ARTISTS’ STATEMENTS

WEAKNESS, AMBIENCE
AND IRRELEVANCE:
FAILURE AS A METHOD
FOR ACOUSTIC VARIETY

Tim Feeney (improviser, percussionist, lecturer), University of Alabama, 202 Moody Music Building, 810 Second Avenue, Tuscaloosa, AL 35487, U.S.A. E-mail: <tim@timfeeney.com>. Web site: <www.timfeeney.com>.

Supplemental materials such as audio files related to this article are available at <www.mitpressjournals.org/toc/lmj/-/22>.

ABSTRACT

The author, a percussionist, finds timbral interest in the failure to consistently execute a common technique.

When I was an 18-year-old percussion student, I spent countless hours practicing drum rolls. Piling hundreds of tiny bounces on top of one another, I hoped to create the aural illusion of a continuous, unchanging stream of sound. A great roll was smooth, effortless and perfect, and I thought that someone who could play one somehow also became smooth, effortless and perfect. As a young klutz, these were things I wanted very much to embody.

It was many years before I could appreciate the irony of working so hard to create what amounted to a drone. At 35, I perform mostly as an improviser, working with players who are interested in exploring slow-moving sound as the force driving their music. I learned from these players how to listen, to appreciate the beauty of detail within sounds. This attention to timbre has become the center of my creative practice.

I was too young then to understand, but I used this ethic of listening constantly when practicing rolls. While playing I made countless judgments based in the sound of a roll: Was one hand louder than the other? Did each hand motion produce the same pitch? Did I hear a break in the sound when changing hands? I listened intently with these factors in mind, regarding any fluctuation as a sign of failure; being smooth, effortless and perfect is ruthless work. To my surprise, I no longer find this technical perfection important, and I have lost the discipline necessary to achieve it. By accepting this failure of will, though, I experience a world of deeper possibility: I can really hear the sound my hands create.

I have just completed a recording for a single snare drum [1] (Fig. 1), made in a three-story atrium. For 45 minutes, I played rolls with my fingernails and with sticks, holding each as long as possible, until physically exhausted. Sitting directly above the drum, I heard the impact noise from my hands in fine detail, but had less sense of the filtering effects of the surrounding tile and concrete. I installed microphones in different locations to catch sound reflected off the walls: behind a stair column, facing a tight corner, and close to the ceiling. The combined result of this drum-and-room system was a bubbling field of slow-changing harmony; fingertip rolls produced sounds similar to noise filtered into pitch bands, while rolls with sticks generated chords built from a prominent fundamental and inharmonic overtones close in frequency to members of triads.

In essence, any drum roll is hand-made granular synthesis. By changing striking position on the drumhead, I am altering the pitch content of individual grains of sound; since my sticks are bouncing according to the rules of damped harmonic motion, successive grains exhibit changes in amplitude and attack envelope; faster hand motions increase grain density. We do not hear these phenomena at the level of individual bounces, but as affecting an emergent textural stream. My hands perform these functions at a lower level of consciousness than I want to control: I view technical failure as a factor introducing random fluctuations into the shape of each grain, which might add microrhythms or unexpected pitch content into the resultant timbre. Many composers must find a way to program this randomness into digital descriptions of grain size and shape; I get it for free.

I notice these effects better the longer I sustain a roll, as my attention spans slows and attunes itself to its surroundings. Rolls initially feel undifferentiated and overloaded with information, but with patience I experience their rich inner lives. My ear might lock into loud or pulsating pitches reinforced by the room, only to find them missing when I turn my head, and my skull absorbs sound at those frequencies. Its attention might bounce back and forth between higher- and lower-frequency bands interacting in a rhythm that decelerates as I tire, and the alternation between my hands becomes irregular. It might compare the sound of a roll with timbres it remembers from the past. The long duration of the piece allows my brain time to make these perceptual shifts and discoveries.

This listening is the performance: the drumming is secondary, and the real music is a psychoacoustic phenomenon unfolding in my imagination, as I explore an environment growing out of the interaction between physical sound, my body and the surrounding space. As an experiment, this process has made me realize that I care about this investigation most when I make my music. That’s enough.

Reference

1. Tim Feeney, Weakness, Fall Spectrum Records, to be released in fall 2012.

Received 2 January 2012.
Tim Feeney is an improviser who has toured the United States and abroad with musicians including cellist and electronicist Vic Rawlings, vocalist Ken Ueno, trumpeter Nate Wooley and others. He is Assistant Professor of Percussion at the University of Alabama.

**Sonic Objects, Resonance and Chaotics**

Phil Edelstein, Port Washington, NY, U.S.A. E-mail: <cp.edelstein@cieweb.net>. Web: <www.cieweb.net/pedelstein>.

Supplemental materials such as audio files related to this article are available at <www.cieweb.net/pedelstein/Impy>.

**ABSTRACT**

The author describes structural elements for and the conditions and contexts within which he creates his work. The recurring use of fractals and resonance is integral to the construction of sound objects.

There is an entire medium of work found in the exploration of resonant objects in time and space and the nooks and crannies of turbulence.

In a recent moment, I recognized the organizing principle for one of my early circuits in a demonstration of fractals on YouTube. The original work (Shrieks and Nuptials [1975]) was a duet for performers joined by a single variable and obligated to navigate in opposition or in concert along one degree of freedom in a realm of non-linear possibilities. The original circuit is a simple cross-coupled function-generator pair that exhibited nodes of silences between howls. The sonic behavior of that circuit is described in a fractal algorithm.

I am seeking ways of creating sounds in specific places in space and ways of offering those spaces to participants. Consider sound as a plastic medium of shape, place and duration: The sculpting of sound is the utilization of the physical properties of waves, still or in motion, ephemeral or persistent, focused or dispersed.

There is delight working with real and virtual sculptural, instrumental, architectural sonic objects. These objects have fronts and backs and tops and bottoms, entrances and exits; they are objects that define the shape of sound. The objects are manifested as landscapes to be navigated by participation/traversal, to be within.

These are sound constructions built with elemental physical properties. Waves meet at defining points in space. Compositions are choreography of the motion of those conjoined waves in time and place. The sounds are found in the ripples in tide pools, peals of thunder, geology of arches, snap of knapped flint resonating on a cave wall. The sound in the conch is a filter found by the ear. The objects are points of departure for exploration and definition.

A swept sine wave drives a transduced object and informs each resonant node that then informs another object. The simultaneity results in a place in space where these voices sound together. The sounds are constructions of reticulated networks. Composition is a framing of space that occurs through a process of exploration and functional structural construction.

Acoustic environments are found surfaces for the ear. Topology offers fundamental operations for instrument construction and composition. The apparent sound is a signal wrapped on a surface, folded and rendered to feed the ear.

My new work is the sonification of a fractal series (Fig. 2). Chaos is not used as an emotional state but as structural material derived from the enharmonic cycles of sunspots, the resonance of earthquakes, the elasticity and stiffness of materials, stickiness and correlations, Hurst exponents. Raw material for object construction is found in the elasticity of financial markets and non-Newtonian fluids.

I am interested in the implementation of non-finite state machines, of un-Turing machines, systems that transcend the plane between harmonic structure and the roll of dice. This is the exploitation and exploration of fractal uncertainty, of leveraging wobbles and eddies.

I dream of manifesting sounds as solids, Möbius strips, Klein bottles—sounds that can be folded and unfolded, bent and molded—constructions of high-amplitude gradients in space that I use as basic compositional instruments. I use sounds found in the amplitude gradient of ear buds, in elliptical rooms, in transduced objects and bone conduction, in tracking head positions, in amphitheaters and enclosing surfaces. My compositions are for holographic sonic instruments not quite yet available, though tantalizingly close in simulation, the sound element equivalent of a pixel.

I seek a taxonomy of uncertainty and resonance, where step impulse is used to perturb a resonant object, and the resonant nodes are used to derive rhythmic structure. Feedback and iteration are fundamental structural elements. Refinement of structure is the characteristic of the control loop, of how the output informs the input. Recent works are the structural elements that form installations or performance. Improvisation is in the expression of how the ear informs the hand.

**Acknowledgments**

I acknowledge the source literature and inspiration of Beckett, Borges and Bowley; the CAGEan departures, Artaudian passages and Cunningham arrivals in Mandelbrot, Chua and Lorenz; and, begrudgingly, Nassim Taleb’s swans. A thin favorite gem is the compositionally informative Chaos and Order in the Capital Markets by Edgar Peters (Wiley, 1991/1996). Miller Puckette’s Pure Data (P4) and its community have provided updated tools and an invaluable form of education. Mentors and collaborators that have been essential community along the way include John Driscoll and Matt Rogalsky in the current incarnation of Composers Inside Electronics; E.A.T.; Laurie Spiegel, Joel Chadabe, Pauline Oliveros, Alvin Lucier, André Boisclair, David Behrman, Rob Bielecki, Tom DeWitt and, most of all, David Tudor, for sounding the way.

Received 2 January 2012.

Phil Edelstein is a founding member of Composers Inside Electronics, a collaborative group dedicated to the composition, installation and live performance of electroacoustic constructions using software, sculptural objects and circuitry.
ORGAN OF CORTI: A LISTENING DEVICE

David Prior (sound artist, composer), Performance Centre, University College Falmouth, Penryn, Cornwall TR10 9EZ, U.K. E-mail: david.prior@falmouth.ac.uk. Web site: <www.liminal.org.uk>.

Supplemental materials such as audio files related to this article are available at <www.liminal.org.uk>.

ABSTRACT

The author discusses a piece that recycles noise in the surrounding environment, inviting active listening and contemplation on the act of listening itself.

Organ of Corti is a recent piece by Frances Crow and myself (working together as liminal). We think of it as a “listening device”: an instrument that can be used to focus attention on the act of listening itself. The piece is constructed from an array of up to 96 vertically mounted 4-meter cylinders (it can be arranged in a number of configurations) that are placed near a broadband noise source. Collectively, the cylinders form a “sonic crystal” array, a term used to describe the effect that these regularly spaced cylinders have on incoming sound waves. As a wave passes through the structure, its path is redirected, altering its ability to propagate. The acoustic effect of this is to attenuate certain bands of frequencies (a band gap), the tuning of which is defined by the diameter and spacing of the tubes. What interested us in particular, however, was the way this natural filter accentuates a small band of frequencies on either side of the attenuated band gap. Using a combination of these resonant notches and broadband attenuation, it is possible to subtly sculpt the noise of the environment into a constantly evolving acoustic mediation of the surrounding sound that changes according to a person’s proximity and orientation to the structure.

Despite its physical resemblance to a pipe organ, Organ of Corti (Fig. 3) takes its name not from the instrument but from the organ of hearing in the inner ear. Our proposal for the piece came out of a sustained period of research, funded by the Wellcome Trust, in which we led a multi-disciplinary team investigating the relationship between sound, health and wellbeing. During this project, entitled Tranquillity is a State of Mind, we became interested in the physiology and neuroscience of hearing and, in particular, the process by which sound is physically mapped according to its frequency content along the length of the basilar membrane in the inner ear. We became fascinated by the fact that, like that of so many animals, our auditory system is predicated on the physical separation of sound in space, and we began to develop ways of exploring this frequency mapping on an architectural scale.

Organ of Corti does not map the frequency spectrum across its structure as a literal interpretation of its biological namesake. However, the resonant notches that occur on either side of the band gap do behave somewhat like the over-active hair cells that occur on either side of a damaged portion of the inner ear: one of the causes of tinnitus. Given this project’s genesis in the earlier Tranquillity is a State of Mind research, we were intrigued by this similarity. However, where tinnitus, an unwanted sound in the head, is often treated by audiologists through a process of habituation (the technique of blocking out unwanted sound by learning to get used to it), the Organ of Corti recycles unwanted sound in the environment, dehabituating the listener to it. Both by its acoustic behavior and by its presence as an architectural “folly” to sound, Organ of Corti serves as a device that invites an active listening to the surrounding environment and also contemplation on the act of listening itself.

Organ of Corti is entirely passive. It produces no sound of its own. The piece eschews the creation of new sounds in favor of mediating that which already surrounds us. However, this work is not primarily a statement about authorship or a reiteration of the notion of the sonic readymade. Rather, in a world already saturated with sound, Organ of Corti seeks to rematerialize an engagement with sound by encouraging the reconsideration of what is already there.

Organ of Corti won the PRS (Performing Rights Society) for Music Foundation’s New Music Award in September 2010. It was developed over the following year in partnership with Keith Attenborough and his team in the acoustics department at the Open University in the U.K. This piece toured in the U.K. during the summer of 2011, visiting sites that included St. Paul’s Cathedral, London; Tebay Gorge on the M6 motorway in Cumbria; a section of the A419 in the Cotswold Water Park, Gloucester; and Diglis weir in Worcester. We are working with Sustrans, the sustainable transport charity to develop a proposal for a permanent version of the piece, called Cochlea Unwound. In November 2011 Organ of Corti won the John Connell Innovation award and received an honorary mention at the 2012 Prix Ars Electronica.

Received 2 January 2012.

David Prior is a musician and an artist. His work spans song writing and concert music, as well as sound installations, listening walks and radio programs. With architect Frances Crow, he is a partner in liminal (www.liminal.org.uk), a studio specializing in making work that explores the relationship between sound, listening and space.

Fig. 3. Organ of Corti, Tebay Gorge, Cumbria, August 2011. (© liminal. Photo © David Prior.)
**Acoustic Mirage: A Psychoacoustic Sound Installation**

Ellen Band (sound artist, composer), 1 Fitchburg Street, Unit B152, Somerville, MA 02143, U.S.A. E-mail: <eband@ellenband.com>. Web site: <www.ellenband.com>.

**Supplemental materials related to this article are available at <www.ellenband.com>**.

**Abstract**

The author describes her creation of a sound installation inspired by the phenomenon of auditory hallucinations.

Acoustic Mirage invites the listener to enter a uniquely designed sonic environment in which the boundary between aural reality and aural fantasy is dissolved. Moving through a dense noisescape intended to provoke and entice the ear, participants confront a perceptual dilemma—are they really hearing what they think they are hearing?

This installation simulates the psychoacoustic phenomenon of auditory hallucinations—i.e. hearing voices and music that are perceived to be present, but actually are not. Inspired by personal experiences of acoustic hallucinations created by combinations of simultaneously sounding pink noise—generating motors in various spatial relationships, this piece explores auditory imagery resulting from what might be termed “combination noise.”

**Acoustic Mirage** was inspired by and simulates an experience I had of hearing “voices” within a dense bed of machine-generated noise. While observing this phenomenon, I noticed that the voices would appear or disappear when my head and ear orientation shifted slightly. Intrigued by this experience, I set out to understand the phenomenon. I subsequently learned that many people in various situations, such as standing near a waterfall, encounter this acoustic phenomenon when hearing noise or layers of random frequencies. These perceptions are referred to as auditory hallucinations and are almost always perceived as voices and/or music. But is this an illusion or the brain’s need to organize and make sense out of acoustic chaos? Psychoacoustics, the branch of science that studies the perception and processing of sound as well as its effects on physiology, deals with this question.

Once I learned of auditory hallucinations, I knew I wanted to create a sound installation that would present acoustically fertile conditions for experiencing this phenomenon. My initial thoughts about designing a sound installation came from a visual analogue. I had seen a movie many years ago titled Under Ten Flags [1]. There is a scene in the movie in which a spy has to break into a safe containing documents he has to photograph. The hitch is that the room is protected by an alarm system that is a complex web of light sensors. He is given a pair of glasses that allow him to see this web. Watching him climb through this web of invisible light was a movie moment I have never forgotten. Using this visual image, I conceived of an acoustic web of noise that would contain sonic “hot spots.” These hot spots would be points at which intersecting frequencies produce aural hallucinations similar to the one I experienced.

After some discussion with colleagues, I abandoned this idea and decided to re-create the phenomenon through simulation. I made two tracks that are dense beds of noise constructed from recordings of various machinery. The third track is a recording of “subliminal audio suggestions,” or what psychologist and psychoacoustician Albert Bregman terms “assisted perceptions” [2]. The subliminal track consists of words and music embedded within the pulsating mixes of discrete noise-generating devices. This track is played back at a low level, or “threshold” level, giving it a subliminal presence.

Upon entering this installation, visitors may initially apprehend the noise fields simply as pink or white noise. As the sound continues to subtly morph, revealing a more complex nature containing other sonic information, details and imagery, people can create personalized acoustic imagery by slowly moving through the acoustic web, identifying their own sonic “g” spots. As in an interactive installation, audience members enter as listeners but can become active participants. Through selectively focusing on combinations of noises and sounds within the sonic fabric of the installation, visitors can create personalized acoustic imagery partially determined by their own interface between sound and physiology. When listeners spend enough time with the installation (individual for each person) they usually begin to hear their own hallucinations, thereby creating the effect for themselves.

**Acoustic Mirage** has been featured at several festivals and sound galleries [3].

**References**

3. Two comments from the sign-in book lend credence to the installation’s success at recreating the phenomenon:

   “Your installation has given me clarity and crystallization. I now know what happened to me 18 years ago when I woke up at 3:00 AM to the distinct sound of human voices. I’m not as cracked as I thought. Thanks.”—DB, California

   “Stumbled on your Acoustic Mirage. Sandra (10 years old) thought it was just a bunch of noise. Susan (her room) appreciated that ‘a bunch of noise’ is beautiful. I appreciate the children singing.”—Susan, Ontario, Canada. (Author’s note: There is no recording of children singing in the subliminal audio suggestions. This comment is an example of the participant generating her own audio imagery—her own aural hallucinations.)

Received 2 January 2012.

**Sustained Tones and the Auditory Experience**

Richard Glover (musician, composer, researcher), Department of Music, University of Huddersfield, HD1 3DH, U.K. E-mail: <rglover@hud.ac.uk>.

**Abstract**

The author describes his approach to using sustained tones in his compositional work and how he harnesses acoustical and psychoacoustical occurrences to create individual listening experiences.

For me, the sustained tone represents the base in music. It provides us with a unique experience whereupon expectancies, imaginings and temporalities can be flexible and entirely individual.

What can be gained from sustained tones, deviating in pitch or not, is a much-enhanced appreciation of the effects of sound on our auditory systems and our being as a whole. Sustained tones can be gained from sustained tones, deviating in pitch or not, is a much-enhanced appreciation of the effects of sound on our auditory systems and our being as a whole. Sustained tones...
tones provide open, non-hierarchical surface layers where much acoustical phenomena occur and where our psychoacoustical processes attempt to deal with data that prove hard to compute. When I come up with new ideas for a sounding composition, I usually conceive of it in terms of how little or how much the composed parameters will deviate from a continuously sustained tone or tones. For deviation to occur there must be an absolutely explicit reason; deviation for the sake of contrast is, for me, a tedious approach toward artistic creativity. What interests me in composing is extremely gradual, linear pitch movement that does not draw attention to the act of deviation but rather continues to present environments where we focus upon an active surface layer.

I use simple convergent or divergent pitch structures, similar to those used by composers such as Phill Niblock and Peter Adriaansz, to create evolving environments for these acoustic surface layers. In my piece Gradual Music for small ensemble, pitch clusters gradually ebb and flow ever wider before narrowing back to their beginning points, allowing varying layers of events to occur throughout. These acoustical and psychoacoustical occurrences form a significant part of my compositional materials. Above all, it is the generation of beating tones in the surface layer that interests me, where amplitudinal variation is created from interference between two tones in close frequential proximity. Very gradual pitch movement generates gradual transformation in the beating patterns, as a result of the action of the instrumentalists, but not always intended by them. Multiple layers of beating patterns create dense webs of transforming sound; our perceptual systems cannot easily partition these simultaneous layers into separate streams, so they become blurred together in different ways for each listener.

In addition, the close tone clusters become difficult to parse into single tones until pitch intervals expand past the critical band; however, individual perceptual systems interpret this differently, resulting in widely contrasting individual experiences as clusters form and dissipate uniquely in individual auditory systems. It is this fuzziness in perception that intrigues me: There is not one single ideal of what my music may be like, but each participant experiences it in a singular manner.

The reason I choose to realize these ideas of gradual transformation in sustained tone environments in a live, instrumental scenario, rather than using electronics, is to promote the personal, physical nature of the music. Over extended-duration sustained tones, human performers naturally deviate in pitch, dynamic, bow/lip pressure and so forth, which results in changes in the surface layer of the sound, consequently affecting our perceptual experience of the music. The nature of human fallibility in this respect is celebrated within the music in its relation to the indeterminate effect upon the acoustics of the sound.

Many more things remain to be explored within sustained tone environments, and the nature of acoustical effects and how we process them will remain at the center of my own future investigations.

Received 2 January 2012.

Richard Glover is a Research Fellow at the University of Huddersfield, U.K. His music is performed internationally and is being recorded by EXAUID and Quatour Bazzini for separate CD releases. He has chapters in forthcoming publications on the music of Phill Niblock and the Ashgate Research Companion to Minimalism, and is currently working on a book exploring the temporal experience in minimalist and experimental musics.

**SOUND IS NOT ENOUGH**

Henry Gwiazda (artist, composer), 555 40th St. SW #228, Fargo, ND 58103, U.S.A. E-mail: chenrygwiazda@cableone.net. Web site: <www.henrygwiazda.com>.

**ABSTRACT**

The artist describes the use of virtual audio for spatial music composition.

As a high school student, I remember bringing in a sketch for a spatial work for orchestra to my first composition teacher only to have him respond that it wasn’t “music.” I didn’t know much about music at the time and was confused by his statement. I always liked sound and secretly preferred it to music. But I thought that I was wrong because almost all of the avant-garde music that I listened to had pitches and rhythms.

Fast-forward 25 years—I am now completely engaged with sampling and sound effects as my palette. I have finally accepted my artistic predilections. I am looking to expand my work and I don’t know how. I want it to be “bigger” but not louder. In 1990, I ran across an advertisement for a product called Roland Sound Space. I received a demo version and thought it was fantastic. One could place, accurately, sounds in physical space using only two speakers. This was what I was looking for. Unfortunately, the “sweet spot” was tiny, and the system cost $20,000. Fortunately, I was referred to engineer/artist Bo Gehring. He had software called Focal Point for the Mac [1], Focal Point did a similar thing to Sound Space but not as effectively.

Bo explained the software as a kind of “super” EQ (Equalization) process. Each dot was assigned a specific EQ, and as you moved the mouse, the sound appeared to move. It was an illusion, of course, but it worked. I could move the sound up and down and from side to side in any configuration. I set up my speakers 14 ft apart, 8 ft from the listener and angled about 45°. I found that I could make the sounds appear to move toward and away from me. The sounds were so vivid; I could almost see a bird flying over my head. The sound became visual. I removed everything in front of me—books, pictures—to better “see” the sound. I could not, however, place a bird sound at a low spatial location. The engineer I talked to explained that we humans expect high sounds to be just that. I also couldn’t place any sounds behind me. Because of the reflection of the wall behind me, however, sometimes I could get away with it. I found that the perfect space for this work was a super dry room. Any reverberation interfered with the EQ, which in turn made the spatialization less effective. Also, the “sweet spot” was a circle about 3 ft in diameter. And only one person could hear the work at one time.

I created two works using Focal Point, one for speakers (two) and one for headphones. Buzzingreynolds'sreamland [2] was the speaker piece, named after a Coney Island amusement park. My normal composition process uses CDs of sound effects as source (musical) material. A sound effect is a pitch and rhythm idea to me. I never process any of the sounds, unlike almost everyone else I know. Why would anyone need to tweak a bird sound? I can’t understand that. If I am not artistically pleased with a sound (musical idea), I find a new one that works. It enlarges my sound vocabulary and produces nice surprises.

The spatialization of the music became an important compositional element. First, I would choose the
sound I wanted, then its volume and spatial placement. Did I want it to be located in a specific area in front of the listener or did I want it to move? What kind of movement did I want? Gradually, I became enamored with the idea of sound moving and occupying a specific space. Music that just “sat there” was insufficient for me. As I presented the work as an audio installation, I became aware that most listeners needed several listerings to be able to perceive all the choreography. In other words, one had to condition one’s ears to the spatialization.

My work with virtual audio produced an unexpected result in my own artistic development. Rather than continuing to create virtual audio installations, I wanted to expand my work further by sampling the whole environment and giving it motion. In fact, working on the aural choreography brought out that side of me that saw movement in everything. I wanted to sample light and human movement along with sound. For me, they were inextricably linked. Sound was not enough.

For me, they were inextricably linked.

**References**

2. See <soundcloud.com/henry-gwiazda/buzzing
reynoldsdream>.

Received 2 January 2012.

Henry Gwiazda is a new media artist/composer whose artistic trajectory has taken him from sampling, sound effects and immersive technologies to his current work with new media. This new work (claudia and paul; I’m sitting, watching . . .; and a doll’s house is . . .) is a comprehensive artistic approach that is digital and multimedia in nature, focusing on movement, and available on Innova. See <www.innova.mu/artist/henry-gwiazda>.

**SOUNDSCAPE AS INTERFACE:**

**The Threshold Project**

Kristian Derek Ball (artist, educator, audio coordinator), Department of Theatre & Zoellner Arts Center, Lehigh University, 420 E. Packer Avenue, Bethlehem, PA 18015, U.S.A. E-mail: <kristian.derekball@gmail.com>. Web site: <www.kristianderekball.com>.

Supplemental materials such as audio files related to this article are available at <www.kristianderekball.com/artwork/1782393_Threshold.html>.

**ABSTRACT**

The author discusses his sound installation Threshold as a system to explore an evolving acoustic ecology. For the purpose of this brief examination, the author observes how the soundscape functions as an interface in communion with its participants.

Electronic devices are now integrated into the natural soundscape. These technologies allow us to conveniently transport our entire music collection or favorite radio station [1] and give us the power to generate and re-purpose practically any sound for our own personal use [2]. These “sound generators” are what the movement of acoustic ecology would have considered a significant contributor to “noise pollution,” and also a distraction to the listener’s communion with the natural sounds of the world. The sound installation Threshold [3] acts as a system to explore an evolving acoustic ecology. Barry Truax and R. Murray Shafer suggest that an ongoing separation from our hi-fi acoustic horizon isolates us from our environment, saying we must figure out how to preserve it. Are these devices adding “lo-fi” sound and tarnishing our natural environment or is this how we should understand the “new” sound environment? With both the movements of our body (oral emissions) and the use of personal communication devices as extensions of our thoughts, there are significant sonic additions to our physical world-space.

The sound installation Threshold consisted of a pressure-zone microphone mounted to the ceiling of the adjacent room near the HVAC system. The sonic events were emitted by the occupants of the space and/or adjoining spaces and the inherent architectural components of the building and then fed back to the audience through a three-speaker system. A compressor processed the input signal to a specific amplitude value. When the input volume would increase, the compressor would engage and change the output volume. The installation was completely dependent upon the acoustic excitation of the space. Various sonic events and incidental sound sometimes caused a stutter in the reaction time of the compressor, creating interesting sonic artifacts.

We are active participants in the soundscape. As moving, breathing, sound-producing creatures, we constantly propagate and re-propagate waveforms in our sonic ecosystem. It is important to think futuristically of acoustic ecology, especially considering how integral technology has become since the original writings about it in 1970s. Personal communication devices and the sonic emissions associated with them are a widely accepted form of social behavior, specifically within the 20-year-old and younger set.
Our soundscape is an interface: What is heard and what is emitted have a symbiotic relationship [4]. In Fig. 4 we see the individual’s connection to the environment. If we define the technological device as a subset of the individual, we can realize its role in delivering sound. Implementation of this experience through Threshold reveals the loss of synecdoche [5] through factors that include poor acoustics, enhanced crowd activity and communicative distractions. These effects increase the tendency to mask seemingly unimportant, subtle life sounds [6]. The objective of Threshold is to reveal the subtle sounds within environmental ubiquity and gather them into the foreground of listening [7].

Threshold presents an opportunity for the passive audience to become active environmental listeners. The initial installation concept calls attention to the minutia of our hyper-localized sonic environment. The secondary attribute (whether conscious or unconscious) is the audience’s intersecting relationship with the soundscape. A sustained incursion of sonic information can become a recognizable influence on the participant, an effect never previously experienced. By giving up former concepts of listening, the “player” becomes self-aware and may voluntarily move into the realm of play. Examining the role of personalized communication devices poses another interesting layer to this relationship. When transmitting and receiving data (sounds generated from the device) or using the device for specific musical and sound-designing applications, the user is participating in the sonic activity of our world. This represents the epitome of involvement between participant and interface, the idea behind Threshold.

Threshold speaks to the multiple sonic factors of our surroundings, representing the active and passive relationships therein. By referring to the soundscape as an interface, we are reminded of our role within our sonic environment, which is to experience sonic phenomenons and participate in this interactive site. Society’s interaction with technology has dramatically changed how individuals contribute to an evolving soundscape. A new and evolving acoustic ecology should be willing to shift its perspective within the cultural and technological changes in a manner that is as flexible as the devices that change us.

References and Notes


2. Although “live” performance has a very significant and relevant effect on this topic, my focus here is restricted to more prolific media.


6. In the lo-fi soundscape, meaningful sounds (and any associated acoustic coloration) can be masked to such an extent that an individual’s “aural space” is reduced. Where the effect is so pronounced that an individual can no longer hear the reflected sounds of his/her own movement or speech, aural space has effectively shrunk to enclose the individual, isolating the listener from the environment: “One’s aural space is reduced to less than that of human proportions” (Truax [4] p. 20). Under such extreme conditions, sonic information mutates into noise. While the hi-fi soundscape is—as acoustic ecologists suggest—balanced in terms of level, spectra and rhythm, the lo-fi soundscape features an almost constant level. This creates a “sound wall” isolating the listener from the environment. See R.M. Schafer, The Tuning of the World (New York: Knopf, 1977) p. 93.

7. This is the reason for miking the HVAC system. Typically we are not paying attention to such subtle sounds. Background sounds orient one to one’s surroundings by presenting the context of the location. Shafer introduces terminology such as keynoted sound and sound signal that focus on the hyper-local positions in a site-specific area. See Schafer [6].

8. Truax [4].

Received 2 January 2012.

Kristian Derek Ball is Adjunct Professor of Sound at Lehigh University and Head of Audio, Zoellner Arts Center in Bethlehem, Pennsylvania. His work includes theater sound design as well as experimental sound art, performance, installation and film. He has been featured in national and international galleries and museums such as the Nelson Atkins Museum of Art in Kansas City and The Franklin Furnace Archive of New York MOMA.
Leonardo Book Series

Editor in Chief: Sean Cubitt
Editorial Advisory Board: Annick Bureaud, Laura U. Marks, Anna Munster, Michael Punt, Sundar Sarukkai, Eugene Thacker
Editorial Consultant: Joel Slayton

The arts, sciences and technology are experiencing a period of profound change. Explosive challenges to the institutions and practices of engineering, art-making and scientific research raise urgent questions of ethics, craft and care for the planet and its inhabitants. Unforeseen forms of beauty and understanding are possible, but so too are unexpected risks and threats. A newly global connectivity creates new arenas for interaction between science, art and technology, but also creates the preconditions for global crises. The Leonardo Book Series, published by The MIT Press, aims to consider these opportunities, changes and challenges in books that are both timely and of enduring value.

Leonardo Books provide a public forum for research and debate; they contribute to the archive of art-science-technology interactions; they contribute to understandings of emergent historical processes; and they point toward future practices in creativity, research, scholarship and enterprise.

Proposals that address these challenges in terms of theory, research and practice, education, historical scholarship, discipline summaries and experimental texts will be considered. Single-authored books are particularly encouraged.

When submitting a proposal, bear in mind that we need to know as much as possible about the scope of your book, its intended audience and how best to bring the book to the attention of that audience. We need to be convinced that the material is important and that you can communicate clearly and precisely in ways your audience will appreciate.

Proposals should include (1) a prospectus describing the book, (2) a detailed table of contents, (3) two to four sample chapters, and (4) an up-to-date résumé/curriculum vitae for the author.

Full submission guidelines: <leonardo.info/isast/leobooks/guidelines.html>.

Inquiries and proposals should be submitted to both:

Leonardo Book Series and Doug Sery
 c/o Leonardo and MIT Press Books
 211 Sutter Street, Ste. 501 and 55 Hayward Street
 San Francisco, CA 94108 and Cambridge, MA 02142
 U.S.A. and U.S.A.

E-mail: <leonardobooks@mitpress.mit.edu>.

RECENT TITLES:
MARK AMERIKA: META/DATA: A Digital Poetics
EDUARDO KAC, editor: Signs of Life: Bio Art and Beyond
CRETIEN VAN CAMPEN: The Hidden Sense: Synesthesia in Art and Science
YVONNE SPIELMANN: Video: The Reflexive Medium
SUSAN KOZEL: Closer: Performance, Technologies, Phenomenology
MATTHEW FULLER: Software Studies: A Lexicon
BEATRIZ DA COSTA AND KAVITA PHILIP, editors: Tactical Biopolitics: Activism and Technoscience

To order Leonardo Books, visit <leonardo.info>.