MAX NEUHAUS - SOUND INSTALLATIONS - TECHNIQUES AND PROCESSES

The Work For The Bell Gallery at Brown University
With Asides And Allusions

Although most people aren't aware of it, sound is as important an aspect of how we perceive a place as the way it looks. We of course sense the size of a space with our ears as well as our eyes and our sense of position and motion may come from aural as well as visual cues. Perhaps more interesting than these psychoacoustic phenomena though, is that the feeling of the basic nature of a place and ourselves within it is determined as much by sound as sight.

Many of the installations have been in public places, on the street or as part of transportation systems. I am always surprised when people ask me why I am interested in working in such places; as if these places were somehow unworthy of serious aesthetic endeavors. The idea being, I suppose, that unless we carefully prepare and maintain special places like museums and concert halls, and educate audiences in how to perceive works of art within them, the aesthetic experience can not occur.

I feel the opposite, i.e. that the aesthetic experience is natural to the human being, a phenomenon of living, and further that it is highly unique to each individual. By limiting it to one singular approach or particular kind of place, we have codified and classified it to the point where we begin to endanger the possibility of its occurrence.

The impetus for the first sound installation was an interest in working with a public at large, and inserting works into their daily domain in such a way that people could find them in their own time and on their own terms. Disguising them within their environments in such a way that people discovered them for themselves and took possession of them -- lead by their curiosity into listening.

The starting point for a work is the space itself -- the sound which already exists there, the nature of its acoustic and its social context. Working in the context of a museum or gallery like the one at Brown is always a challenge -- I have to find a way of restoring the space to its natural state as a room. Emptying the space of visual elements is the first step in this direction, especially when the space has a tradition of being used to exhibit visual art.

I usually begin a work by defining the sound sources or the way sound enters the space. I find the loudspeaker to be a rather uninteresting sound source. I use it simply as a transducer; a means of translating the sound from electrical to acoustic form. Rather than using sound directly form a loudspeaker, I usually use the surfaces of the environment themselves as the sources of sound.

The most interesting acoustic shapes in the Bell Gallery were the corners. There were many - room dividers formed twelve extra corners in the space (drawing 1). By pointing speakers from the ceiling (at an angle where they couldn't be heard directly) into each, the corners themselves, with their complex patterns of reflection and acoustic shadows, became the perceived sources of sound. Six electronic sound generators were connected to different groupings of the sixteen sources so that each sound generator formed a three dimensional shape composed of two or three corners in the space.

I have always used electronics to generate the sounds of my installations, in spite of its bad reputation in the cultural world. It is simply the best "paint" we have for sound today. The arguments about "acoustic" as opposed to electronic sound sources appear false to me. People working with sound have always seemed to utilize the most advanced technology of their time. Pianos don't grow on trees, but are in fact rather antique sound synthesizers from the mechanical age. A sound generated electronically is just as "real" as a sound made by a piano or violin.

The distinction between electronic and other kinds of sound was originally made because of the primitive nature of early electronic sound sources; sounds made electronically had a distinct character. We have obviously gone beyond that point if we can listen to music recorded electronically and not call it electronic sound. I believe the question for an artist is not so much what we use to make something, but what we do with it.

For me, the transition of moving from using mechanical sound sources to electronic ones was a gradual one. It began while I was still working as a percussionist. Knowing nothing about electronics, I became intrigued with the possibilities of extending the tone color of the traditional instruments I was working with. At that time there were few electronic sound making or processing devices available. So I began teaching myself about electronic circuits which could make and change sounds.

I began very simply. For Fan Music (1968), I built eight electro-mechanical solar sound sources. Ventilation fans placed between photocells and the sun generated a sound waveform which changed in tone color as the sun moved across the sky, and disappeared as it set. The work was made for an urban terrain, the multi-leveled rooftops of four adjoining buildings in lower Manhattan. The sources were dispersed on different levels to form an aural topography to match the physical one (see slide).

I was interested in working with large groups of independent sound sources. The ideas about stereo and quadrophonic sound seemed to have more to do with re-creation than creation. The real sound world we live in is, in fact, formed by a multitude of sound sources each one contributing a small part of the whole. I became interested in trying to work on this level of complexity.

During the years up until 1979, I built a special set of sound sources for each work. As my work became concerned with larger groups of sound sources, I became interested in computers as a means to control arrays of sound generators.

One of the most powerful ways of refining a sound one is building is to compare several versions of it. Our sound memory is more relative than our visual one, so the number of comparisons possible and the speed of moving between them becomes a crucial factor. In the mid-seventies when the first microcomputers appeared, I began experimenting; using them to edit, store, retrieve and compare complex sound structures for many independent sound sources.

The permanent work for the Museum of Contemporary Art in Chicago, with thirty sound sources (see slide) was realized in two stages. First with a small portable computer of my own fashioning to select the works pitches by ear in the space, and then the construction an installation of a dedicated system to generate them permanently.

In the process conceiving and constructing physical structures, computers are used to analyze, simulate and model; utilizing their facility and flexibility as a means of design and planning for a future physical reality. When we use a computer to generate sound, on the other hand, one is at the same time also able to create the physical reality, a very great advantage -- the reality is as malleable as a model.

The early days of making sound with computers were plagued with many difficulties, the major one being the inability to hear what you were doing. The machine took so long to calculate the sound that in many institutions the combination of computing time and bureaucracy meant that it took a week after you had made something before you could hear it.

Our technology still can't measure things which the ear can hear and the science of psychoacoustics has only begun to sketch the outlines of what sound means to us. Science and the language of mathematics, although precise, can only give us a limited description of our sound reality. The most powerful means we have of directing the creation of sound is the ear in conjunction with the mind. To try to make a sound work without hearing is analogous to trying to drive a car without seeing.

The low cost and sophistication of the current crop of electronic sound generators and shapers has now moved the possibility of using computers to work with sound, out of the institution and into the hands of individuals. Because these machines are designed specifically to make sound it is usually quite easy to hear what are doing.

The work at Brown used the first version of a computer controlled sound generator array which I built to use as a basic tool for not just one work, but many. The system consisted of sixty-four independent sound generators under the control of a microcomputer. The computer allowed sets of sound generator parameter values to be chosen and patterns of these

values which varied in time, to be created and compared.

Because the space is as an important a sound dimension as the sound itself for me, I need to be able to shape sound from any point in the space of a work. Therefore the problem of hearing what I am doing has another dimension. It becomes hearing what I am doing, WHERE I am doing it, hence I have a need for a system which I can operate by remote control. Something which allows me to make sounds and structures -- changing and quickly comparing them from any point in the installation site. In this preliminary version of the system I used a long cable connected to a battery operated TV monitor and a light pen.

At the present time, (1986) the array I am using is a network of sound generating computers. It extends the original concept by making each source an independent computer capable of executing many tasks simultaneously. Rather than one central computer trying to control the huge number of parameters in a large array of sound generators, the central computer distributes programs to the individual computers of the array. Each of these in turn controls its own sound generator. This architecture allows the expansion of the array at will because each module added takes care of itself. The remote control unit is now wireless and has a range of a half mile for large scale installations.

For the work in the Bell Gallery I used a subset of the early system. After fixing the corners of the space as sources of sound I spent time exploring their character and the character of the room itself with different kinds of sound. Moving around the space, making sounds and listening from various points. Building up a library of sounds for the space and getting a feeling for how they worked there. I decided to use a series of short clicks -- quasi pitched sounds like finger snapping which I could vary in tone color.

I was interested in creating a strong sound image which would seem to move around the space sort of like aural lightning flashes, but very, very subtle and soft. I decided to make a five click phrase and move it through overlapping channels. The click phrase was a little less than a second long and consisted of five fast pulses followed by an equal period of silence. Each phrase was composed of linked pulse pairs. The first click of a phrase appeared in one channel shape. The second click was actually composed of two simultaneous clicks-- a click from the new channel shape along with the repetition of the first channel. The third click was a third channel shape and a repeat of the second channel, and so forth. (drawing 2)

This structure linked the perception of the pulses into a phrase which seemed to pivot as it moved around the room --each new phrase with a different pathway. Independent of the evolution of these click phrase pathways was a second evolution of click timbre -- the tone color of the click changed from light/high to dark/low and back again at an independent speed in each channel (drawing 3).

Sound installations of mine use sound to actualize imaginary places --places to explore aurally or simply to be in. The sound is not the work, the place is -- the sound is only the catalyst which creates the sense of place.

The listener entering the Bell Gallery was confronted with an empty space -- he began to find his place when he first noticed the sound.

Max Neuhaus, November 1986