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FREE SOUND

Sound Sculptures – A Survey of American Work

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"It is my strong believe that the human race has known and abandoned magical sounds, visual beauty, and experience-ritual more meaningful than those now current. I must therefore decline to limit the dimensions of my rather intense believes by the modernly specialized word: music. I believe devoutly that this speciality must become less specialized for the sake of its own survival."

Harry Partch (1)

When Partch spoke those words into a tape-recorder in 1967, he touched upon the three most traveled paths within the field of sound sculpture. The magical sounds to which he refers were presumedly embodied in his gourd trees, percussion instruments that he fashioned out of natural materials as these ancestors had likely done themselves long ago.

It was also important that these instruments were visually beautiful. And perhaps this additional stipulation is what differentiated the exotic musical instrument from the sound sculpture. Today still, there are many practitioners in the field for whom this distinction defines the artform.

Finally, the experience-ritual, manifested today in environmental works and performance pieces, highlights the element of public engagement that characterizes much contemporary work in the field. The liberation of sound from the narrow territory of the professional musician has allowed artists and audiences alike the joy of discovering the lost magic of the soundscape.

Accidents of discovery recur throughout the short history of the medium. Another early proponent of sound sculpture, Harry Bertoia, stumbled upon the sonic possibilities of metal sculpture by chance several years into a successful career. While working for Knoll Associates, he designed the classic Bertoia chair. His frequent architectural commissions brought his large-scale sculpture into a variety of public spaces, most prominently the Saarinen Chapel at the Massachusetts Institute of Technology where his metal screen sculpture provides a foil for the dancing reflections of light that animate the central altar. Eleven years later, in 1966, he created his first major commissioned sound sculpture for the River Oaks Shopping Center in Calumet City, Illinois.

This piece was the culmination of his researches into the sonic character of different types of metal. For this piece he selected Tobin bronze rods for their bell-like sound. The sculpture was activated by the wind blowing through the many lengths of bronze. The water itself had little effect on the sounding quality of the piece outside of the incidental counterpoint of the trickling water to the deeply resonating sound of the reverberating metal. The design of the fountain sculpture

posed two interdependent formal problems for the artist. The first and most obvious was the scale relationship of the sculpture to the surrounding architecture. Bertoia's happy relationships with architects and numerous successes with architectural commissions was rather unusual at the time (and even today for that matter) and might be best explained by his considerable experience as a designer. While Bertoia had by this time demonstrated a remarkable instinct for architectural commissions, the fountain sculpture posed not only spatial problems, but sonic difficulties as well.

The scale of this piece affected not only the fountain's relationship to its physical surroundings, but the sound that it produced as well. According to June Kompass Nelson, Bertoia selected heavy rods and was prepared to muffle them (the sound that they produced as the wind hit them) because of the legendary strength of the Chicago winds. (2) In fact, the sculpture could barely be heard. Bertoia later claimed that he could have improved the sonic character of the sculpture by extending the rods. Nelson further speculates that such an adjustment would have also improved the piece's relationship to its surroundings. Whatever the shortcomings of this piece are, it represents a milestone for sound sculpture in America simply because it serves as an early example of sound sculpture as public art, an increasingly popular trend today.

Throughout the sixties, Bertoia had experimented with smaller scale musical sculptures activated by running one's hand across them. At his studio in Bally, Pennsylvania, he filled an entire barn with these musical sculptures, using the barn itself as a resonator for the singing sculptures. He and his brother spent many hours inside the barn experimenting with the effects of different materials and configurations.

Musician David Moss came across some of these sculptures in a New York gallery exhibition in the early seventies. He arranged to meet the artist at his Pennsylvania studio to hear more of the works and to talk with Bertoia about them. As Moss recalls, Bertoia claimed little previous interest in the work from musicians. Certainly, Bertoia did not consider himself to be a musician. (3) Out of this meeting, however, emerged a musician in possession of some rather extraordinary musical instruments – sound sculptures. (figure 1) Moss has incorporated his Bertoias into his battery of conventional and makeshift musical instruments; Moss makes music out of everything from drums to crumpled sheets of plastic, expressing the Duchampian sensibility of found sound popular with New Music composers. The notion of discovery inherent in the New Music propensity for found sound is a recurring motif throughout the course of modern sound sculpture as well and constitutes a common bond between these often overlapping media.

Reinhold Marxhausen also started his career as a metal sculptor. Like Bertoia he came upon the sonic possibilities of his work quite by accident. While building a representation of the sun, moon, and stars made of metal wire welded onto a doorknob, his curiosity got the best of him. As he recounts it, "When the other person (in my studio) was not looking, I placed the object next to my ears and strummed the wires. Wow!" (4) Thereafter, Marxhausen began to weld wire of different metals, lengths, and gauges – and consequently different tunings – onto doorknobs and other objects.

Marxhausen's fascination with sound stretched back to childhood experiences with homemade orchestras of used whiskey bottles filled with graduated amounts of water. Children with no sophistication whatever regarding the "Duchampian sensibility" have always come naturally to found sound, whether they are blowing into bottles or dragging a stick across a picket fence. Later, Marxhausen performed with the Nebraska Symphony, his instrument was the saw.

Inspired by these memories of childhood, he began to develop this strange sounding doorknob into a variety of configurations. Two of them welded to a steel band, offered an intriguing variation on stereo headphones. One could wear the sculpture and play it by gently stroking on the protruding wires.

More than anyone else, John Cage is cited by contemporary sound artists and composers as a major influence. Sound sculptor/composer David Tudor was among Cage's students at the New School in New York. "For nearly a year, John Cage taught a class there. The people were characteristically and interestingly not all musicians. Some were artists who wanted to learn his method of composition and of handling situations. He wasn't, strictly speaking, teaching music. He was

teaching how to compose for an event, and out of that class came a crew of people who were ready to propagate the happening, and it spread rather rapidly." (5)

In 1968, the Merce Cunningham Dance Company commissioned RAINFOREST, an audio environment that Tudor and other members of Composers Inside Electronics have since presented as a performance and installation. The piece requires an assortment of found objects to be wired for sound with transducers thereby making loudspeakers out of them. The sound source that is fed into these sculpture/loudspeakers varies from performance to performance; the sound produced is more a product of the peculiar resonances of the sculptures than of the actual sound that is being "reproduced".

Another artist benefitting from Cage's encouragement, and also known as an electronic composer, is Alvin Lucier. In 1965, Lucier used brain waves to generate sound in MUSIC FOR SOLO PERFORMER. MUSIC ON A LONG THIN WIRE (1977) used audio oscillators and a taut 80-foot length of wire attached to amplifier and loudspeakers to create sound out of minor atmospheric changes in the room which would cause the wire to vibrate. This attention to the sonic character of specific places has inspired other Lucier projects as well. I AM SITTING IN A ROOM explores the resonance of the room in which it is performed. Lucier recites a text explaining what he is doing into a tape recorder. He then replays the recording into the room and re-records it over and over again until the final product has been rendered unintelligible. Since then, he has used radiotelescopes and solar collector panels to give shape to the sonic environment.

The distinction between a musical instrument and a sound sculpture has proved consistently elusive. Frequently, it is simply a matter of context. Bill Fontana records the sounds of given environments and transposes them into unlikely situations. His own evolution from composer to sound sculptor began with an interest in field recordings of ambient sounds. For Fontana, "what was especially interesting about ambient sounds was the way in which they inhabited and belonged to the environments and acoustical contexts in which I found them". (6) This observation prompted Fontana to transpose these sounds from one environment to another, first with tape-recorders and more recently with live telephone cable and satellite links.

SATELLITE SOUNDBRIDGE SAN FRANCISCO-COLOGNE is a 1987 project that involved linking those two cities for an one-hour live radio broadcast. In San Francisco, Fontana transposed the sounds of the Golden Gate Bridge and the animal life on the Farallon Islands, twenty-six miles offshore, to the Memorial Court between the San Francisco Museum of Modern Art and the Opera House (figure 2). Microphones placed on the island picked up the sounds of the waves, birds, and sea lions as well as the sounds of whales and dolphins via a hydrophone on the east side of the island. From the bridge came the sounds of cars passing over expansion joints, fog horns blasting, and water breaking. In Cologne, microphones linked the Zoo, the Rhine, pedestrian streets and Romanesque bell towers to the area surrounding the Museum Ludwig.

Park users and passers-by, wellremoved geographically from the sources of these sounds, were alternately amused, perplexed, intrigued, and irritated. Loudspeakers placed high on the Museum buildings transported people to several different places simultaneously, leaving them a little less grounded in their actual location. Fontana has used this method of aural dislocation to transform a number of different places to effects as varied as the locations themselves. While Fontana delights in setting his audience a little off balance so that they might more consciously notice and appreciate the natural soundscape, other artists build instruments through which the more immediate environment may make itself better known.

Liz Phillips uses anemometers, which measure wind velocity, and weather vanes to trigger automatic compositions on a synthesizer. In any given installation of a Phillips piece, long hours are spent "tuning" the piece to its new home. As Bertoia had learned with the RIVER OAKS fountain, estimating the strength and direction of wind patterns is only as reliable as the most recent weather report. While Bertoia's tuning depended almost solely on the physical configuration of the metal rods, Phillips can tune with the synthesizer itself. The same installation that barely speaks one day, can often be heard singing loudly the next.

Phillips also creates indoor works, activated by the movement of the

audience/participant(s) through the spaces in which the pieces are installed. As people move through the space, they interrupt electronic signals that cross the room and thereby trigger the synthesizer. When tuning her pieces, she explores the synthesizer's many voices, turning a knob here or there or rewiring the board. "I make my work a lot like a painter paints with a wide palette. You mix a little of this and a little of that until you build up the right textures of background and foreground. A lot of what I'm trying to achieve is a dynamic variation that's very much like landscape – like the wind would carve sand dunes." (7)

An installation of WINDSPUN for North Shore Community College in 1986 was tuned to Eastern scales when winds were from the east, flipping to Western scales with a change of the wind direction. A similar installation at the Whitney Museum, however, was lent an entirely different character through Phillips' tuning process.

While Fontana takes a rather literal, if surreal, approach to the environment, Phillips brings a little more added color to the landscape in her manipulation of the electronic components of her installations. Yet while both methods can be attributed to the evolving technology of sound reproduction and synthesis, there still exist many artists who have picked up where Bertoia fell short with acoustically tuned sculpture. Among the best known of these is Douglas Hollis.

One of his most successful works to date is A SOUND GARDEN (1983), commissioned for the grounds of the National Oceanic and Atmospheric Administration, Seattle. A paved area with benches overlooking Lake Washington is sprinkled with steel towers holding wind-activated organ pipes. Visitors can take in the coastline and listen to the changing song of the wind as it blows through the tuned pipes.

Hollis does not, however, consider himself a sound sculptor; he rather sees himself as a public artist and perhaps as a poet. His work has grown from wind harps and organs to projects that engage their public in a more direct way. A VENUE (1980), a temporary installation at the Albright-Knox Art Gallery, Buffalo, was a floating walkway constructed of pipe and wire selected for its acoustical properties. The wind and water hitting against the string and pipes actually produced the sound; people moving across the walkway would cause the sound to change, or retune, due to the undulation of the resonating pipes in the water.

LISTENING VESSELS (1987), do not produce any sound of their own (figure 3). The VESSELS are parabolic chairs constructed of wood, plaster, and metal, set facing one another approximately fifty feet apart. Their design and construction cause sound to be focused in the centers of the parabolic dishes at ear level. Sitting in the chair, one hears the ambient sound greatly magnified. The special construction also allows the sitter to hear another person in the opposite chair greatly magnified.

Acoustical design has been with us since the time of the Greek amphitheaters and before. Spaces that focus, echo, and mute sound, offered some of the magic for which Patch longed. Bruce Nauman's ACOUSTIC WALL (1969) is constructed of acoustical insulation and creates a field of "dead air" as one walks along it. Normal ambient sounds are heard through the ear not facing the wall. The unusual single-channel input that passers-by experience sets them offbalance.

Catching the viewer/listener offbalance is a frequent strategy used by sound sculptors, the most commonly cited objective being a heightened perception of the everyday environment. Max Neuhaus has created many of these installations. His SOUND INSTALLATION (1973) used an amplified subway ventilation chamber to activate the area around the sidewalk grating above, creating a subtle rupture in the natural soundscape for the passing pedestrians.

As Hollis created a meditative garden for his NDAA wind organ, Peter Richards and George Gonzales built for their WAVE ORGAN a park of its own at the end of a jetty (figure 4). The ORGAN itself is a series of plastic pipes running into the water and terminating above ground level through a variety of openings in and around an area that looks like a large barbecue/altar. The seating area/platform is constructed of old curbstones and discarded tombs. Openings on the rear wall of the seating alcove and periscope-like protruding plastic pipes all around whisper with the song of the lapping waves. Crashing against the submerged pipes, the water releases columns of air through the above-ground openings, creating pings, plunks, gasps, and sometimes thundering booms in concert with the ambient

sounds of the area – the waves, foghorns and gulls.

Bruce Goland, a composer and sound designer based in Denver, creates environmental sound sculptures as well. His RIVERWORKS (1980) used underwater microphones as probes to articulate the natural rhythm of the Roaring Forks River in Aspen, amplifying these sounds through homemade ceramic loudspeakers (figure 5). A variation on this piece, RIPPLEWORKS (1985) was presented as part of New Music America. Listeners could create their own "mix" of the piece by moving along the loudspeakers along the site. Inside the gallery, a stereo mix was provided over a home stereo unit.

For many of these pieces, the same hardware is moved from site to site, creating a different flavor each time. In fact, many works of sound art that articulate the peculiar sonic qualities of specific places travel from place to place in suitcases. They are, for the most part, just so much hardware until they are installed and tuned to their surroundings.

Christopher Janney's SOUNDSTAIR (1977) has travelled around the world as a completely portable unit capable of being set up on any grand stair in less than one hour (figure 6). Janney places electronic sensing devices along the edge of an existing stairway, one unit per step. The sensors are wired to a computer and synthesizer, triggering a musical note as a person climbs or descends each step. The scales, instrumentation, and patterns can be adjusted to each situation.

Bill and Mary Buchan have built wind harps, wind antennas, and other site-specific sound sculptures for several years (figure 7). SONIC MINIATURE GOLF (1984) engages its viewer/participants in an unusual game of miniature golf in which each of the nine holes incorporates audio incidents as the ball hits a chime or rolls over a xylophone. SONIC MAZE (1983) is a similarly altered pinball game. Most recently they have been developing a proposal for a sound park that would contain drum seats amplified by a parabolic dish above the seating area. The proposal includes other features such as a tunnel entrance designed to alter ambient sound. Many of their sculptural instruments have previously been featured in temporary outdoor sound parks, frequently in conjunction with a performance. The creation of a permanent park would shift the focus from instruments for performance to instruments for exploration and discovery.

Many artists who work as sound sculptors find themselves performing with their pieces. In some cases, this is more the result of the greater availability of performing jobs than of funds for installations or purchases of works. Other artists, however, build their pieces with performance in mind. Ed Tomney's GUITAR TREES (1986) can function as sound sculptures triggered by the viewer or as automated members of Tomney's Industrial Orchestra (figure 8). The sculptures are constructed with pawn shop guitars attached to metal stands. Small motors strum the guitars, and electronic filters and pitch transposers modify the open tunings. In their installation context, the sculptures are activated by the push of a button. In their incarnations as members of the Industrial Orchestra, the GUITAR TREES can be pre-programmed, playing autonomously, or manipulated physically and electronically during a performance. Tomney can finger a chord using the fretboards or alter the composition at a control board. In concert, the sculptures are accompanied by live keyboards, more conventionally played guitars, and taped samples of factory noises. The automated churning of the guitars was in fact inspired by Tomney's fond childhood memories of the factory noises of the industrial northeast United States.

The technology of automation is at the heart of John Driscoll's SECOND MESA (1983), an installation/performance using robotic loudspeakers which respond to the architectural configuration of the room in which they are installed. The loudspeakers spin, reflecting the electronic sound they produce off of the walls and other barriers, defining the space sonically. As part of a collaboration with sculptor Jeffrey Schiff and choreographer Douglas Dunn, they provided a set and sound design for a dance performance at Boston's Institute of Contemporary Art as part of the "Art and Dance" exhibition in 1983. Sound sculptures have, in fact, frequently been used as sonic sets for dance performances.

Sound artist Richard Lerman sees the microphone as an "audio microscope"; amplifying "little sounds into big ones" is his stated goal. In his investigations of the soundscape, Lerman has forged new, if tiny, territory using transducers to magnify the smallest of sounds – from the plinking of a cut soda straw to the

sounds of a blowtorch on a piece of sheet metal. As he applies flame to wired sheets of metal, the molecular expansion and contraction takes on gargantuan proportions. (8)

When Lerman does wind-activated pieces, it's likely to be the different sounds of wind as amplified by brass, nylon, and bronze squares of window screen wired into a sound system. As with the rods of Bertoia's fountain and the pipes and wires of a Hollis' wind harp, the 'materialness' of Lerman's makeshift microphones lends a distinctive quality to the sounds they produce. In contrast to much of the work already mentioned, Lerman's pieces go beyond a focusing of the natural environment to a scrutiny of minute detail.

While environmental and public works have dominated this brief history thus far, and certainly constitute something of a trend within the field, sound has emerged in a number of different object and performance contexts that demand recognition in any survey. Laurie Anderson's unusual musical instruments have focused much attention on the fields of performance art and sound sculpture. Jon Borofsky's singing paintings and sculptures have animated museum galleries. Vito Acconci, Connie Beckley, Hannah Wilke, and, more recently, photographer Nic Nicosia have all produced sound sculpture by transforming an object in some way with recorded sound.

The clear direction of sound sculpture in America none the less lies in Public Art. This year, the New Music America Festival in Philadelphia, a traditional venue for sound sculpture, will take place concurrently with Public Art in America '87, the first major conference on Public Art of its kind. By presenting sound sculpture as part of the Public Art conference, many new opportunities for sound sculptors should emerge across the country. Sound sculpture's ability to engage a broad public depends not so much on its visual beauty, but on the rediscovery of lost magical sounds through the artist's hands and ears – and the public's desire for an art that speaks for itself and can be directly experienced.

(1)
Partch, Harry, "Monophonic Just Intonation" a dissertation on audiotape, 1967, as cited in SOUND SCULPTURE, John Grayson editor, A.R.C. Publications, Vancouver, 1975. → [back](#)

(2)
Nelson, June Kompass, HARRY BERTOIA, SCULPTOR, Wayne State University Press, Detroit, 1970, page 37. → [back](#)

(3)
Moss recalled his meeting with Bertoia during a telephone interview with the author in May 1987. → [back](#)

(4)
Grayson, op. cit., page 76. → [back](#)

(5)
David Tudor in conversation with the author in 1985 at Mobius, Boston. → [back](#)

(6)
Fontana Bill SATELLITE SOUNDBRIDGE (catalogue essay), Museum Ludwig Köln/San Francisco Museum of Modern Art, May–June 1987, page 23. → [back](#)

(7)
Liz Phillips in conversation with the author in April 1986 at North Shore Community College, Lynn, Massachusetts. → [back](#)

(8)
Richard Lerman in conversation with the author in February 1986 at Mobius, Boston. → [back](#)