

Interpretive Artificial Soundscapes Based on Natural Soundscape Structures and Elements

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ABSTRACT: In this paper the author describes his initial experiences in electroacoustic music composition and in soundscape composition, then describes how he was eventually able to use the structure of the soundscape in the creation of abstract music for a film.

KEYWORDS: soundscapes, artificial soundscapes, algorithmic composition, performance sound art, sonic structure, musique concrète, aleatoric elements, electroacoustic music.

1. Introduction

The kind of “research” I am presenting in this paper is one of personal compositional discovery, not a report on library findings or laboratory experiments. Although I took music courses in university, I was not a music major but rather a media–production student. As a result, I was open to many new forms and ideas, even in the very early 1960s, that I might not have embraced if I had studied music in a traditional fashion. This is a personal narrative of my discoveries spanning a period of over fifty years.

2. Exploring New Music

As a student, I had a strong background in science and technology and thus became fascinated with the kinds of sounds and music that used technology, both in the recording of sound and in its creation. At that time, composers such as Edgard Varèse, Karlheinz Stockhausen, and Pauline Oliveros were exploring electronic circuits as a means of sound production for experimental music. Most were using electronic equipment originally intended for nonmusical practice – devices such as function generators, vocoders, filters, and so forth.

But many composers were creating experimental music – disconnected from the widely accepted “classical” music taught in most conservatories – with electronics that were both expensive and scarce, having been designed for science and technology research. The first vinyl recording I bought that included electroacoustic music was *Extended Voices* [Behrman] which included works by Pauline Oliveros, John Cage, Morton Feldman, Robert Ashley, Alvin Lucier, and Toshi Ichyanagi. As a student in the Midwest United States, I had no inkling that I would come to know three of these composers much later in life.

Meanwhile, I became fascinated by what I was reading about the RCA Mark II synthesizer often used by Milton Babbitt at the Columbia–Princeton Electronic Music Center. It seemed the complete antithesis of sound created by pure acoustic means. *It was sound from electricity, and it was exciting.*

2.1. A Personal Introduction to Electroacoustic Music

While still in graduate school, I was employed as a classical–music television producer, frequently working with celebrated performers and conductors. Thus, for a time I set aside my interest in experimental music.

After graduate school, however, my first academic post was at a school with limited studio television facilities where I would be unable to continue producing classical–music programs. The thought crossed my mind, “If only one could do television without cameras.” As a result, I became interested in electronically generated images and created some by modifying found gear. Then, in 1969, I received a grant to do some work at the Computer Image Corporation in Denver, Colorado.

But in creating electronic images I also needed sound. I met the electroacoustic composer Larry Austin, who was working with a small Buchla synthesizer. In concert, he performed on the Buchla in real time. He didn't use a keyboard but rather setup patches, then turned knobs to create very interesting sounds. This, too, excited me.

Unable to afford a Buchla, I purchased a small EMS synthesizer, which I used for music soundtracks and even as a signal generator for some of my visual images. This, now, was both image and sound from electricity—no reference to the “real world” here.

During that period, I was exposed to *musique concrète*. The composer Ann McMillan visited Omaha, Nebraska (where I was living), and stayed with me for a short period. Having learned her craft from Pierre Schaeffer, she carried her trusty Nagra and a good microphone. I helped arrange a session at a very good recording studio for some post production, but since the Nagra was also out of reach financially, I didn't pursue that line of composition. I did, however, listen to quite a bit of music by Pierre Schaeffer, Pierre Henri, Michel Philippot, and others associated with ORTF, and was impressed by the richness of that sound, which was less “technical” than many compositions produced with oscillators and filters.

2.2. Soundscape Epiphany

My realization of the creative potential of natural soundscapes occurred a number of years later, after I had mostly abandoned electronic music and had become enchanted, as did many in my generation, with the possibilities – mostly visual – of the tiny personal computer.

In 1980, I spoke at a computer conference in Anaheim, California. My wife and I drove from Anaheim to Los Angeles to meet with some people we knew in the entertainment industry. We stopped for lunch at Marina del Rey. It was a very windy day and there were hundreds of sailboats moored, each with an aluminum mast. As I stepped out of my car, I was greeted with the most amazing chorus of lines hitting the masts. I said to my wife, “This is what music should be.” Instantly fascinated with the “music” of natural sounds, I completely changed my compositional form after that experience.

3. Sound Components

How to turn natural sounds into music? At that time, I was not familiar with the concept of soundscapes, especially in the documentary sense, but I knew I wanted to create some kind of music using the processes that had produced the very interesting sonic experience of Marina del Rey.

There are many ways to describe the components of music and sound. As a recordist, I am often concerned with frequency, amplitude, timbre, duration, ratio of direct to indirect sound, and so forth, but my new sonic aesthetic requires a different frame of reference.

For this paper, I want to focus on three different ways to describe a sound composition:

1. **The force behind the creation of sound** – for a flute player, blowing air across a special kind of tube; for the sound of a waterfall, the force of gravity causing the water to fall over a cliff.
2. **The content of a sound composition** – what the listener hears, whether it's the notes played by symphonic instruments or the wind and birds in a forest. For the present purpose I suggest two types of content: the *documentary* or *referential* component (*What is the sound?*) and the *emotional* aspect (*What feelings* are produced in the listener?)... though these sometimes overlap.
3. **The structure of a sound composition** – how the content elements are arranged and, tangentially, what causes this arrangement. The structure may be dictated by a composer who writes out every note to be played, or it might be created by processes, such as those of nature, and may have aleatoric (chance) components.

In a string-quartet performance, the content is the musical sound produced by the instruments; the structure is often one of the traditional forms of “classical” music, usually dictated by a composer; and the force is the bowing or plucking of strings.

In my Marina del Rey experience, the content of the soundscape was the metallic sounds of lines hitting metal masts; the structure was partially aleatoric but not complete “chance,” as the sounds were limited to the pitches and timbres of the masts and lines; and the force was the wind blowing the lines against the masts. In terms of content, anyone could recognize the source of the sounds, but it was the emotional component that seemed most important to me in that context. I was thrilled to be surrounded by the percussive sounds in a way that went far beyond simple recognition of what was causing them.

3.1. Computer “Wind”

It was never my intention to create music that would sound like the Marina del Rey soundscape, but I wanted to explore similar methods of production in order to achieve the same emotional results. If I could set up a series of sound objects, then control them via a computer using partially aleatoric processes, I could create unpredictable, very changeable music. Initially I used the program M by Intelligent Music and later used other programs, including Music Mouse, written by Laurie Spiegel, and SuperCollider.

This technique, algorithmic composition, was especially well suited to theatre performances, art-gallery installations and film sound design, as it provided a kind of sonic environment rather than a “tune.” I did much of my graduate work in the field of theatrical scene design, and my work with theatrical soundscapes could be considered a form of sonic scene design. But for me, this process, though less rigid than through-composed music, created only artificial soundscapes with no connection to real-world soundscapes.

3.2. Exploring Natural Soundscapes

For a time, I taught an electronic-music course in which the projects were based on *musique concrète*, as most students had access to portable recording gear and audio-editing workstations but not to synthesizers. Though *musique concrète* is based on recorded sounds, these are usually highly processed. One does not have a clear idea of the original source. There may not be a strong documentary component. Often, the sound objects for *musique concrète* are created in a studio, not in nature.

Becoming acquainted with the soundscape compositions of the Canadian sound ecologists, especially R. Murray Schafer, Hildegarde Westerkamp, and Claude Schryer, I found that while such compositions, like *musique concrète*, are often constructed in collage fashion, the intent is to preserve the natural sounds, adding a documentary component to the composition.

My initial interest in soundscapes was oriented toward finding new sounds for *musique concrète*, but when I discussed my approach with Hildegarde Westerkamp at a World Forum for Acoustic Ecology conference in Sweden, she said “Don’t just be a composer; learn also to be an acoustic ecologist.”

This changed my thinking some, I became fascinated with the “openness” of the sounds from nature. For many years, when I went out jogging for exercise, I would wear headphones that played music or audiobooks. As I gradually became attuned to natural sounds, I abandoned my headphones and music player, instead savoring the interesting sounds provided free by the environment.

When I taught recording techniques, I started asking students to produce soundscapes based on their local environments, playing examples from the Canadian sound ecologists. I had received from Claude Schryer *Lettre sonore II* [Schryer] – a CD consisting of soundscape clips he had collected. To teach students to use the audio-editing software, I asked them first to use some of his clips in a short mix composition, then to make another composition using clips they recorded in their own environments.

Students in another of my classes created a website featuring natural sounds of the Hudson Valley. These included trains, coyotes, birds of various kinds, an abandoned old mine partially filled with water which had a huge reverberation time, and others. I enjoyed becoming a sound collector and getting to know others with related interests, including Jim Metzner, who produces the daily syndicated radio program *Pulse of the Planet*, and musician-turned-nature-sound-collector Bernie Krause.

3.3. Taking Apart the Soundscape

In 2016 I was invited to participate in an art show in which four pairs of artists – a video artist and a sound artist in each pair – had to create fifteen minutes of video and audio based on a short poem about the Hudson River, “An Arrow Pointed Down”, by Sarah Heady:

The Hudson is an arrow pointing down (though it flows both ways). The City is a poured-concrete floor onto which all things land, and sometimes break. You can hold—with your hands raised above your head, with a system of pulleys, with a net, standing on a ladder—your life and all its parts in the air.

But there is the fact of gravity.

The Hudson River, only two blocks from my home, influences local art of all kinds. I didn't want to merely record soundscapes from the river. In my view, the river's definitive soundscape was created and recorded years ago – on the CD *Sound Map of the Hudson River* [Lockwood], by Annea Lockwood, who once taught at nearby Vassar College. On the other hand, I didn't wish to simply create innocuous “background music” for the visuals. Also, as the poem suggests, the Hudson river flows both North and South depending on the tides. This lent the theme a degree of abstraction and ambiguity in sonic interpretation.

After consideration, I came to realize that the attraction of the river went beyond the documentary content (both sonically and visually) to generate certain emotions in the person experiencing the river. I decided to separate the two types of content – documentary and emotional – and produce music that had some of the emotional content and form of the space without the documentary content. To many soundscape artists, I admit, this might seem to contradict the purpose of the soundscape. Interestingly, the video/photographic artist I was paired with, Lori Adams, wanted to use a similar approach – to capture the feeling of light as it might play over water rather than use images that referenced the river in documentary fashion. This too was considered controversial by some; we were like John Cage in a group of Beethoven enthusiasts. Lori's visuals consisted of moving points of light, like specular highlights on moving water, followed by a pattern produced by those lights as she captured their traces with a digital still camera.

The river is, of course, fluid, and I wanted to structure sounds the way soundscapes of the river are structured, but with mainly emotional content that didn't necessarily convey the river's actual sounds. To design the sounds' fluidity, I relied mostly on analogue synthesizers to create various sound clips, which I then used to build a composition much as soundscape collectors create soundscape compositions. This was a departure from my digital algorithmic compositions, which were more or less real-time presentations created without regard to the sonic structure of a particular soundscape. After all, I had never tried to compose algorithmic music that mirrored the structure of the sounds in the Marina del Rey experience. In a sense, I borrowed the soundscape's method of production but not its structure.

My visual-art partner used light painting to create the abstract but very fluid images she wanted. Her method of working produced moving points of light, moving in more than one

direction, followed by a resulting static composition that the moving lights “painted” on the camera sensor. Accordingly, I had to make my sound composition quite episodic in order to synchronize the two. Yet both Lori and I were satisfied that we captured the feeling of the river without the trite “postcard” visual and sonic approach often used for this kind of art.

To the soundscape purist, our avant-garde technique might seem sacrilegious, but I became intrigued with creating sound compositions approaching the “essence” of the soundscape without the degree of documentary reference.

4. Coda

I would be remiss in this recounting of my experiences if I did not mention my encounter with Walter Branchi. His business card reads “gardener and composer”. He feels that both roles are nurturing and is a noted rose-grower as well as composer and music teacher. He presents concerts in which electronic sounds he has created are played relatively quietly in an outdoor setting for the purpose of letting the natural soundscape merge with his more artificial electroacoustic ingredients.

I heard his concert in the garden of the Greenwich House School of Music in New York City. He discourages recording of these performances for CD release, believing that each performance should be “new” according to the soundscape in which it is presented. Some of his ideas are collected in a series of essays he has written over the years, *Canto Infinito: Thinking Music Environmentally* [Branchi].

The approaches that I have outlined above constitute the new direction of my sound-design work.

It has become a fusion of my experience with electroacoustic music and natural soundscapes, and it will be interesting to see where it leads. Stay tuned...

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