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Witchcraft, Cybersonics, Folkloric Virtuosity

In the 18th Century a mechanical landscape-automaton, the Jacquet-Droz grotto, was exhibited throughout Europe. Approximately one meter square in area, it was an exceptional example of complex clockwork art. The clockwork landscape containing grazing cattle and sheep, singing birds and barking dogs, flowing streams and fountains and people in promenade. The sun and moon followed their exact daily paths.

Like Wolfgang Amadeus Mozart, who was also a travelling performer in Europe at that time, the Jacquet-Droz grotto was a celebrated entertainment. However, when the grotto travelled to Spain it was confiscated by the Spanish authorities and destroyed. It was considered to be a deamonic manifestation, a threat not only to the church but a danger to the culture of Spain.

The Spanish of the time were also settling in the New World and establishing religious missions in California. The spiritual influence of that early Spanish culture is still important in California. It is now mixed with the spiritual ways of the indigenous indians and the immigrant Asians and European Protestants. Witchcraft and occultism are part of the spiritual ambience, and sometimes the political manifestations of California.

I have been in Northern California this past year, establishing contemporary performance arts activities at the new University of California at Santa Cruz. Santa Cruz is an incredibly beautiful part of California, in an area of giant, ancient Redwood trees overlooking Monterey Bay on the Pacific Ocean. My collaborators in the project include the composer and musicologist William Brooks, students at the University, and people from the surrounding community. We made indoor and outdoor performances of new music, theatre, and dance throughout the year. On our first concert I performed a composition of my own, *Schoolwork 1970*, for musical saw. It was not controversial. One of our collaborators was a carpenter, cabinet maker and jazz clarinetist named Paul Stricklin. He made a composition for a later performance, done in April 1974 at the University Theatre. Stricklin's composition, *Cradle Song*, was for a quartet of gasoline-powered chain-saws and a conductor. In front of each chain-saw performer was a wooden cradle which

held a large Redwood log. The logs were cut in half on cues from the conductor. Though the audience was enthusiastic about Stricklin's sonorous *Cradle Song*, there was a serious controversy. A group of witches in the community protested the imposition of mechanical devices on the sacred Redwoods.

In our many performances at Santa Cruz we presented as diverse aspects of contemporary culture as possible: for example, music of Webern, John Cage, and Alec Templeton; theatre of Albee and ZAJ; and particularly the original work of the people living in Santa Cruz. Some of the cultural activities unique to that part of Northern California push at the boundaries of our European-influenced concepts of art.

Just north of Santa Cruz a dozen people work with a mystical artist named Gary Aro Ruble. At night they transform large land areas into performances. For example, one performance occurred at a Pacific Ocean beach surrounded by mountain caves, and occupied an area of approximately one square kilometer. With a red railroad flare one performer traced a long path along the barely visible beam of a helium-neon laser which was directed outward from inside a cave. After this task was completed the laser was shifted a few degrees and the performer made another tracing, continuing this process until several traces were completed. Simultaneously a large sailboat was dragged from the ocean across the beach and up into the mountains. Every few meters the sailboat would stop and a red or blue strobe-light would flash behind the triangular sail.

Throughout other parts of the night landscape a small circle of dancers moved. At each new position a hand-held strobe-light would flash, making the dancers momentarily visible. This performance ritual lasted throughout the dark hours of the night. The only spectator was a large sheetfilm camera overlooking the scene from the ridge of a nearby mountain, and containing a single sheet of color film. The camera shutter was open for the entire night. Thus these rituals are time-telescoped into a single, Breughel-like image. Ruble calls the photographic memory of each performance a »power flick«.

There is too little time to describe here the many other unusual activities of California. It is enough to say that Californians are abundantly nourished by this diversity, and by the stimulating conflicts between these cultures.

The United States has a long history of individualist creative artists such as Stricklin and Ruble. Some, like the composer Charles Ives, are widely known. Though the universities still tend to nourish conformity, the individualists survive. The individualists, even the crackpots, are a source of pride to almost everyone. They are the source of our most fertile innovation.

There is also great interest in technology in the United States, and a general concern that it be put to good use in the service of living things. Recent individualists of this inclination include the composers Salvatore Martirano, David Behrman, Alvin Lucier, Pauline Oliveros, Paul DeMarinis and David Rosenboom.

Salvatore Martirano, who lives in Illinois, does not have a large list of compo-

sitions to his credit, but most of his music is formidable. He works for several years on a single piece. Following the birth of his virtuoso multi-media composition *L's G. A.* (1968), Martirano began experimenting with digital computer technology. He went beyond a concern with standard programming procedures and explored the architecture and design of digital computers. The result of this study was his development of a unique musical instrument, named the Sal-Mar Construction. The sounds of the Sal-Mar Construction are initiated and controlled by the performer at a large »keyboard« panel which contains a complex matrix of touch-sensitive points. The sounds are heard by the audience from twenty-four separate loudspeakers. The touch-sensitive points are arranged on the panel according to function. For example, one group of twenty-four points corresponds to the twenty-four loudspeakers. Other groups of points control entire sequences of musical continuity rather than individual pitches (as is done on traditional keyboard instruments). The Sal-Mar Construction is a live-performance instrument, but because of its digital computer and memory functions it also makes musical decisions of its own. The human performer and the Sal-Mar Construction share in decisions at the *process* level of music. It is really a performance collaboration instrument.

David Behrman, who lives in New York State, also builds his own electronic music equipment. During the past several years he has built configurations of electronic music instruments that are shared by ensembles of performers, who sometimes perform with acoustical instruments. Behrman's *Wavetrain* (1966), *Players with Circuits* (1967), and *Runthrough* (1968), which has been recorded by the Sonic Arts Union for Mainstream records, are examples of these explorations. Most recently Behrman has built with analog integrated circuits a „home-made synthesizer“ which can be performed by an ensemble of players, and will also perform by itself. Alone it makes sliding chords of precisely tuned, complex intervals, and spins its gently shifting sonorities into a ballad-like continuity of epic proportions.

In *Queen of the South* (1972) by Connecticut composer Alvin Lucier, the visual environment is of equal importance with the sound materials. This environment has the character of an exotic ritual. The performers sing into microphones or produce sound with oscillators. By means of electromagnetic transducers, large steel plates which are suspended horizontally near the floor are made to vibrate with these sounds. The vibrational patterns are made visible by sand and other granular materials which the performers sprinkle onto these plates. As they change the pitches of their sounds the granular images on the plates shift from one pattern to another. The performers, each with their own plate, are located throughout the performance space — ideally it is a gallery rather than a traditional proscenium theatre. The spectators move freely around these sonically and visually vibrating islands, and choose their own degree of involvement with the ritual.

The California composer Pauline Oliveros is involved with both rational and non-rational aspects of music. She is diversely skilled in instrumental and electronic music techniques. She also uses procedures of extra-sensory perception and telepathy. While working on her composition *In Memoriam Nicola Tesla, Cosmic Engineer* (1968), which was commissioned for the Merce Cunningham Dance Co., she studied the many diverse scientific and industrial patents granted to Tesla. They are collected in a large book published by the Tesla Museum in Beograd. Oliveros found this book of Tesla patents at only one place in New York City: a bookstore specializing in occult literature. It is clear from a performance of *In Memoriam Nicola Tesla, Cosmic Engineer* that she also does not consider the rational and non-rational as opposites. In recent tours Oliveros has presented *Sonic Meditations* in which everyone participates. Her work has become an important influence on the way people think about music.

Also in California there is Paul DeMarinis, a young composer who works with Robert Ashley. Like Martirano and Behrman, DeMarinis builds electronic instruments which perform alone or allow human collaboration. DeMarinis builds his instruments with integrated circuits and uses digital shift-registers to determine musical continuity. He has named these instruments »Pygmy Gamelans«, and their music uses the same »hocket« techniques practiced by various Southeast Asian and African peoples. No two of these Pygmy Gamelans are exactly alike. Though built of electronic components rather than acoustical materials, in many ways they are folk instruments.

David Rosenboom, now living in Toronto, is one of several composers who integrate biophysical phenomena into their music. One example of Rosenboom's work is his ensemble »The New York Bio-feedback Quartet«, in which four performers play commercial electronic music synthesizers. Some of the control signals for the music are obtained in the usual way, from the standard function-generator components of the synthesizers. However, certain control signals are electroencephalic. They are the »alpha« and »theta« currents, and are obtained from electrodes attached directly to the heads of the performers. These electroencephalic signals are used to control the amplitude and frequency of the synthesizer-generated sounds. For most people in the Western world the alpha and theta currents are voluntary manifestations of brain activity. Rosenboom and the members of the New York Bio-feedback Quartet have developed skill in controlling these currents, and consider them a reasonable extension of human activity into musical performance.

For some it is still unsettling to see electrodes protruding from a person's head. The California witches were similarly unsettled when their trees were violated by mechanically powered saws. But many people now accept these procedures as normal. We see the heads of our astronauts, as well as the actors of Kubrick's film *Clockwork Orange* or Crichton's *Terminal Man*, covered with electrodes. Some people with electrodes in their brains are becoming popular heroes.

The six composers I have mentioned work independently (except for Behrman and Lucier, who perform with the Sonic Arts Union). Their work is typical of the diverse new music activity in the United States, particularly outside New York City. Common among them is an interest in electronic technology. But more important is their attitude about using electronic technology in their work. Rather than impose the formalities of non-electronic and European concert traditions upon it, they develop their art from their experiences with electronics and the diversity of the culture in which they live. One result is that music can become an organic part of its environment.

My own work *Hornpipe* (1967), a composition for French Horn with live-electronic accompaniment, is an example. The Horn player wears on his belt a »cybersonic« console, a small analog computer that I designed for the piece. The cybersonic console responds to the sounds of the Horn and to the acoustical resonances of the performance space. *Hornpipe* begins as a solo without electronic sound. The Hornist plays various sounds in the space, produced with a conventional mouthpiece and with reeds. The cybersonic console contains a series of tunable, gated amplifiers which automatically adjust their resonances to compliment those of the performance space. When sufficient resonance information has been gathered by each gated amplifier, the gate opens and the resonance of that particular amplifier is heard from loudspeakers. During the performance the Hornist learns the constellation of resonances of that particular space, and is able to deactivate the cybersonic circuitry by playing sounds which are out of the resonant constellation. Since the resonances are activated by the sounds which the Hornist plays, the cybersonic circuitry and the acoustical space an organic part of the ensemble of *Hornpipe*.

I derive the word »cybersonics« from »cybernetics«, the science of automatic control by feedback principles, and »sonics«. In the cybersonic console of *Hornpipe* the sounds are controlled by their own characteristics. Though different in detail, this principle also applies to some extent in the work of the six composers I mentioned previously.

More recently in my work I often find the inherent sounds of a process so interesting that I hesitate to impose any outside formality or influence upon them. In 1972 I made a composition, *Telepos*, for Merce Cunningham's new dance *TV Rerun*. I had worked for several years with accelerometers, devices which change accelerations into analogous electrical currents. For the dancers of *TV Rerun* I made belts containing small accelerometers, a voltage controlled oscillator, and a radio transmitter. The accelerometers measured change in the dancers' movements, which were translated into pitches and then transmitted by radio to loudspeakers in the theatre. The process is called »telemetry«, which means measuring at a distance. Each dancer had a different belt, and produced a different set of pitches. In performance the telemetered sounds were like those received from space travel, undersea, or biomedical research. Whatever their measurement

functions, they are inherently interesting as sound, and I left them that way. The dancers were responsible for the music of *TV Rerun*, though in a sense they danced to co-incidental music.

Much folkloric art is also innovative in its virtuosity. All of the work I have mentioned is innovative in its virtuosity, and is in some sense folkloric. Furthermore though it is the art of a literate people, and electronic technology is the manifestation of a highly literate society, it has many characteristics of non-literate art. None of it is mass produced, and very little is notated. Most of it is used by people who teach it directly to one another and distribute it only by performance.

Though not everyone has equal access to electronic resources yet, one resource shared by all peoples, and also used in innovative ways, is the human voice. There are many virtuoso examples, such as the »sygyt« style of singing done by the Tuvinians in Russian Central Asia, in which the oral cavity resonates the harmonics above a voiced fundamental pitch. An interesting variation of this procedure, practiced by the Nivkh peoples of Asia as well as by Central Africans, is the holding of a bowed string in the teeth so that the harmonics can be accentuated by the mouth resonances. To many European ears the Nivkh music sounds electronic. Examples of hybrid instrumental-vocal procedures can be found in many non-literate parts of the world. The Australian natives practice a skilled circular breathing technique while simultaneously blowing and singing into the *digeri-doo*, a wood stem instrument borrowed from the insects who made it by eating a complex meandering tunnel through the marrow of the wood.

John Cage has returned to the use of the virtuoso voice in his recent compositions *Mureau* (1971), *Mesostics* (1972), and *Empty Words* (1974). Besides his interest in vocal sound, he is concerned with the syntax of language, and has been applying chance operations to its restructuring and abolition. He performs these works with his own voice. For several years Robert Ashley has been at work on a vocal-electronic hybrid titled *In Sara, Mencken, Christ, and Beethoven there were Men and Women*. The words are from a poem by John Barton Walgamot, and are spoken in a continuous, rapidly articulated phrase lasting forty minutes. The problem of breathing while speaking has been approached in several ways, including the obvious solution of alternating two performers. The live-electronic aspect, developed in collaboration with Paul DeMarinis, is interrelated with the voice. The electronic sounds occur automatically as a result of the inflections of the speaking, and the performer adjusts these inflections according to the electronic responses.

People from non-literate societies often perform several activities at the same time: the dancer who plays an instrument and sings simultaneously. This kind of virtuosity is uncommon in Western literate arts. There are exceptions, such as Meredith Monk, a remarkable singer, dancer, and composer of poetic theatre in the United States. She uses her voice in ways which greatly exceed the accepted

expressive gestures of Western art-music, and her sense of theatre-time is much broader than that of Western literary drama. In spite of her innovative virtuosity, Meredith Monk's work is comfortably accommodated in proscenium theatres, and her music has achieved wide appreciation on recordings.

I have suggested that all of this work, though of substantial virtuosity, is basically folkloric art. This may seem an unorthodox perspective, but it makes possible several important considerations.

It is clear from our now relatively easy contact with the music and art of other cultures that everyone can be a virtuoso with the resources to which they have access. But those of us from the Western, technological cultures have access to more resources than do the peoples of the non-literate and »third world« cultures. This inequitable use of resources has many causes, the most complex being that of colonialist exploitation. Colonialism has been a part of history for so long that its origins are obscure, its victims weary with anger, and its solutions difficult. The more technological cultures cannot simply impose contrived solutions upon the less technological cultures. The virtuosities as well as the resources must be shared.

Performing artists can be a good influence. When we are inclusive of other cultures we help overcome the uneasiness with cultural differences which pervades much of the world. Performing artists share their unique virtuosities on a person to person basis with other cultures. We seek and disseminate an understanding of the human and spiritual resources manifested in the arts, particularly in the folkloric arts. People of other cultures who are virtuosos with their resources might also become virtuosos with the resources to which they do not have access. Because their cultures are different, their innovative insights will benefit everyone.