+511: David Rosenboom, Guest Composer & Salvatore Martirano

Thursday, March 23, 1995
8 PM Tryon Festival Theatre
Krannert Center for the Performing Arts
University of Illinois at Urbana-Champaign

Systems of Judgement (1987-88) David Rosenboom

Section VI
Meaning in Context
David Rosenboom, piano and electronics

On Being Invisible II (1994-95) David Rosenboom
(Hypatia Speaks to Jefferson in a Dream)
Ray Sasaki, trumpet
Erik Lund, trombone
William Brooks, narrator
Heidi Von Gunden, Hypatia
Jason Scher, Jefferson
David Rosenboom & Kent Clelland, computer media

L's.G.A.

film: Ronald Nameth
music: Salvatore Martirano
M.C. Holloway, politico
Denise Tipei, nurse

David Rosenboom is a George A. Miller Endowment Visiting Professor

Special thanks to the Yamaha Corporation of America and Byerly Music of Champaign for the use of the Disklavier and to CV Lloyde Music Center of Champaign for the use of additional equipment.

Systems of Judgement
Section VI: "Meaning in Context"

Systems of Judgment was composed in 1987 as the musical score for a choreographic work by Duncan MacFarland of DanceArt Company, San Francisco, which also involved interactive sculpture by Australian artist, John Davis. The music has been presented extensively in live-performances in North America, Europe, and Australia, and has recently been released on a CD by Centaur Records, (Centaur #CRC 2077, distributed by Harmonia Mundi).

There is a conceptual paradigm which guided the creation of the musical form. It attempts to elucidate parallel views of evolution by examining and speculating about processes which we, any organism, or any system, must use to learn to make differentiations, be self-reflexive, and arrive at judgments from which language may be formulated.

The counterpoint of the form is conceived in a multi-dimensional concept space linking three views of evolution. The first focuses on an ontogenetic view, the evolution of the individual of a species. Its imagery involves using the idea of the drone, a sonic singularity, to represent birth or the beginning of self-consciousness. From there it proceeds through a process of self-reference, using smaller divisions of the drone, to develop a combinatoric view of the elements of experience, resulting in complex counterpoint and a view of harmonious relationships. The second is a stochastic view of evolution by probabilistic processes. It represents the evolution of thought. It begins with the idea of an undifferentiated field of evenly distributed energetic events. Asymmetries develop inside the field, from which arises the concept of resonance. As these resonant warpings of the field recruit more and more of the surrounding events into an ordered relationship with them, patterns result, ending with the creation of an alphabet. The third view of evolution is symbolic of social organization. It attempts to juxtapose a scale of primitive to advanced imagery against the other two views and provide a counterpoint of semantic references examining ideas of meaning and context.

The macrostructure of the work involves an enfolded fabric of "golden ratio" time proportions. A carefully defined set of themes and harmonic structures are subjected to transformation processes which produce variations, but which preserve essential shape or contour characteristics. These are combined with various collected sound images, each of which becomes a player or leitmotif in the scenario for evolution which unfolds. The drama in the work involves a tension between the three views of evolution. At any point, each view has a certain strength. All three progress in time simultaneously. The final, single evolutionary trajectory which results is one which mixes and balances the three views in an essential tension. This provides the programmatic content for Systems of Judgment.

The facilities used to create the music included the following: Kurzwiel 250 Digital Synthesizer, Oberheim Xpander, Macintosh computer, Touch Computer Music Instrument, Gentle Electric Pitch Follower, Lexicon PCM-70 Digital Effects Processor, Emulator II+HD Digital Sampling Instrument, a multi-track recording studio with Sony 701/A+D PCM Digital Mastering and Amek Scorpion console, homemade circuits, acoustic instruments, Neurona Omnivoila music modules, and a variety of music software packages, featuring HMSL (Hierarchical Music Specification Language) and FOIL-85 (the Touch instrument language) developed at CCM.

The sound synthesis processes involved digital synthesis with non-linear waveshaping algorithms, sampling and resynthesis with digital filtering and other transformations, time domain processing, hybrid analog synthesis with computer control, unstable feedback circuits whose behavior is described by the mathematics of chaos dynamics, voltage controlled pulse wave frequency dividers, pitch and amplitude tracking, and analog computer circuits. Information applied on the level of compositional form sometimes resulted from algorithmic pattern generation or manipulation of precomposed themes along with patterns extracted from dominant resonances contained in concrete sound sources. Concrete sources ranged from rainstorms and waterfalls to trains, birds, human voices, motors, engines, interesting outdoor environments, and sounds from acoustic instruments and transformed ensembles. Non-electronic instruments used in live performance include violin, piano, and light percussion instruments from Africa, the Middle East, North America, and Aboriginal Australia.

D.R.

On Being Invisible II
(Hypatia Speaks to Jefferson in a Dream)

program notes on a work in progress

In the late 1960's I became fascinated with new developments in brain science as they related to musical perception and the emergence of new musical languages. Ideas from cybernetics, notably those relating to the self-regulation of systems by means of feedback, were finding their way into psycho-biological research, resulting in an explosion of interest in something popularly known as, biofeedback. The notion of self-regulation, that individuals may be able to achieve a degree of conscious, willful control of particular body functions formerly thought only to be regulated by unconscious, autonomic processes, captured the imaginations of many people. My own interest in biofeedback centered around the notion that self-regulation of brain functions, as could be observed through monitoring aspects of electrical brain activity was closely related to certain processes involved in the evolution of new musical styles. Self-regulation by means of feedback is also closely related to some ideas about evolution, and models of evolution appear as a consistent, thematic referent throughout much of

my musical work. Consequently, I began a long period of research in information processing modalities of the nervous system as they relate to aesthetic experience and creative activity. I produced many musical compositions and interdisciplinary, artistic pieces in which the material forms in the works were generated spontaneously by means of direct monitoring of electrical brain activity and/or other body functions. I published numerous articles about this work, a book, Biofeedback and the Arts, and several recordings. This was, however, only a beginning.

In 1976, I began creating a work entitled On Being Invisible, which, for me, contains the richest aesthetic, symbolic and metaphorical content arising form the import that biofeedback systems had on my work as a composer. On Being Invisible is a self-organizing, dynamical system, rather than a fixed musical composition. The title refers to the role of the individual within an evolving, dynamical environment, who makes decisions concerning when and how to be a conscious initiator of action and when simply to allow her or his individual, internal dynamics to co-evolve within the macroscopic dynamics of the system as a whole. Consequently, the work is always ongoing. Within the corpus of my music, the title serves as a label for a period of work with these ideas from about 1976 to 1979. Recently, after concentrating on other things for several years, I have begun new work with this system, calling it, On Being Invisible II. This new work is stimulated partly by advances in technology that only now make the realization of earlier concepts possible, and it is partly the result of interest in applying new knowledge within a still very rich musical paradigm.

One of the primary objectives in this research was to achieve the technical capability necessary to create an attention-dependent sonic environment. I wanted to create a situation in which the syntax of a sonic language orders itself according to the manner in which sound is perceived. To accomplish this, components of the electroencephalogram (EEG) recorded from the brains of on-stage performers, known as event-related potentials (ERP's), are detected, measured and analyzed. ERP's are transient waveforms in the EEG associated with the occurrence of stimulus events having a high degree of salience - particular meaningfulness - to the subject emitting these brainwaves, always in relation to a particular context of surrounding events. Next, computers are programmed to produce a stream of sonic events according to some predetermined starting point or compositional method devised by the composer. The computer software also contains a partial model of musical perception, with which it attempts to predict what events in its own, musical output might be perceived by the subject as having significance in the emerging musical structure. Usually, these correspond to boundary points, such as the end of a phrase and the beginning of a new phrase, a significant change in texture, or changes in the pattern grouping of phrases into sequences or other higher level forms. (A powerful, widely used software tool, co-authored by the composer and known as HMSL, (Hierarchical Music Specification Language), is used to manipulate formal musical elements referred to as morphologies, or morphs, for short.) ERP's from

the musician-subjects are then analyzed to determine if the computer's predictions correspond to signals from the brain that should accompany important, attention-securing events. If they do not, the music generating algorithms are allowed to mutate into new forms and new predictions are tested. If the predictions are confirmed, the kinds of events reliably associated with these confirmed predictions gain prominence in the musical fabric. In this way, self-organizing, musical forms can emerge that are related to the shifts of attention experienced by the musician-subjects and that can be confirmed by brain signal measurements. In modern terminology, this system exhibits many of the characteristics of what we call, complex adaptive systems. Such systems are used to model the evolution of complex life forms that are often governed by simple, underlying rules. Thus, an interactive, musical system is produced that can spontaneously evolve new, emerging, musical orderings, and perhaps, even languages.

Over many years of performing, producing recordings of On Being Invisible, publishing another monograph, Extended Musical Interface with the Human Nervous System, and further thinking, the components of this feedback system began to remind me of characters in a mythological drama, the spontaneous forces of creativity, the drive to converge upon ordered relationships in society, the counterbalancing tension of divergence from order as our conscious attention lose its focus on orderings from the past, and the fundamental uncertainties regarding forces in nature that are only partially knowable. Consequently, I began to think about On Being Invisible in theatrical or narrative terms. This raised a fundamental question. If music combined with theater can be loosely termed, opera, how, then, does one go about creating a self-organizing opera? This question may never be fully answered, but it is far too stimulating to my imagination to stop trying.

On Being Invisible II (Hypatia Speaks to Jefferson in a Dream) is an experiment with this question. The setting is a dream in which Thomas Jefferson hears a lecture by the Greek, woman, astronomer, mathematician, and philosopher, Hypatia, delivered across the centuries of time and the space of continents, as he is writing one of his great documents. The components of ideological conflict that emerge from this scene remind me of the tension associated with the individual performer in On Being Invisible who must always negotiate a thin dividing line between being part of something larger than one's self and trying to willfully direct a naturally evolving process. Hypatia, an Alexandrian who was murdered in A.D. 415 for being both Greek and a woman who dared to lecture, resided at a focal point of change in the old world, the end of Classical Greek philosophy and the beginning of the Dark Ages, the foundation of Neo-Platonism and the emergence of Plotinus, the transformation of Christianity from a moral teaching into a brutal instrument of political power, the appropriation of Plotinus and mysticism by the Christians to obscure thought and achieve totalitarian, political control, the decline of Alexandria as an intellectual center, symbolized by the destruction of the fabled library, combined with an unprecedented outpouring of romantic, multi-sexual poetry, and the labyrinthine racial-political conflicts there

CREDITS AND ACKNOWLEDGEMENTS

On Being Invisible II
(Hypatia Speaks to Jefferson in a Dream)
Conception and Composition: David Rosenboom (1994-1995)

Based on the earlier work: On Being Invisible (1976 - 1979)

(an attention-dependent sonic environment)

A Self-Organizing, Multi-Media Performance Work Utilizing Event-Related Potentials From Performers' Brains

Technical Assistance and Computer/Video Image Design: Kent Clelland

Recorded Voices: Teri DeSario, Roxanne Merryfield
with voice synthesis and processing

Projected Slide Collages: Jacqueline Humbert

Additional assistance: Warren Heaton, digital video

Photoshop wizard: Vincent Cart

Analog video: Steven Kury

Media Consultant: Sara Roberts

Brain science inspiration: Dr. E.E. "Ted" Coons Dr. Lloyd Kaufman

among Greeks, Jews, Ptolmaics, remnants of Egyptian antiquity, Copts, Islamics, Europeans, and numerous others. These are just a small sampling. Similarly, Thomas Jefferson was a figure wedged in-between the end of the Age of Enlightenment and emerging Romanticism, an American hero who espoused freedom of thought and religion but also kept slaves, a revolutionary torn between rationality and romance, who's relationships with women, from slaves to European intellectuals, symbolized the psycho-sexual dilemma of a young nation, whose brilliant inventiveness and creative genius was at once steeped in Neo-Classicism and evinced a great contempt for Plato, who was both a champion of the political avant garde and a player in the new dynamics of wealth and power, a president in the new world who was also obsessed with the mathematics of miscegenation. The invisibility manifest in this scenario is represented by the dream state of Jefferson in which these conflicts energize his thoughts and entreaties to wisdom are transmitted to him through warps in space-time by the reincarnated mind of Hypatia.

This realization of On Being Invisible II is set for two performers, representing Hypatia and Jefferson, whose brain signals are being monitored and event-related potentials analyzed. The results are used to create the forms of electronic music we hear, sequences of visual icons we see through computerized video projection, and arrangements of words spoken by electronically sampled voices. The words come from various texts by Jefferson, including selections from his letters and writings on the arts and philosophy. Hypatia's words are speculative. They come from various authors, original words by the composer, and selections from Hypatia's contemporaries. Each of these characters has a double image on stage in the form of a musician. These are the ghost doubles of Hypatia and Jefferson, in the sense of being their personal angels and also representing human being's propensity to make copies of themselves in nefarious forms. These musical parts are written for master improvisers to provide musical glue for the performance. Finally, a narrator, heard, but not always seen, represents the dream state and a neutral form of the emerging properties of a new, global consciousness.

L's.G.A.

Fourscore and seven. Seven? Seven section!

I. Forksore, a stomach real and imagined. Imagine a real storm-ache: the bottom ascends, swirling sauce, muddy brown it boils down eudiometrically. Intergastric electricalization. Fango-therapy, its delizioso.

II Boom, Boom, Boom, Boom !
Eat and be eaten by the calefactive cannonball of Kiln 574.5.

III. L's A. H. rises slowly, draws from his pocket a paper and when commotion subsides, in a sharp unmusical treble voice, reads the brief and pithy remarks. (end of quotation)

IV. Speeded-up. A lion caged? A Cagey lion at the blat in Mudville.

V. A Case of canned knots and furthermore would knocks.
L's B.J. saith: Thou shalt not; Thou shalt not;
Thou shalt not; plus 7.

VI. Ox-tongue mined air raids. Look out! Sirenes wail.
Intermedium? The General clubwoman said: War is, hell, raw electro-anasthesia.

VII. Babies. Babies slobbering, dribbling saliva. A megaton of spit orbits and slides. Two hundred and fifty men, a link and a chain toward epiphany. Whose hearts, whose sweet voice, cry music, when soft voices die, lingers in the Memor-eye?

Professor Martirano's music is published by Schott, London, and Smith Publications, Baltimore. He has recorded for CRI, Advance, Heliodor, Polydor, New World Records, Centaur CD, Einstein Records, Neuma Records and GM Records. L's. G. A. is recorded on Centaur CD:Salvatore Martirano Retrospective, release date April '95.