

MUSIC FOR PURE WAVES, BASS DRUMS AND ACOUSTIC PENDULUMS
for one player with electronics and percussion

Introduction

Electronically generated sound waves excite the heads of large bass drums, setting into motion ultra-light pendulums which are suspended in front of the drums. The rhythms created as the tips of the pendulums strike the heads of the drums are determined by the pitch and loudness of the waves, the lengths of the pendulums and the resonant characteristics of the drums themselves.

Equipment

- 4 large bass drums, all the same size
- 4 matched loudspeakers, small enough for each to stand unseen behind a loudspeaker
- 1 sine wave oscillator
- 1 quadraphonic amplifier or equivalent amplifier(s) with 4 loudspeaker terminals
- 4 ping pong balls
- 1 spool of 2 or 4 lb. test monofilament fishing line
- 2 8-foot tables, if necessary
- 1 small table

Set-up

Place the drums side by side, their heads facing the audience. Elevate them on tables, if necessary, for unobstructed viewing. Make 4 acoustic pendulums by gluing a long length of monofilament line to each ping pong ball. Hang each ball from the ceiling in front of each drum. Raise the rim of each drum by inserting books, paper, foam or other non-resonant material between it and the table top, so that the balls rest firmly against the drumheads. Center each ball exactly in the middle of each drumhead. Position a loudspeaker directly behind each drum. Set the oscillator and amplifiers on the small table in the middle of the room. Wire the amplifiers to the loudspeakers. Plug the oscillator into the amplifiers, routing its signal equally to all 4 loudspeakers. Switch the oscillator frequency range to F x 1, or equivalent. Find and pre-set the lowest frequency to which the loudspeakers respond. Lower all volume controls to Zero. See Figure 1.

Performance

Sit at the electronics table, facing the array of drums. Slowly raise volume levels to a point at which one or more pendulums starts oscillating. Throughout the performance manually rotate the frequency tuning dial of the oscillator in one upward sweep, causing

Performance

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Sweep with microscopic slowness so as not to miss any possible pattern and with continuous motion so as to make an accurate mapping in time of all resonant, sympathetic, pendular, sonic, and visible phenomena.

Keep volume levels as low as possible, while still maintaining effective pendular motion.

A performance is over when a frequency region is reached in which the drums no longer respond. As that situation becomes clear lower all volume levels to Zero. An average performance time is about 15 minutes. See Figure 2.

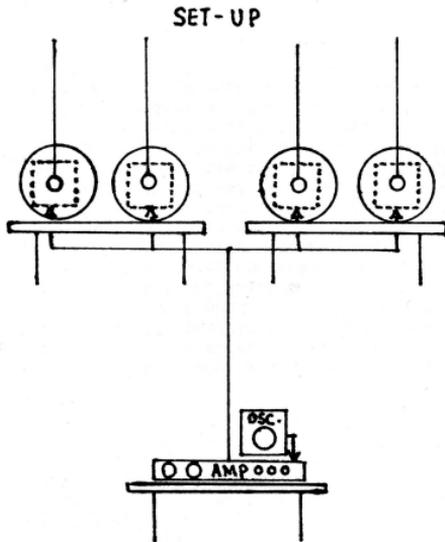


FIGURE 1

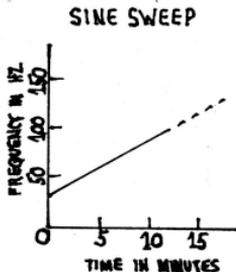


FIGURE 2

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Installation Version

Set up from one to four drums, pendulums, and loudspeakers in the manner described above. Position the oscillator and amplifiers, however, out of view of visitors.

Tune the oscillator to a resonant frequency common to all the drums. Then for the duration of the installation let changes in temperature, humidity, and other environmental conditions alter the tensions of the drumheads, thereby varying the pendular motion and its resulting sonic and rhythmic manifestations.

SET-UP

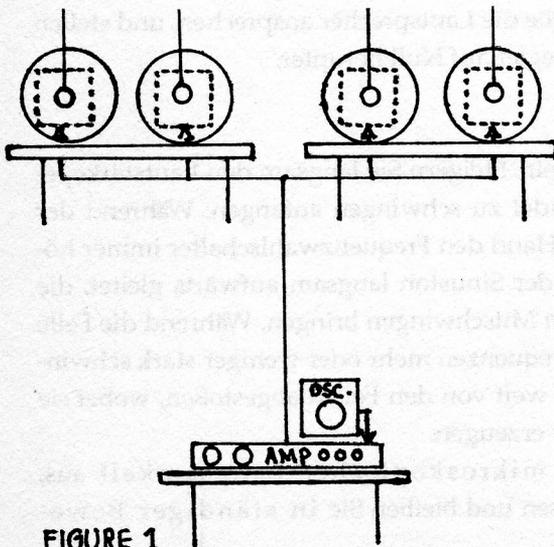


FIGURE 1

SINE SWEEP

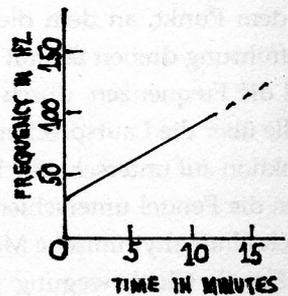


FIGURE 2