio feedback experiments of Alvin Lucier.*)

- 2008 \_\_ **Disklavier Mark IV** (*Yamaha's latest Disklavier player piano, the Mark IV, can download music from the internet via Wi-Fi and play along, pedals and keys clacking in time. For now it only supports music in the "Tune-1000" format from Yamaha's website, but "other formats will be supported. "The Mark IV series takes the Disklavier's remote control functions to the next level: all Mark IV models include the PDA-type Pocket Remote Controller, a wireless remote with dedicated buttons and a full-color LCD touch screen. In addition to the Pocket Remote, select models also feature the tablet-PC type Tablet Remote Controller, a portable 10.4" touch-screen LCD color control panel that offers different animated, customizable visual environments to operate from. Both remote controllers use the 802.11b wireless specification to communicate with the piano over long distances, enabling full-function control of the Disklavier through walls and with a flexibility never before possible. The Yamaha Mark IV line features new, open-ended software-based architecture built on a rock-solid Linux Operating System that will facilitate future upgrades and expansions, thus offering outstanding investment protection. "With IDC (Internet Direct Connection), the Disklavier Mark IV functions as a radio by streaming songs. DisklavierRadio subscribers can choose from among more than 10 music channels. And piano selections played on the Disklavier truly resonate when instrumental accompaniment is streamed through Disklavier speakers."*) <http://www.yamaha.com/yamahavgn/CDA/ContentDetail/ModelSeriesDetail/0%2C%2CCNTID%2525253D33874%2C00.html>

- 2008 \_\_ **European Sound Delta**, Valérie Vivancos and Joachim Montessuis (*Mobile radio art project. European Sound Delta is a 3 months nomadic residency navigating on the Rhine and Danube rivers, a performance across Europe and a radio project concerned with the perception of traversed spaces. Two boats will simultaneously navigate upstream on both great European rivers from the North Sea and the Black Sea down to Strasbourg. Technical equipments and crews of artists -either invited or having responded to a call for participation- will be on board. During Summer 2008, participants will be asked to compose sound pieces and create in-situ devices from recordings made in the crossed cities: ambiences, languages, music... During each boat-call, the public spaces of the cities will become a 'playground': a sound territory to explore but also a place for diffusing the work of artists through a series of events : concerts, performances, installations, itineraries... In its final stage, the completed works will be gathered and exhibited as part several sonic cruises in (26-27-28 September 2008). By involving a great number of participants European Sound Delta thus prefigures an original network of artistic and cultural cooperation focused on sound art. It will also enable young people needing professional integration to get acquainted with sound creation techniques. It will be possible to follow the entire project from a distance thanks to an ephemeral radio jointly operated with local radios and an online sound wall, where the artists will post their sketchbooks. Radio2radio is a mobile, ephemeral and experimental experience. It is a Est/West radio aiming to confront the sound and musical worlds of the Rhine and Danube rivers during a 3 months journey through the heart of Europe. This program selection guided by the proclivity of sound artists will be made through a series of crossing, friction and multiple encounters with the people involved in the local artistic scenes and their inhabitants. A radio, carrying sounds and images, will be engineered aboard two mobile studio-boats. Its programs will be made of chronicles (a travelogue on both boats), original sound creations, and live transmissions of artistic and musical events. The radio schedule will be enhanced by a par series of programmes provided by the most creative radios of the traversed territories. radio2radios is: 2 and 1/2 months of non-stop programmes around the clock, 16 guest FM radios, 20 resident sound artists, 20 guest artists, 20 live events. The 'Poulpes' will pace the radio schedule like a clock, on an hourly basis: a 1 minute sound piece generated by Apo33' sound installations will be broadcast in real time.) <http://www.sound-delta.eu/?lang=en>*

- 2008 \_\_ **The Fragmented Orchestra**, Jane Grant, John Matthias & Nick Ryan (*The Fragmented Orchestra is a collaboration between artist, Jane Grant, composer-musician-physicist, John Matthias and composer-sound-designer Nick Ryan and is the winner of the 2008 PRS New Music Award. The Fragmented Orchestra is a huge distributed musical structure modelled on the firing of the human brain's neurons. The Fragmented Orchestra will connect 24 public sites across the UK to form a tiny networked cortex, which will adapt, evolve and trigger site-specific sounds via the FACT Gallery in Liverpool, the current European Capital of Culture from December 11th 2008 - February 9th 2009. Each of the sites will have a soundbox installed, which will stream human-made and elemental sound from the site via an artificial neuron to one of 24 speakers in the FACT Gallery. The sound will only be transmitted when the neuron fires. A firing event will cause fragments of sound to be relayed to the gallery and will also be communicated to the cortex as a whole. The combined sound of the 24 speakers at the gallery will be continuously transmitted back to the sites and to this website at which the sound from the individual speakers can also be listened to. The sounds of The Fragmented Orchestra will vary*

according to location; wind through a forest, heavy traffic, the continual rotating of wind turbines and chatter of migrating birds arriving for the winter will be combined with incidental and performed sounds from members of the public. The public, invited to play the instrument at the 24 sites, will be able to hear the effect their playing has on the overall composition of the piece at each site, at FACT in Liverpool and on this website. As members of the public use the instrument they will become both player and audience of a vast and evolving musical composition extended across the UK. We are looking for suggestions for sites over the next two months. If you would like to suggest a suitable site for us to install one of the 24 soundboxes in your local area we'd like to hear from you. [Jeremy de Prisco] <http://www.thefragmentedorchestra.com>

- **2008** \_\_ « **Global Art** », Derrick de Kerckhove (*Art that reflects and promotes a planetary sensibility: 1/ Change of scale (we are all globalized by carrying a cellular phone), 2/ Accelerating environmental awareness (the new ground of human experience), 3/ Continental imagination (Europe as an intermediate step for global community), 4/ Everywhere (immersed in a single data environment), 5/ Ubiquity and simultaneity, a transcultural condition. Great variety: 1/ Earth as artform (land art, etc.), 2/ Global spectacle (object of contemplation), 3/ Global connections, 4/ Global contractions, 5/ Interlocal interactions, etc...)* <http://www.mcluhan.utoronto.ca/derrickdekerckhove.htm>

- **2008** \_\_ **The Hispaniola**, Christopher Williams (*A webradio play for flutist is a 56-minute work in 4 acts somewhere between an experimental Hörspiel and an electroacoustic composition, to be heard via webradio, traditional radio, or live with or without the flutist present. The Hispaniola centers on a study of imaginary distances: both among its diverse source materials and its media of production. Fragments from Treasure Island, historical variations on Lillibullero (a popular 17th century tune which appears in TI), bits of interval signals from the BBC World Service, and original music for flute and electronics form part of the same circus, mediated by an FM radio broadcast within the piece that alters our sense of space and narrative. When this broadcast later "heats up" through feedback and electromagnetic interferences, the radios en scène obtain a voice of their own.*) <http://www.nauchristopher.thenthis.org/>

- **2008** \_\_ **Hokkaido Industrial Research's 'Melody Road'** (*Not to be outdone Shizuo Shinoda of the Hokkaido Industrial Research Institute in northern Japan in 2008 created three 'Melody Roads' each delivering thirty second interludes of Japanese pop songs: one in Wakayama playing "Miagete goran yoru no hoshi wo" ("look up at the stars in the night" by Kyu Sakamoto) if driven at 40km/hr, another in Gunma, which when driven over at 50 km/h reproduce "Memories of Summer" and one in Hokkaido (no song name supplied) "You need to keep the car windows closed to hear well," wrote one Japanese blogger. "Driving too fast will sound like playing fast forward, while driving around 12mph has a slow-motion effect, making you almost car sick."*) <http://www.youtube.com/watch?v=yTsoP3WWgU4> <http://www.noiseaddicts.com/2008/09/car-musical-instrument-melody-roads-japan/>

- **2008** \_\_ **Honda Civic 'Musical Road'** (*The Most recent application of audio road corrugation is the 'Civic Musical Road' developed as an advertising gimmick by Honda in 2008 in Lancaster, California. the original Musical Road played a version of the 'William tell overture' over a quarter mile stretch of the highway - but had to be paved over at the insistence of local residents tiring of nocturnal multi-vehicle reverberations of the lone ranger. The road was later re-located to Avenue G between 30th Street West and 40th Street West, beyond earshot of local residents: "Take the 14 freeway to the Ave G exit and go west. Stay in the left lane and you will hear the road play the "William Tell Overture" about a mile or so down the road..."*) <http://www.youtube.com/watch?v=RLNfN6-eA0g> <http://www.youtube.com/watch?v=gRiJEte910>

- **2008** \_\_ **In Hear, Out There**, Mat Green (SARC), Andrew Henley, Maria Prieto, Artur Vidal, Horacio González, Luis Ayuso, Carlos Panero Zurbruggen (*The aim of this project is not only to trace unexpected and multi-sensorial soundscapes of those places in Madrid, but also to manage and redesign the spaces and emotions of this unperceived park. This artistic work seeks to create an augmented experience of that urban space; to revitalize an open, green, public space for the city. Technologically, we realised this aim through the use of GPS and mobile technologies which intelligently deliver audio-visual content to an individual navigating through the site. A PDA device can be booked out at the main desk at the Medialab-Prado. A participant will then be asked to walk around a mapped space within AZCA. They are to inhabit a new urban environment where structures and bounds are expressed through sound composition delivered through headphones. This audio develops according to the user position within the AZCA space. When within one of three mentioned rectangular areas the individual will also be presented with a series of images from each created site. Conceive a catalogue, a map of sound/video from place – from everyday environments – from out in the street. Account how this map could be edited and updated by a network community. Conceive a manner by which an environment, a path, a locale from another place can be aurally/visually transposed, fitted, juxtaposed to your place – putting you within a hybrid place – is your attention in or out, in and out? Using GPS and a sound/video recording equipment two differing walks through (or outside of) Madrid will be documented and a map will be created.*) <http://195.53.62.237/inhearoutthere/>

- **2008** \_\_ **The Internal 'Orchestra' of the Earth** (MIT Seismologist John Bullitt has synchronized the vibrations recorded by a

global network of digital seismographs, shifted their frequencies up a number of octaves, sped them up, and made them audible to the human ear.) <http://www.jtbullitt.com/>

- **2008 \_\_ LAPS**, Locus Sonus, Nicolas Maigret (*LAPS est une installation sonore et visuelle qui utilise Internet comme un espace imaginaire dans lequel le son vient se réverbérer. En s'appuyant sur les erreurs de transmission, le matériau sonore est modelé par l'espace acoustique virtuel du réseau. Les flux sonores diffusés au sein de l'installation se complexifient progressivement et rendent compte de l'activité du web en différents points du globe. L'analyse du réseau en ces différents points est utilisée pour dessiner progressivement la silhouette d'un paysage imaginaire à l'intérieur de l'installation*) [http://peripheriques.free.fr/article.php3?id\\_article=922](http://peripheriques.free.fr/article.php3?id_article=922)

- **2008 \_\_ LS in SL**, Locus Sonus in Second Life (*Research on remote ambient sound combined with an interest in spatialization techniques and ways to interface with them has led us to take an interest in virtual worlds and 3D environments. The idea is to experiment the possible permutations between the physical and the virtual world using audio as the main vector. The aim is to verify the way resonant spaces influence and mix with the local acoustic space leading to a paradoxical hybridization possibly placing the user in both places simultaneously. Avatars visiting the "Cultures Digitales island" in Second Life are invited to manipulate sound objects. Their action is spatialized in the physical space in Aix and the resulting audio signal in the physical space is recorded and "streamed" into Second Life. We looked at Second life in terms of a networked community, and we started wondering if it would be worthwhile to create an extension of our lab there. The first action that we accomplished was to set up an interface to listen to the locus sonus streams in SL. (Brett Ian Balogh, SAIC). We then asked ourselves what the equivalent of an open microphone might be in SL. It became apparent that the possibilities for generating audio within SL are extremely limited, therefore we decided to create an autonomous system which generates sound to be streamed to SL. Our system was created as an extension of the real world into the virtual world of Second Life. In SL, we fabricated a series of rooms adjoining a virtual representation of a real place. In these rooms, we placed objects, each linked to a sound. When an object in the virtual space is moved, the sound reverberates through the virtual architecture, and is relayed into real life, as if it were a physical object. A microphone in the physical space plays the room tone and synthesized sounds back into the virtual space, creating a closed circuit between the virtual and real. Today we are interested by the creative possibilities offered by this project, exploration of possible permutations between the local and the virtual space is just beginning. Using a virtual environment to manipulate relatively sophisticated audio synthesis is exciting, as is the relationship between a synthesized (imagined) sound and object built in 3d. We are now intending to start work on our own virtual world using a different platform for which we will provide a downloadable client.*) <http://locusonus.org/>

- **2008 \_\_ Marvelo Bikes**, Kaffe Matthews (*The Marvelo project studies, makes and plays with sound, mapping and collective composition for mobile performance, making new music for outside spaces that plays from audio bicycles as you pedal. Locally made by the Marvelo Team, the music is sourced from home and street recordings, then mixed and processed into fragments using maps and routes as scores, finally laying one huge sound work over the neighbourhood. Take out a Marvelo Bike and a visitor can find their own sequence through the score, each ride revealing a unique performance for cyclist and passer by. The Marvelo Project was commissioned by the Folkestone Triennial 2008, curated by Andrea Schlieker, facilitated by Niamh Sullivan of the Creative Foundation, and is open from June 14th to September 14th 2008.*) <http://www.kaffematthews.net/wiki/Marvelo>

- **2008 \_\_ Massh!**, Tokui Nao (*Massh! is an online music software, which enables users to use any portions (i.e., loops) of sound data found on the Internet and mix them to make their own versions of songs (i.e., Mashup). Mashups made on this system can be also published as "blueprints" containing descriptions enough to reproduce the same result on other users' computers. Its distinctive visual user interface also provides highly interactive user experience, so that people with little music knowledge and experience can join the creative process of making music. 1/ A network music software, which enables you to Find, Mashup & Share your favorite tunes. 2/ A Music 2.0 web application. 3/ An on-going project of Nao Tokui. 4/ An homage to an artform formerly known as music. 5/ A way to think about the future of music.*) <http://www.sonosphere.com/mash/>

- **2008 \_\_ Netrooms – The Long Feedback**, CNMAT University of California Berkeley, CCRMA, Stanford University, SARC Belfast Pedro Rebelo - Michael Zbyszynski (Berkeley), Jerome Joy (Nice), Alejo Duque (Nice), Alain Renaud (SARC), Chris Chong (Second Life) (*nine-site network performance. Netrooms: The Long Feedback is a participative network piece which invites the public to contribute to an extended feedback loop and delay line across the internet. The work explores the juxtaposition of multiple spaces as the acoustic, the social and the personal environment becomes permanently networked. The performance consists of live manipulation of multiple real-time streams from different locations which receive a common sound source. Netrooms celebrates the private acoustic environment as defined by the space between one audio input (microphone) and output (loudspeaker). The performance of the piece consists of live mixing a feedback loop with the signals from each stream*) <http://www.sarc.qub.ac.uk/~prebelo/netrooms/>

- **2008** \_\_ *NomadicMILK*, Esther Polak (*The NomadicMILK project by GPS artist Esther Polak travels to Nigeria. There she is using the satellite technology to track both the distribution of "Peak" brand milk from harbor city Lagos to the capital of Abuja as well as a nomadic Fulani family of cow herders in Abuja's vicinity. By showing the people involved their own tracks and videotaping their responses to it she creates a reflection on current nomadic life. A custom built robot accompanies her to Africa. Once fed the GPS data it draws the people's recorded routes using sand, allowing large groups of people to gather around the image and reflect communally. During this process, the potential of sand drawing as temporary graffiti to show and discuss data in public space has become an important focus point for the latest works of Esther Polak and was developed further in the proposed project Spiral Sunrise. Esther Polak has been following the dairy economy for some time now. During her previous MILK project she tracked how milk from Latvian farmers ended up in Dutch cheese, earning her a Golden Nica award at the Arts Electronica festival. Milk, she says, has always been a fundamental part of our diet and as such has sculpted our lives and our landscapes. Her activities can be followed live on the [www.nomadicmilk.net](http://www.nomadicmilk.net) blog as well as via a twitter account she updates via SMS.) <http://www.nomadicmilk.net>*

- **2008** \_\_ *Olinda* (*Olinda is a prototype digital radio that uses modular hardware that is customizable for each user. It has your social network built in, showing you the stations your friends are listening to. Six lights on Olinda show when a close friend is listening to the radio, using wifi and Radio Pop, the BBC's website for sharing 'now playing' information. Each light is a button: you can tune in to listen along with them, discovering new stations via your social network.*) [http://schulzeandwebb.com/2008/olinda/Olinda\\_pamphlet\\_for\\_screen.pdf](http://schulzeandwebb.com/2008/olinda/Olinda_pamphlet_for_screen.pdf)

- **2008** \_\_ *Oterp*, Antonin Fourneau, Alejandro Palmero, Jankenpopp, Saitone, TM (*Make music with a disc of 510 067 420 km<sup>2</sup> = the Earth or how to use the surface of the earth to realise something between a music game or a real time sound editor. Oterp is a prototype sound editor within a video game, in which GPS sensors allow you to manipulate music in real-time, based on your location on Earth. As well as generating new sounds, you will also discover and collect different kinds of sounds as you travel. Oterp's goal is to mix the reality of our environment into game music. It is a way of re-imagining our daily displacements in a society increasingly on the move.*) <http://www.inclusiva-net.es/oterp/> <http://atonews.blogspot.com/>

- **2008** \_\_ *Pacific Rim-of-Wire*, Pan Asian Music Festival, Stanford Laptop Orchestra Premiere in a Live Networked Concert with Beijing, Stanford, SLOrk (*In this first-of-a-kind concert, musicians from Stanford's renowned Center for Computer Research in Music and Acoustics (CCRMA) will connect with musicians 6,000 miles away in Beijing to perform - in real time via a webcast - a program that celebrates music, technology, and international collaboration, and marks the premiere of the all-new Stanford Laptop Orchestra (SLOrk). Also on the program is guest composer and painter Luo Jingjing, who will collaborate with the laptop orchestra to create a new improvisational work on site*) <http://slork.stanford.edu/>

- **2008** \_\_ *PALAOA - Transmitting live from the Ocean below the Antarctic Ice* (*Transmitting live from the Ocean below the Antarctic Ice: "Providing an acoustic live stream of the Antarctic underwater soundscape is a formidable challenge. After all, more than 15000 km lie between Antarctica and our institute in Germany. Underwater sound is recorded by means of two hydrophones by PALAOA (Perennial Acoustic Observatory in the Antarctic Ocean), an autonomous, wind and solar powered observatory located on the Ekström ice shelf (Boebel et al., 2006). The data stream is transmitted via wireless LAN from PALAOA to the German Neumayer Base. From there, a permanent satellite link transmits the data to the AWI in Germany*) [http://www.awi.de/en/research/new\\_technologies/marine\\_observing\\_systems/ocean\\_acoustics/palaoa/palaoa\\_livestream/](http://www.awi.de/en/research/new_technologies/marine_observing_systems/ocean_acoustics/palaoa/palaoa_livestream/)

- **2008** \_\_ *Pings*, Simon Whitehead & Barnaby Oliver (*PINGS springs directly from the geographical distance between two collaborators. Working from their locales they explore the physical space between them through rivers and air and a range of other terrains with their own qualities, such as the web, phone, post, and less tangible links of memory and synchronicity*) <http://www.untitledstates.net/pings/>

- **2008** \_\_ *Programmable Media II: Networked Music*, Pace University, NYC, April 2008 (*Participants: Andrew Beck, Jason Freeman, Mark T. Godfrey, Sawako Kato, Zach Layton, LoVid, Adam Nash, Helen Thorington, Peter Traub, Dan Trueman, Tobias C. Van Veen. Pace University will host a free public event on Friday called Programmable Media II: Networked Music to address the question of whether networked music can provide "a compelling music experience." The one-day event will highlight a number of digital artists who are attempting to do just that, plus explanations of how they go about it. After an introduction covering the theory, history and ideas behind networked music (the central concept is to create music from networks and "the collective behaviors of their machine or human nodes"), attendees will see and/or hear a few networked music performances, which should provide helpful examples of what this stuff actually sounds like. Based on the rapidly expanding archive of music/sound experiments to be found on *Networked\_Music\_Review* and the fifteen short works recently commissioned for it, the symposium aims to stimulate critical and far-ranging discussion on emerging music and sound art practice.*) <http://csis.pace.edu/digitalgallery/ProgrammableMedia/2008.html> [http://slurl.com/secondlife/Emerson\\_Island/193/12/36/](http://slurl.com/secondlife/Emerson_Island/193/12/36/)

- **2008 \_\_RJDJ**, Michael Breidenbruecker (*RjDj is a music application for the Iphone. It uses sensory input to generate and control the music you are listening to. RjDj is mainly listened to with headphones. Think of it as the next generation of walkman or mp3 player. The listening experience of RjDj is similar to the effects of drugs. Drugs affect our sensory perception, so does RjDj. RjDj is a digital drug which causes mind twisting hearing sensation. RjDj is promoting a music genre that we call "reactive". The sound that listeners hear is produced by digital devices in the very moment it is listened to. Composers of reactive music often make heavy use of sensory input, which makes the environment of the listener part of the music that is heard. Compositions are called "Scenes". Scenes have a different musical structure than traditional compositions and they often have no clear beginning and end. Some scenes promote active listener involvement and others promote passive listening. In any case, when listening to RjDj, take care and enjoy your mind twisting hearing sensations. The interface of the RjDj application is very much like the ipod application. It features an RjDj Player, an RjDj scene browser and a browser of your recordings. The RjDj player plays back RjDj scenes. We have currently bundled a number of scenes from different artists with RjDj. Scenes define what you hear. The difference to an mp3 player is that RjDj uses sensory input of the iphone to control or generate the music you hear through the headphones (Attention, currently only playing through headsets with headphones and microphone). Some scenes react on sound input and others on accelerometer data and some on both. This means that what you hear sounds different wherever you are listening to it and whatever you do. A scene is only defining the behavior of the composition not necessarily what you hear. That is why we also built you a recorder. Using the recorder you can record what you hear and save it. So if you have one of those mind twisting hearing sensations, record it and listen to it over and over again. There are different scenes which suit different situations. When you want to dance we have scenes which use accelerometer data to multiply the effect of your moves. When you walk on the street we have scenes to calm you down and we have scenes which you should listen to alone or with your friend instead of dazing you away. Every scene has a description which you can access through the player. Read it so you don't get lost. RjDj scenes are composed using a software called PD. If you are an artist, composer or programmer and want to create your own scene, you can do it. It would be really cool to hear back from you, we will certainly bundle more and more scenes with the application. We are also doing RjDj events which we call sprints in different locations. They are generally focused on people who want to create RjDj scenes but we are happy to meet anyone with an interest on RjDj on those events.) <http://more.rjdj.me>*

- **2008 \_\_ Riffworld**, Somona Wire (*Riffworld.com is Somona Wire Works' entry into the music collaboration and social networking space. Using the RiffWorks desktop recording application, up to four musicians can connect and collaborate on a song simultaneously. As a layer records, it instantly streams to other players' running RiffWorks. As the Riff loops, other players can add more. All contributions are saved on RiffWorld.com and can be opened later for further collaboration.)* <http://www.riffworld.com/>

- **2008 \_\_ RoadMusic - Autosync**, Peter Sinclair (*RoadMusic AutoSync revisits the common experience of listening to music while driving in a car by replacing sounds normally provided by media - radio, cd or mp3 player by an installation which produces sounds from the action of the drive itself. Gear changes, vibrations, road surface, become the instruments playing music unique to each trip. "We all love driving down a open road with music on the car radio, at times there seems to be an almost magical synchronization between the music playing and the passing landscape, the speed, the hum of the motor, sounds harmonize with the machine... Then somehow it stops, we get bored of the same rhythm, or it starts to rain, or traffic slows down and suddenly it doesn't seem right anymore. We start grubbing around for CDs or changing radio stations or navigating on our USB key..." This was the impetus for Peter Sinclair's AutoSync. With AutoSync, the music played on the car HiFi is generated entirely by the car itself: vibrations of the car on the road, recognizable movements (accelerations, gear changes, bends etc.) and the passing landscape. The program (Pure Data) runs on a mini PC which is plugged into the aux jack of the car HiFi. Information about the drive is captured by a Wiimote controller, fixed with a suction cup inside the windshield, which continuously sends data concerning the XYZ movements of the car. The Infra Red sensor has been adapted (the filter taken out), so that it detects position and size of any luminous objects (headlamps or tail lights of other cars, areas of sunlight or shade etc). The vibrations from the Wii are continuously written into lookup tables (one for each axis), then read as audio (wavetable oscillators). This means that while pitch (the tune) is defined algorithmically within the program, the timbre of the sounds varies according to vibrations of the motor and other movements of the car. These movements are analyzed and categorized to distinguish bends, accelerations, decelerations, bumps in the road and standstill. These events are used to trigger variations on sequences which are automatically generated whenever the car stops. RoadMusic AutoSync has been presented publicly for the first time at the festival "version Beta" Centre Pour L'image Contemporaine, St-Gervais, in Geneva (friday oct 31st saturday nov 1st 2008) and on december 13th.) <http://nujus.net/peterhomepage/> <http://nujus.net/~petesinc/> <http://petersinclair.org>*

- **2008 \_\_ Say The Music**, The Cathedral Band (*The Cathedral Band performance will feature DJ Tamara, AJ Sabatini as the Chronicler and William Duckworth on PitchWeb, along with local musicians Stuart Dempster and the Seattle Chamber Players. So phone in your sounds, and then tune in to hear the continually unfolding story of Cathedral. Say The Music is a global sound event in which people from around the world are invited to participate. Here is how: simply call a local phone number in your area; leave us a personalized sound, song, word or phrase; and DJ Tamara or I will mix your sound into the performance. You will even be able to*

hear it in a live webcast. Local phone numbers are available worldwide - from New York to Seattle, and Brisbane to Perth, plus London, Paris, Rome, Tokyo, and Rio.) <http://echolog.net/?q=node/2> <http://cathedral.monroestreet.com/>

- **2008 \_\_ Silent Rave** (Often more than a thousand people gathered for a dance party without audible music, known as a silent rave. Silent raves are popular in Europe, especially London, but also in New York. The basic premise is that a hundred or a thousand or a few thousand people all turn up in a public place, turn on their own headphones and dance at the same time. So they are dancing to whatever is on their MP3 players in a public silence. "A mass of people — a head-bobbing, arms-above-the-head, conga-line-forming, full-tilt boogie-woogie — emitted what seemed like no sound but rather music visible. Everyone danced in place, listening to an iPod and prancing to his or her own playlist. For long minutes, in the distance, only the square's ever-present bongo players could be heard, while close up only shoes, or bare feet, could be heard padding on concrete. Video cameras and cellphones were everywhere. A man explained to his friend: "It's a silent rave. Everyone's dancing to whatever's on their iPod." "And filming themselves," replied his friend. "Yeah, it'll be on YouTube tonight," the first man said, "if not, like, now already.") [http://www.nytimes.com/2008/04/20/nyregion/20rave.html?\\_r=2&oref=slogin&ref=nyregion&pagewanted=print&oref=slogin](http://www.nytimes.com/2008/04/20/nyregion/20rave.html?_r=2&oref=slogin&ref=nyregion&pagewanted=print&oref=slogin)

- **2008 \_\_ Streaming Festival : }onsite(online), <AREA 10: MEDIALAB /> London** (3 days dedicated to urban spaces exploration in connection with online transmissions) <http://www.area10medialab.co.uk/>

- **2008 \_\_ Sun Run Sun: Sonic Navigations**, Yolande Harris, STEIM, NIMk Amsterdam ("The project development over the last four months has been intense and varied, and the months of March and April hold the exhibitions and performances of five related works on the theme of navigation technologies, environment and sound. The central work is the Satellite Sounders, small portable instruments for hearing the live data from the GPS satellite network. These can be tried out by walking along the canals around NIMk and are part of the upcoming Territorial Phantom exhibition there. The two installation pieces, Dead Reckoning and Navigating by Circles present spaces of intuitive navigation in sound and video, in Amsterdam and Den Haag." Sun Run Sun is an audio installation by media artist Yolande Harris, made during a residency at the Netherlands Media Art Institute (Montevideo), in Amsterdam. The project investigates different modes of perception related to geographical position. The precision of the latter depends on the use of new sampling technical instruments. In other words, it involves different media objects. The nature of GPS signals lies at the base of Harris' research. There are two kinds of signals: data related to the found GPS satellite identification and position, and data related to the user position. They represent two different structures, each with its own value. Both are used in Harris' installation, where they are translated into a musical composition, changing accordingly to the user/navigator's and satellites' movements. This translation can be interpreted as a process aimed to rediscover the human role in his surrounding environment. The artist's argument is that the ubiquity of positioning systems, GPS among them, is taking over our ability to perceive spaces and navigating them. Sound has the ability to open up a subjective dimension, which can free us from the coldness and mechanics of reading digitally generated data. These sounds are causing human intimacy. Harris believes that audio receptivity precedes visual one. [Vito Campanelli] <http://sunrunsun.nimk.nl/>

- **2008 \_\_ SoundWire / JackTrip - Multimachine jam sessions over the Internet2** (JackTrip is a Linux-based system used for multi-machine jam sessions over Internet2. It supports any number of channels (as much as the computer/network can handle) of bidirectional, high quality, uncompressed audio signal streaming. It is currently being developed and actively tested at CCRMA by the SoundWIRE group.) <http://ccrma.stanford.edu/groups/soundwire/> <http://ccrma.stanford.edu/groups/soundwire/software/jacktrip/>

- **2008 \_\_ Street Radio**, Armin Medosch (The public installation project Street Radio has been recently launched by Armin Medosch at the central Southampton railway station, and it'll last till November 2008. Medosch has realized a radio network drawing on Hivenetworks technology and Alexei Blinov consultancy (Raylabs artists who contributed to countless media artworks). The network has ten public nodes, broadcasting some stories selected from the Southamptons Oral History Archive and adapted to match the site's characteristics, where the nodes has been implemented. Street Radio uses a set of technologies that have become usable out of the scientific research "sancta sanctorum" thanks to the free software movement's virtuous dynamics. Now they lend themselves to various DIY approaches, as this one. Every installation node is made up of a small weather resistant box (weather in this harbor city is far from being a mild one); the inside hardware/software combination is made by Hivenetworks, enabling the loop playing of audio files through FM radio waves (89.0 MHz). The boxes are supplied with a small USB charger and they can spread the audio waves up to 30 meters away, being also able to register the presence of a Bluetooth enabled mobile. Remote connections are used only for machines' maintenance, so the devices are definitively not access points. One of the most interesting aspects is the oral tradition involvement, so often endangered in a society obsessed by the future, the newest forms of communication and the technical innovation. The Street Radio project can then be interpreted as the nth disproof of the short-sighted forecast stating that oral tradition would have been wiped out by the computer society. Today we can notice an emergent new form of orality that should be defined as a "tertiary", in the School of Toronto tradition, that taught us to consider the electronic-era orality as a secondary one.) <http://www.thenextlayer.org>

- 2008 \_\_ « **Tapping into the Internet as an Acoustical and Musical Medium** », Chris Chafe (*“Sound propagation in the network differs from sound in air, along stretched strings or through other familiar media. Among its unique aspects are jittery arrival times of sound packet data and speed asymmetries in opposite directions over a given path. - An “audio ping” monitors QoS (Quality of Service) at a finer granularity than the traditional network “ping” utility in real time. The tones often exhibit an unusual pitch wavering due to changes in the speed of sound over the network. - Where in physical media, distance-related delay affects signal intensity, spectrum and other qualities, in the Internet the sound remains the same even having traveled around the planet. These differences are significant for behavior in musical performance. The analogy that comes closest is from our experience with underwater acoustics. Entering into these different sound worlds with our ears, the properties of water or Internet media give them a sonic imprint all their own. We know very well the sound of the former and may soon become familiar with the latter.” - Published in Proceedings of ICMC’08, SARC Belfast, August 2008*)

- 2008 \_\_ **Telematic Performance. From Soho to Rio: What’s wrong with the world ?** (*Telematic Performance. From Soho to Rio: What’s wrong with the world? is a unique event performed in real time across two continents. Combining live performance in Soho’s theatre bar with real time video links from both London and Rio, What’s wrong with the world? takes the distance between the two cities and uses it to create a third, surprisingly intimate location where performers in London mingle, merge and collide with their counterparts in Rio. Created, rehearsed and performed via live video link, What’s wrong with the world? combines two cities and two stories to form a single vibrating narrative of distance, delay, loss and discovery characterised by Station House Opera’s distinctive physical and visual style. What’s wrong with the world? is a collaboration with Phila7 and Oi Futuro in Brazil and is produced by Phila7 in Brazil and Artsadmin in the UK, with support from Soho Theatre and Café Lazeez. Station House Opera and its director, Julian Maynard Smith, has led the way in the art of linking up live theatrical performance via the internet and, since 2004, has developed a series of ambitious multi-location projects connecting cities, countries and continents with a range of international partners.*)

- 2008 \_\_ **Telemergence**, Deep Listening, Pauline Oliveros (*New works for the telematic medium by composers commissioned by Deep Listening Institute, Ltd. Three ensembles from across the country will perform commissioned works together live via Internet2, using Jack Trip audio software developed by Chris Chafe and iCHATav video software. Composers commissioned for this concert include Monique Buzzart, Mark Dresser, Michelle Nagai, Kristin Norderval, Will Swofford and Sarah Weaver. The three collaborating ensembles will be performing from three locations: Stanford University in Stanford California, Rensselaer Polytechnic Institute in Troy New York and the University of California - San Diego. Telemergence is a part of the Telematic Circle (TC) <http://www.deeplisting.org/site/telematic>*)

- 2008 \_\_ **The Telephone Game: Oil/Water/Ether**, Princeton Laptop Orchestra (PLOrk) (*exploration of a real-time collaborative composition local network. All of the performers have identical performance/composition programs — a custom flexible step-sequencer — that invite play with rhythmic cycles of various lengths and timbres. The real fun starts, however, when the players begin spying on their neighbors, secretly, via the network, and stealing their ideas with the click of the mouse. Unplanned structures begin to emerge, like oil on water, as riffs propagate and evolve, sometimes returning unrecognizable to their creators. Each instrument consists of a laptop, a multi-channel hemispherical speaker, and a variety of control devices (keyboards, graphics tablets, sensors, etc...)*) <http://plork.cs.princeton.edu/>

- 2008 \_\_ **Trace Aureity**, Adam Nash (*Immersive interactive audiovisual sculpture for Second Life. « I have attempted to concentrate on the sound and music generative qualities of interactive realtime 3D. The work uses 88 separate audio samples from field recordings of ordinary reality: city streets, birdsong, talkback radio, etc. These sounds are harmonically filtered and manipulated (and usually slowed down) according to a rational scale of my own devising, based on a fundamental tone of 77Hz, and proceeding in intervals of whole numbers over seven. The work is designed for avatars to play within. There are 96 nested rotating objects, densely arranged in a three dimensional grid. When passed through by an avatar, these objects sound. Certain of the innermost nested objects, coloured red, also spawn glowing spheres which fly out at velocity and bounce around inside the work, triggering sounds as they pass through other objects, before they disappear after about a minute. Because the audiovisual navigable/playable space of this work is so dense, the interactor is rewarded by slowing down their movements as much as possible, since even small movements create differences in sonic output, be that by translation or rotation, since the environment outputs spatialised stereo with depth falloff. The work is designed to be played, either solo or in groups, as slowly as possible. The contingencies of time-based interaction by people-as-avatars creates a dynamic audiovisual composition, always unique to that moment and those interactors. This may be seen to represent an evolution of the aleatoric composition techniques of Cage and Eno, as well as an enactment of the objets sonore of Pierre Schaeffer. These approaches, among many others, are given extraordinary enabling potential by digital media generally and interactive multi-user realtime 3D specifically. <http://slurl.com/secondlife/Marni/179/181/29> <http://transition.turbulence.org/Works/adamnash/>*)

- **2008 \_\_ Tuned City - Between sound and space speculation**, Berlin (*exhibition and conference project which proposes a new evaluation of architectural spaces from the perspective of the acoustic. The project draws the traditions of critical discussion about urban space within the architecture and urban planning discourse—as well as its strategies and working methods—into the context of sound art. This expanded discussion reinforces the potential of the spatial and communicative properties of sound as a tool and means of urban practice. At the foundations of this event are artists' works and theoretical approaches which examine in a critical and sensitive way the given urban and architectural situations alongside their resulting socio-political implications, that re-use existing spaces or that conceive and open new spaces. A dialogue will be built at the intersection of both disciplines which traces out the complex relations and interactions of space-sound, both presenting and testing new strategies, methods, possibilities and potentials of sound work within the artistic and applied context. Tuned City is structured in two main segments – symposium and site-specific installations. The project Tuned City was initiated by garage and is produced and organised by a larger production team in cooperation with singuhr hoergalerie berlin and several other partners.*) <http://www.tunedcity.de/>

- **2008 \_\_ Urban Spaces with 4-Channel online stream**, HMSS, RIXC (Centre for New Media Culture in Riga) (*HMSS is an ensemble for electroacoustic noise-improvisation consisting of Ludger Hennig (Leipzig) Markus Markowski (Bremen), Hanns Holger Rutz aka sciss (Weimar) and Johannes Sienknecht (Berlin). The ensemble exists since the beginning of 2006 and, searching to extend musical improvisation through electroacoustic software-instruments. The musical material of HMSS consists mostly of noise and ambient sounds but also live-soundscapes which are interconnected within a signal-network. During the concert in Riga HMSS will be using a special 4 channel sound installation for visitors to experience the sound both acoustically and spatially. During the performance which will be a special electroacoustic network improvisation visitors will be able to move around using the space to perceive the architecture of sounds, which will feature urban soundscape from Riga city.*) <http://www.strommusik.org/download/streaming/> <http://www.rixc.lv/projects/hmss/>

- **2008 \_\_ World Listening Project** (*The WLP website could provide a number of services/functions that are not limited only to creating a sonic map of the world. These include: 1/ a "clearinghouse" or hub where people can find out about global efforts in the fields of acoustic ecology, listening, mapping, soundscape research, sonic art, phonography, and related endeavors, 2/ a place where people can hear new WLP-affiliated and/or sponsored audio recordings that are being created, e.g., a WLP sonic map of the world, 3/ an educational forum at which people can learn about soundscapes, acoustic ecology, etc. The purpose of categorizing is to make the WLP a searchable archive and/or database, the same as freesound.org, SoundTransit, Wild Sanctuary, Open Sound New Orleans, Locus Sonus, among others. The goals of the World Listening Project are to collect field recordings from every country on earth, to create a sonic map of the world, and to archive those recordings on a website. Many of the recordings for WLP have already been recorded, but many more will be recorded and archived. The WLP website is a work in progress, and it will be part of the Third Annual Chicago Calling Arts Festival (October 1-12, 2008). It will continue to be developed into the future. [Eric Leonardson]*) <http://launch.groups.yahoo.com/group/worldlistening/> <http://worldlisteningproject.blogspot.com> <http://www.2008worldlisteningproject.com/>



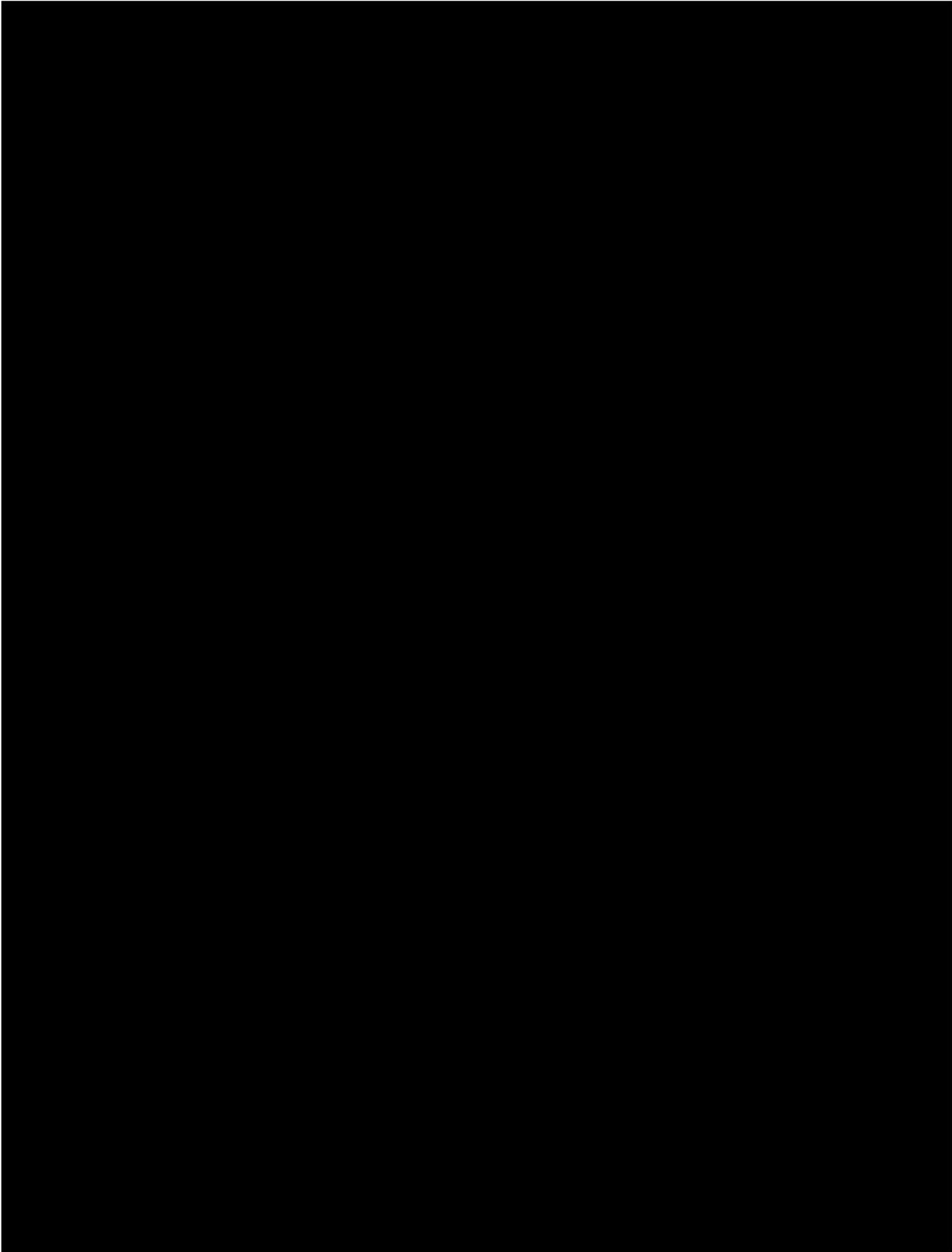


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Corpus



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CORPUS : PART 3

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THIS VOLUME IS NOT YET FINALIZED : NOT FORMATTED AND NOT CORRECTED.

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legend :

- □ : scientific source (papers, proceedings,
- ○ : specialized articles (press, writings, essays, books, etc.)
- △ : literature and other domains

reference : (*norme scientifique*)

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**A**

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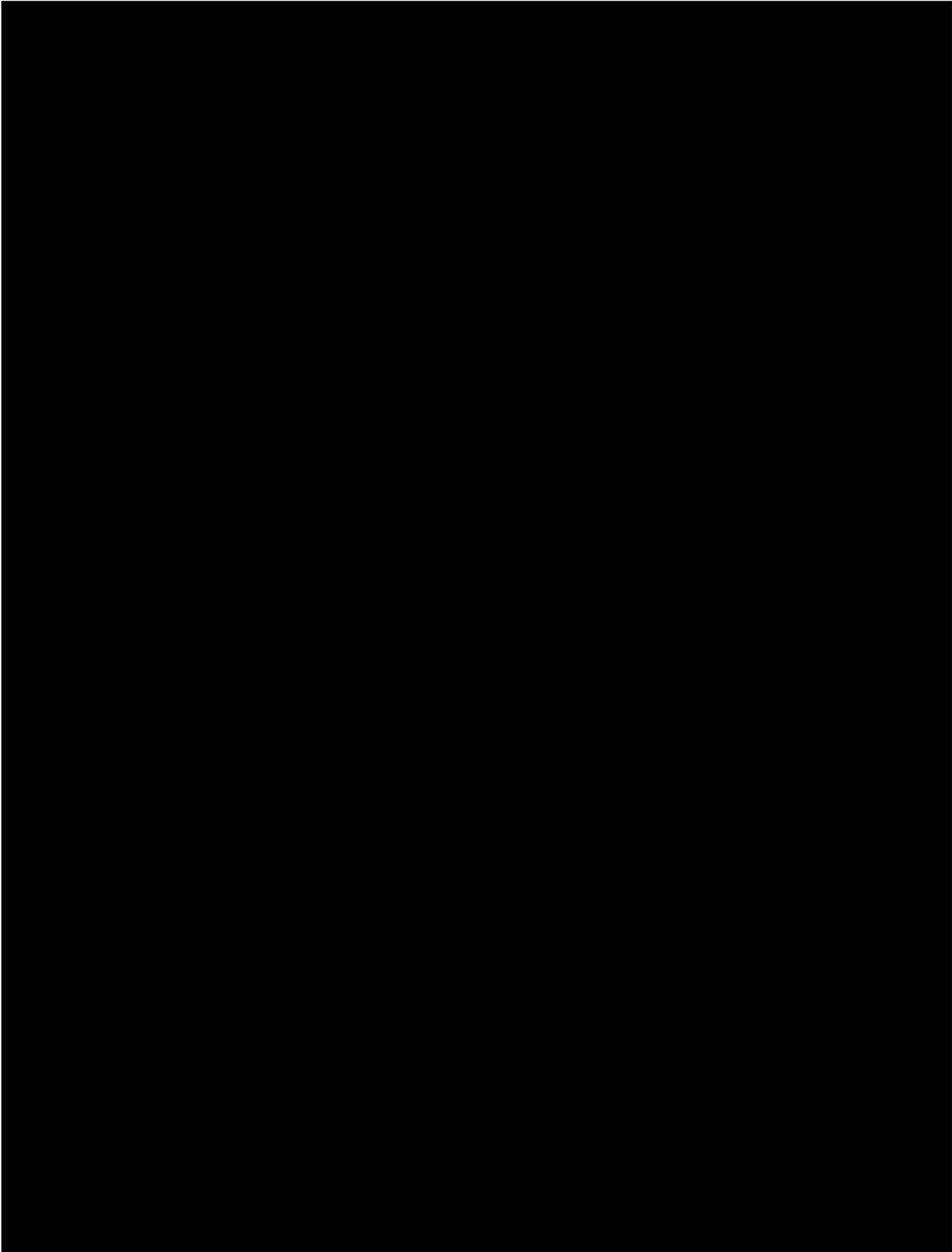
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# NMSAT

## About the authors



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## ABOUT THE AUTHORS

### - Locus Sonus, audio in art, sonic research lab

2009/2011 : Julien Clauss, Stéphane Cousot, Alejo Duque, Scott Fitzgerald, Jérôme Joy, Anne Laforet, Grégoire Lauvain, Anne Roquigny, Peter Sinclair.

- ▶ Locus Sonus is a research group specialized in audio art. It is organized as a post graduate lab by the Art Schools of Aix en Provence (ESAA) and Bourges (ENSA) in France. We have a partnership with sociology lab CNRS, LAMES Aix en Provence (who are interested by the way that practices related to new technologies are creating modifications in artistic production and the way that the public responds to these modifications), and we currently continue collaborations with the CRESSON, architecture lab CNRS in Grenoble (sonic spaces research centre), the School of the Art Institute of Chicago (SAIC), and other international partners. Locus Sonus is concerned with the innovative and transdisciplinary nature of audio art forms, in the framework of networked sonic spaces, some of which are experimented and evaluated in a lab type context. An important factor is with the collective or multi-user aspects inherent to many emerging audio practices and which necessitate working as a group. Two main thematic define this research - audio in it's relation to space and networked audio systems. Since it was launched in 2004, the research group Locus Sonus has been working on artistic possibilities arising from the intersection of networked and acoustic or local audio spaces. The first projects, « Locustream » (a worldwide network of open web microphones) & « Wimicam », were developed from experimentation using audio streaming techniques, and engage with problematic related to the use of flux for artistic purposes (flux understood here as a continually updating medium) in local and networked environments. Our research is fundamentally practice based aiming to create a corpus of artistic experimentation around a common problematic. The forms emanating from this activity are “verified” essentially through their presentation in public contexts. The choice of implementing this research within the art education environment is prompted by the current renewal of techniques and art-forms which are at the intersection of the visual arts and music. Today our research is grouped under two main headings “Field Spatialization” and “Networked Sonic Spaces,” around ongoing projects related to sonification (« New Atlantis ») and to specific sound studies on “distance listening” and “Internet auditoriums” (« NMSAT - Networked Music & SoundArt Timeline »), and various research projects led by the Locus Sonus artists-researchers.
- ▶ <http://locusonus.org/> .

### - Jérôme Joy

- ▶ *Jérôme Joy is a composer, performer and artist. He is currently professor at the National School of Arts of Bourges and co-director of research -with Peter Sinclair- of Locus Sonus, audio in art, research lab. He is currently working towards a PhD student in audio art & experimental music at Laval University Québec (title : Distance Listening & Internet Auditoriums - A new paradigm of the listening into the contexts of networked music and soundart). Recent projects include : networked music performance and telemusic (Sobralasolas !, Sumphoty, etc.), audiovisual net-projects (nocinema.org), net-art and netmusic collectives (The Thing, Collective JukeBox, etc.), noise instrumental & live music. He*

- has played, performed and lectured widely in Europe and internationally. In 2011 he will participate in the big French exhibition Le Temps de l'Écoute (Murs du Sons 2) at Villa Arson Nice.*
- ▶ *Recent writings : Hypermusique, programmation, composition. in Actes du Colloque "les sens du numérique : nouvelles perceptions" (Digital & the Senses : New Perceptions), Monaco, 1998; Lascaux2.org. in "L'art contemporain et son exposition", sous la direction de Catherine Perret, Paris: Éditions l'Harmattan, 2003; Dispositifs artistiques coopératifs - Co-op art systems (Collective JukeBox, picNIC, PacJap, ForumHub, etc.). in "NetzMusik/NetMusic", edited by Golo Föllmer, Neuen Zeitschrift für Musik, magazine and cd-rom, Berlin: Wergo Eds., 2004; LOGS, micro-fondements pour une émancipation sociale et artistique. Sous la direction de Jérôme Joy et Silvia Argüello, Programme de recherche AGGLO, 2001-2005, Paris: Éditions è@e, 2005; Networked Sonic Spaces. Locus Sonus, in Proceedings ICMC'08 International Computer Music Conference, SARC Belfast, 2008; Espaces Sonores en Réseau - pratiques de la recherche en art - Locus Sonus, In "Recherche et Création. Art, Technologie, Pédagogie, Innovation", sous la direction de Samuel Bianchini, Paris: Éditions Burozoïque, ENSA Nancy & Les Éditions du Parc,, 2009. Networked Music & Sound Art Timeline (NMSAT): A Panoramic View of Practices and Techniques Related to Sound Transmission and Distance Listening. Jérôme Joy et Peter Sinclair, Locus Sonus, In Contemporary Music Review, "Network Performance", Vol. 28, Nos 4 & 5, August/Oct. 2009, Abington Oxford: Routledge Taylor & Francis Group ; Networked Music & Sound Art Timeline (NMSAT): Excerpts of Part One - Ancient and Modern History, Anticipatory Literature, and Technical Developments, Jérôme Joy, Locus Sonus, In Contemporary Music Review, "Network Performance", Vol. 28, Nos 4 & 5, August/Oct. 2009, Abington Oxford: Routledge Taylor & Francis Group ; La Musique Étendue : En Plein Air — Les Écoutes Fascinantes sur l'île Lamma (Extended Music - 'Out in the Open' - 'Lammaserizing' Listeners), In Catalogue Around-Listening Places, edited by Yang Yeung, Honk Kong : soundpocket, 2010 ; Une Époque Circuitée - Réflexion sur l'organologie des arts en réseau : Le passage de l'Internet à son état musical (A Circuited Era - Towards the organology of networked art : The Internet's musical shift), In Intermédialités, no. 13, Été 2010, Centre de Recherche sur l'Intermédialité, Presses de Université de Montréal; (Introduction à une Histoire de la Télémusique (Introduction to an History of Telemusic), In NMSAT, Locus Sonus (eds.), 2010 ; Son et Distance – L'Écoute à Distance (Distance Listening & Internet Auditoriums), In NMSAT, Locus Sonus (eds.), 2010.*
  - ▶ *Urls : <http://jeromejoy.org/> <http://nocinema.org/> <http://sobralasolas.org/> [http://fr.wikipedia.org/wiki/Jerome\\_Joy](http://fr.wikipedia.org/wiki/Jerome_Joy)*

#### - Peter Sinclair

- ▶ *Peter Sinclair is a digital media and sound artist best known for his sound installations and other cross-disciplinary works which use sound as their principal medium. Excited by technology but handling it with critical irony, his work has moved from burlesque mechanics, through the misuse of computers to performance that parodies modern media language in transatlantic streamed-collaborations. Aside from his personal artistic productions Peter Sinclair participates in various artist collectives such as PacJap and Daisy Chain and he has been working with New York-based artist GH Hovagimyan since 1996. Their collaborative works, which include « Exercises in talking », a soapopera for laptops, « Heartbreak Hotel », « Shooter » and « Rant rant back back rant », have been shown frequently in Europe and the US in such venues as MAC Marseille, MAC Lyon, Potsmatters gallery New York, Eyebeam New York, Steim Amsterdam, Gaîté Lyrique Paris, and Jeu de Paume Paris. Today he is working on a project entitled « RoadMusic - AutoSync », a device for cars which generates music for your drive from your drive. Peter Sinclair is a tenured professor at Ecole Supérieure d'Art d'Aix-en-Provence where he has been responsible for the sound department since 1996 and is co-director (with Jerome Joy) of the research group "Locus Sonus audio in art " which is a collaboration between Ecole Supérieure d'Art d'Aix-en-Provence, Ecole Nationale Supérieure de Nice (la Villa Arson) and Université de Provence - Aix/Marseille LAMES CNRS-MMSH (Sociology Research). Member of the scientific council, for the office of research and innovation in fine arts at the French Ministry for Culture from 2005 - 2008. He is currently engaged in a research degree (PhD) at London College of Communication / CRiSAP Creative Research into Sound Arts Practice (LUFa), University for the Arts, London (title of his research : Using real time data flux in art - the mediation of a situation as it unfolds).*
- ▶ *Recent writings : Locus Sonus, Peter Sinclair, Locus Sonus, In 'Autumn Leaves - Sound and the Environment Artistic Practice', edited by Angus Carlyle, CRiSAP, University of the Arts London, Paris : Double-Entendre; Networked Sonic Spaces. Locus Sonus, in Proceedings ICMC'08 International Computer Music Conference,*

SARC Belfast, 2008; *Espaces Sonores en Réseau - pratiques de la recherche en art - Locus Sonus*, In "Recherche et Création. Art, Technologie, Pédagogie, Innovation", sous la direction de Samuel Bianchini, Paris: Éditions Burozoïque, ENSA Nancy & Les Éditions du Parc,, 2009. *Networked Music & Sound Art Timeline (NMSAT): A Panoramic View of Practices and Techniques Related to Sound Transmission and Distance Listening*. Jérôme Joy et Peter Sinclair, Locus Sonus, In *Contemporary Music Review*, "Network Performance", Vol. 28, Nos 4 & 5, August/Oct. 2009, Abington Oxford: Routledge Taylor & Francis Group.

- ▶ <http://petersinclair.org/> / <http://nujus.net> / <http://crisap.org/>

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## **NMSAT**

Networked Music & SoundArt Timeline

### **Vol. 3+4+5**

Networked Music and Sound Art Works & Tech Developments  
and Contemporary References — Bibliography

Edited by Locus Sonus, audio in art

Coordination : Jérôme Joy, Anne Roquigny, Peter Sinclair

April 2011

*A Panoramic View of Practices & Techniques related to Sound Transmission and Distance .  
Bibliographical References for Sound Studies - Archeology, Genealogy, and Anthropology of Distance  
Listening and Internet Auditoriums.*

The Networked Music & SoundArt Timeline (NMSAT) is part of Locus Sonus' research into audio art. It aims to provide an overview of technique and practice in the realm of networked music and networked sonic performance from ancient history to the present. It proposes a collection of references to theoretical and critical texts, a valuable resource available to actors in the artistic and scientific spheres. It is a platform designed to accommodate different analytical approaches.

NMSAT is structured as a database. Each entry or item contains a short description followed by references. The current version of the database consists of these items classified in chronological order.

NMSAT encompasses various domains and types of events including :

- Technologies and software;
- Forward thinking literature;
- Musicology and ethnomusicology;
- Sound anthropology and history of telecommunication & radio;
- Contemporary music and soundart.

Volumes 1 and 2 concern the historical period : ancient and modern history, anticipatory literature and technical developments references (ancient times - 1964). Volume 6 consists of a collection of studies which use the NMSAT database as a source of reference.

The NMSAT is moderated and maintained by the NMSAT scientific development committee consisting of around 60 researchers and artists.

*Locus Sonus is a research group and a post-graduate lab (School of Arts Aix en Provence, National School of Arts Bourges) supported by the French Ministry of Culture (DGCA / Research Department), DDAI / MRT, CNRS, DRAC PACA, FACE & PUF international programs.*