THE ENVIRONMENT AS A MUSICAL RESOURCE

by Bill Fontana

"music goes on all the time around us and is made audible by a musician" (Henry Cowell)

Part 1 -Vienna 1990

The concept of ecology is used to describe the harmonious relationships existing between living species in natural habitats that enables them to mutually survive together. In these natural habitats, ecology can also be understood as being successful design1 relationships between the various aspects of environment.

In the human/ built environments (which are supposed to be designed because they are constructed), the qualitative aspects of these environments are also crucial to the well being of society. The visual aspects of these environments (architecture, interior design, landscape design, urban design etc.) have long histories of being designed. The acoustic aspects of environment are in most cases not designed2, and it is only very recently that the concept of sound design and soundscape have even existed.

In natural environments, sound design can be perceived as the pleasing sound relationships we hear (and expect to hear) between for example, song birds in a forest. What we perceive as being aesthetically pleasing sound relationships have deeper ecological functions, such as the ability of many bird songs to travel long distances and to be clearly recognizable. This can happen even during the acoustically active early morning time without these songs overwhelming each other. This ability of certain bird songs to travel long distances and to be clearly recognizable is not caused by the songs being loud relative to other competing songs, but because the melodic shape and exact frequencies of these songs are tuned to the acoustics of the particular habitats they are in. It is also interesting that in the melodic shapes of these songs, they are not constantly at a peak loudness but are only momentarily at these peaks, making it possible for melodic lines from different birds to overlay each other and retain their individual clarity. Thus, the central design aspect is the ability of all of this sound information to be heard together and achieve its communications purposes.

In the human/built environment there are some interesting examples of designed sounds that can be beautiful to hear. For example, fog horns, train whistles, and bells are designed to travel long distances and be clearly recognizable. However, in a general sense the human soundscape is not designed. Many densities of sounds occur at sustained high levels that have no quiet space in their acoustic shape. This traditional lack of designed sounds and sound relationships is largely influenced by the concept of noise. This concept assumes a hierarchical value difference between meaningful and meaningless sounds. It is a general fact that most people in our Western culture find little meaning in their everyday experience of ambient sound. Sounds are normally considered meaningful when they are part of a semantic context such as speech and music. Most ambient sounds exist in a semantic void, where they are perceived as being noises. In addition to the semantic context in which

meaningful sounds are experienced (music and speech) the physical context in which this semantic context is experienced is a crucial perceptual issue in the potential meaning of ambient sound. The language of contemporary music is full of sounds, (from John Cage and other serious composers to the sampled sounds of popular music). The presence of ambient sounds in the music context has certainly influenced perceptions of ambient sound among people who are exposed to the music. One limitation however, is that the physical contexts in which music is experienced are nearly always isolated from the physical contexts in which ambient sounds take place (concert halls, home stereos, walkmans etc).

In my sound sculptures of the past 10 years, the relocation of ambient sounds to urban public spaces is a radical attempt to redefine the meaning of the acoustical context in which the sound sculpture is experienced. By comparison to musical situations, the use of these public spaces exposes the sound sculpture to many people who would normally never think about such aesthetic issues. This experimental redefinition of acoustical context is also a way to temporarily transform the concept of noise. Such a transformation of "noise" in a more permanent way will make the human/built environment become more livable, because it will stimulate society to develop a sensibility for its ambient sounds, causing more of the general public soundscape to become designed.

My sound sculptures use the human and/or natural environment as a musical information system full of interesting sound events. In designing such real time musical information systems I am assuming that at any given moment there will be something meaningful to hear. I am in fact assuming that music, in the sense of meaningful sound patterns, is a natural process that is going on constantly. These information systems are designed by selecting interesting sound locations within either an urban or natural environment, placing live microphones or hydrophones at these locations, and simultaneously transmitting the sounds to a central listening point (sound sculpture location).

It may be self-evident that such environmental music can be found in natural environments, but someone may be skeptical that it can really be found in the urban environment. My sound sculptures have often used live urban based sound sources to construct such musical information systems. METROPOLIS COLOGNE (1985) had live microphones installed at 18 locations throughout the center of Cologne simultaneously transmitting to loudspeakers mounted on the facade of the Cologne Cathedral. LJUDSKULPTUR i STOCKHOLM (1986) used the city of Stockholm as a sound source and used these sounds to explore the acoustic space of the 600 meter wide fjord in front of the Town Hall. Sounds were sent to both sides of this waterway, and produced many interesting echoes. ENTFERNTE ZUGE (1984) brought the sounds of the Cologne main train station to the ruin of the former Anhalter Bahnhof in Berlin. In 1984, when this was realized, the ruin consisted of a large empty field (where the main station hall was once located) and the remains of the station entrance at the head of the empty field. This sound sculpture not only explored the aesthetic aspects of a multiple perspective sound rendering (8 channel) of the Cologne station but it also explored the power of this relocated sound to evoke a sense of historical resonance and place in Berlin. To enhance the evocative qualities of the sound, loudspeakers were buried in the large empty field so as not to visually interrupt the stark qualities of the Anhalter Bahnhof. SOUND SCULPTURES THROUGH THE GOLDEN GATE (1987) was a live duet between the Farallon Islands National Wildlife Refuge and the Golden Gate Bridge, thus combining natural and urban based sound sources. This island is the westerly limit of San Francisco, lying 32 nautical miles directly west of the Golden Gate Bridge. The small island is

an important wildlife refuge for migrating sea birds and marine mammals, and in the spring (when this sound sculpture was realized), had a population of more than 500,000 birds and three thousand marine mammals. The Golden Gate Bridge as well as being a visual landmark of San Francisco is also an acoustic landmark because its fog horns (which are often sounding) can be heard through large areas of the city and harbor. The bridge also produces a constant percussive sound from cars driving over various joints. This island and bridge duet was heard in the middle of downtown San Francisco during the 50th anniversary of the Golden Gate Bridge from loudspeakers mounted on the facade of the San Francisco Museum of Modern Art. It was also the San Francisco component of the SATELLITE SOUNDBRIDGE COLOGNE-SAN FRANCISCO (1987), which was a live duet via satellite of environmental sounds from San Francisco and Cologne. This was heard on radio stations throughout Europe and the U.S. and as a sound sculpture at the Museum Ludwig. In June of this year I am realizing ACOUSTICAL VIEWS OF KYOTO (1990) which combines urban, natural and religious sounds of Kyoto with a hill top sculpture site (Kyoto City College of Arts) that commands panoramic views of the urban and natural landscape of Kyoto. At the sculpture site you have distant panoramic views, and where you can see much further than you can hear. This sound sculpture explores the experience of hearing as far as you can see, by borrowing the landscape for sound3 by simultaneously bringing many live sounds from the Kyoto landscape to the hilltop.

My purpose in installing LANDSCAPE SOUNDINGS (with its live sounds from the Au) in the public space of the Maria Theresien Platz is not intended to be a romantic return to nature. It is intended to be a radical transformation of the acoustic meaning of this public space. The acoustic qualities of the Maria Theresien Platz also transforms the natural sounds from the Au because of the sonically reflective presence of the two parallel museum buildings.

The musical information system constructed in the Au for LANDSCAPE SOUNDINGS simultaneously listens from 16 microphone locations and transmits4 these sounds to Vienna at the Maria Theresien Platz. These microphone locations are sub-divided into large spatial groupings of microphones. These groupings are located in the Au near Witzelsdorf, Stopfenreuth and Hainburg. Each spatial grouping distributes individual microphones at intervals of least 100 meters apart from each other. The most extreme distances of the first to the last microphone are more than one kilometer. When you divide these relative microphone distances by the speed of sound (330 meters per second) a potential time structure is created that describes the movement of sounds though the Au landscape that is mapped by the microphone positions. The longest acoustic delays occur in relation to sounds that are loud enough to travel through the Au landscape to the most widely separated microphones. Nightingales, woodpeckers, crows, amsels, drossels, ducks, cuckoo, eichelhaher, meisen, finken, rotschwanzchen and reiher are loud enough to echo through these furthest microphones. Sometimes these microphone installations hear echoes created by the nearby human presence. Although the microphones are as far away as possible from the sounds of aircraft, traffic and trains, they occasionally enter the microphone configuration. Thus, the distant airplanes may become like a flying organ, as each microphone hears its Doppler shifting engine harmonics with different pitches. Train and boat whistles as well as church bells can sometimes be heard reverberating through the landscape.

"The clear voice
of the fulling-block echoes up

to the Northern stars"
(Basho)

Part 2 -Lyon 2000

Part 1 of this essay was published 10 years ago in Vienna on the occasion of a large-scale installation called "Landscape Soundings". I have chosen to publish Part 2 under the same title, as this basic concept of using the environment as live source of musical information has continued to be a fundamental aesthetic principle in my work.

In 1990 I wrote the following:

My sound sculptures use the human and/or natural environment as a musical information system full of interesting sound events. In designing such real time musical information systems I am assuming that at any given moment there will be something meaningful to hear. I am in fact assuming that music, in the sense of meaningful sound patterns, is a natural process that is going on constantly.

This idea, succinctly stated here, has been the aesthetic basis of my work for the past 25 years. This idea is no less relevant for me today than it was with my first live projects.

In the beginning stages of my work, this idea was more of an assumption than a fact.

After realizing many different projects around the world that all involved the creation of a musical information network, I conclude that there is something compelling about the hearing the simultaneity of sounds in a natural landscape, a city, a structure such as a bridge, a train station, a harbor or a long stretch of beach. What is so compelling is the natural completeness of the live flows of musical events and patterns. That the live ambient sound constellations present such seemingly perfect relationships makes this art form actualize an awareness of what is already present.

In the accumulation of making projects and directly experiencing the simultaneity of sound in the environment (landscapes or cityscapes), investigating the aesthetic horizons of the present moment are the most exciting and challenging genre to explore.

The working process is a kind of composition in reverse. The music and the patterns exist as some incredible unheard music, because in order for them to hear it would be necessary to be with ones body in all these locations at the same time. Thinking about the
musicality of the world as the simultaneity of sound events becomes a redefinition of the sense of embodiment. Listening in acoustic space is always an activity of a body in a space. The installation of microphones and sensors in many places at the same time takes streams of disembodied information and reconstructs them into a new form of embodiment.

The sculptural placement of the live multiple audio streams in one space as a sound sculpture has been an important strategy for reconfiguring the acoustic sense of the body in relation to an environment. In my recent ACOUSTICAL VISIONS OF VENICE, which was installed during the last Venice Biennale on the façade of the Punta della Dogana, live sounds from 13 locations in the visual panorama, acoustically wrapped this building with its amazing views. It created a situation that you could hear as far as you could see. This new multidimensional acoustic body of Venice was transparent and framed the actual acoustic events one would normally hear at the Dogana, so that whenever a bell rang or ship blew its horn, one heard it first at the speed of light and then at the speed of sound. A physicist visiting the sculpture remarked to me that I had created a reverberant zone. This newly created acoustic body of Venice could effect ones memory and anticipation of sound relationships when one reentered the normal acoustic life of this city in ones pedestrian journeys. Perhaps to a sensitive observer, the sounds of Venice would seem more alive and full of musical potential. If they returned to the sound sculpture at different times, perhaps the interaction with their personal acoustic memories would intensify.

While ACOUSTICAL VISIONS OF VENICE was running, I made extensive digital multi-track recordings. Listening to these in a studio, removed from the interactive context of a live installation, I am struck by the complexity and richness of sounds that this live information flow created. In studying these recordings, I realized that it would not have been possible to achieve this level of complexity or musical cohesiveness without the use of a live musical information network. An installation version will be created in the Acoustic Art studio of WDR Cologne will be presented as a large gallery installation at the Museum für Angewandte Kunst in Cologne this May, as part of the Cologne Musik Triannele.

It occurred to me in the Venice project that if it had remained as a permanent installation, it would have an interesting accumulative impact on the public awareness of sound. . The project I am currently creating for new Lyon Tramway system gives me the opportunity to do that by integrating a musical information network with the public transportation network of the Tram.

This sound sculpture will create a musical information network out of sounds from the city of Lyon and continuously transport changing combinations of them to all the stations along the Line 1 of the new Lyon Tramway System.

The invisible presence of this sound sculpture will make it a work whose essential form is perceptual, mental and corporeal. This sound sculpture will be an ongoing investigation into the relationships existing between an individual's acoustic memory of the city and the live sound collages (of those elements) that will be a constantly changing overlay to waiting for or departing from a tram. The placement of this sound sculpture as an integral recurring event at each station will have an accumulative effect over time, so that during the daily experience of riding the tram one will hear and recognize more and more acoustic patterns in the city. This accumulative pattern recognition will not only enliven ones relationship to the Tram journeys, but to ones pedestrian journeys through the city.

The fact that this sculpture is invisible conveys urban ecology that will not clutter the already visually

saturated cityscapes. This invisibility will also be in harmony with the visual experience of the city that the transparent architecture of the Tram Stations expresses.

If you think of the difference between looking at a movie with the sound track running or with the sound turned off you can best understand what the presence of this sound sculpture will be. Most people in modern cities tune out the sounds around them as noise, making the visual experience of the city like the movie without a sound track. Over time, individuals will gradually turn up the sound in their own acoustic perceptions of the city, so that the presence of this sound sculpture will be a sound bridge to an enhanced experience of city life.

Sound will be used as a medium to express the simultaneity of urban life in a way that is not possible with visual media, since it will be possible to hear multiple sound events from different parts of city at the same time. At any given moment, someone waiting for a tram will be transported to other parts of Lyon in an acoustic journey of the imagination and of memory.

A rich vocabulary of Lyon sound locations will be fed live into the musical information network from all of the familiar areas of the city creating a language that is concrete, evocative, abstract and transparent. Most of the sounds in this network will be live, although this network will accumulate acoustic memories over time that will be stored on a hard disk recording system. These recorded elements will sometimes float through the continuous streams of live elements, which in the sculptural time of permanence will give an evolving historical dimension to this work.

The accumulative impact on the public perception of noise in Lyon will change over time. The idea of an artwork that integrates listening to Lyon within the total infrastructure of a tram line will curiously bring a new kind of silence to Lyon, even though sound is being placed in public situations. This will be accomplished because the more literate the public becomes to the acoustic patterns of the city, the more musical these sounds will seem to be. The more musical the acoustic ambience of a city becomes the less perceivable noise there will be as the public develops an evolving and accumulative sense of ambient acoustic literacy.

PROJECT DESCRIPTIONS	**LISTEN TO SOUND SCULPTURES**