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### Acoustic Ecology and the Experimental Music Tradition

By David Dunn

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A recent composition of mine, *Five Micro-Worlds*, includes the strident scratching of ants communicating deep in their underground nest, the quiet wheezing and buzzing noises of underwater invertebrates in freshwater ponds, the eerie ultrasonic echolocation bursts and singing of many different species of bats reflecting back from rock crevices at night—pitch-shifted into our human-hearing range—and the insistent chirping and scraping of tiny beetles chewing through the inner bark of pine trees. These are all sounds that are not audible to humans without the aid of special

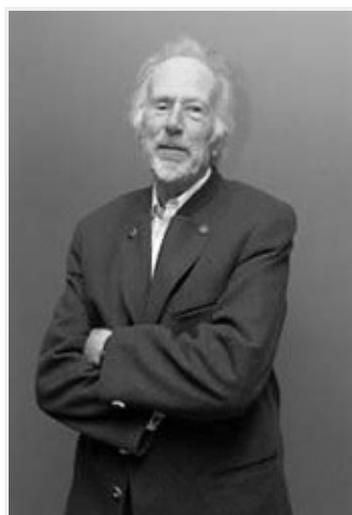


David Dunn  
Photo by Naomi Milne

recording devices, and this is one of the things that I do as a composer: bring forth the sonic presence of these worlds for human contemplation of their inherent aesthetic beauty and to show the amazing continuity of life, with its capacity for infinite variation in audible communication.

Every so often over the past decade, I have had a recurrent experience where upon being invited to lecture and present this kind of work at an institution, I find myself advertised as an "acoustic ecologist." While I never argue with this characterization—I'm usually unsure of the specific rationale for its use—I have never applied the original meaning of the term *Acoustic Ecology* to myself, been affiliated with its originators, nor used it to describe what I do (with one notable exception where it was used to highlight some of the issues addressed by this essay). All the while, I remain deeply sympathetic to it. Perhaps there is some confusion afoot in the worlds of art and music about what the term means, but there's also a vague intuition of its appropriateness for describing a much more expansive domain of intellectual activity than would have ever been claimed by its original practitioners. This essay is an attempt to put some of these conflicting assumptions into perspective while also clarifying some of my own insights into related issues.

The history of the collective of ideas generally associated with the term Acoustic Ecology is usually written from a perspective that locates it as an academic trademark. There is certainly validity in this approach, especially for the practitioners of its most specific usage to define distinct boundaries for a movement that began in the early 1970s in western Canada. However, the term's scientific ring has beckoned a younger generation to its broader implications and many of these newly interested adherents come to it with more of an environmental conservation and media art/science background than a historically focused knowledge of the ideas of composer R. Murray Schafer—who, most likely, first formally coined the term. While I plan to give due attention to his generative role, I wish to place an understanding of that role into a larger context that has evolved somewhat consciously from its original intentions but, as importantly, from activities that developed independently, in parallel to, or in reaction against it. Current usage of the term can now be found to describe any or all of these sometimes contradictory positions.



R. Murray Schafer

While Schafer's ideas are rich and unquestionably profound, some are also sufficiently general as to be readily summarized:

1. Our modern 20th-century culture—but by no means all human cultures whether extant or extinct—tends to privilege our understanding of reality through our sense of sight; and this preference for visual experience also becomes manifest through our predominant use of language metaphors based upon these visual experiences. Aural experience is largely pushed further into a background perception, and we pay for this diminishment with a loss of sensitivity and awareness towards certain aspects of our environment.

2. The framing of the concept of "the soundscape" as a defining metaphor for perceptually pulling forth the auditory characteristics of an environment into foreground attention and insisting that these sonic attributes be regarded as a consistent organizing factor—not only for how the environment is defined and experienced, but as an essential feature for defining the historical and ongoing social relationship of humans to that environment.
3. The necessity to heighten awareness of the negative consequences of certain historical developments in human societies that have resulted in the loss of traditional knowledge conveyed through sound or, similarly, the increase of industrial "noise" that has both a disintegrating social impact and psycho-physiological destructive aspect. This concern has often been simplified into issues of "noise pollution" and confounded with the more direct agenda of environmental acoustics.

The evolution of Schafer's ideas can be traced through his sequence of extraordinary writings, starting with many of the general concepts, moving through curriculum outlines and listening exercises, and eventually to the defining of a lexicon of formal language for framing all of these ideas towards heuristic application and research. During the expansion of these concepts, there formed a larger collective of colleagues that became known as the World Soundscape Project. Books and recordings were published that demonstrated many of the group's core concerns and a standard arsenal of tools and strategies for increasing listening sensitivity to the environment were codified: soundscape recording, list making, oral history recording, various forms of sound mapping, amplitude and spectral charting of auditory spatial locations, sound walks, and many other types of listening exercises that were especially geared for educational uses with children. Overall the group produced a combination of activities drawn from both the emphasis on experiential education that was burgeoning at the time and a form of quantifiable communication theory that is more characteristic of the social sciences than of musicology. Diaries and field observations of specific geographic locations (Vancouver and several European villages) resembling ethnographic field notes were made and data collected to subsequently create ingenious charts and maps showing correlations between sonic landmarks and patterns of social organization and history.

While the principal metaphor that Schafer used to formulate his concept of Acoustic Ecology and the World Soundscape Project was the value of listening to the soundscape as if it were a musical composition—and even participating in how that soundscape gets "composed"—there also seemed to be a dramatic schism between his interests as a composer and the maintenance of the WSP as a somewhat abstract—and didactic—research project. The two always seemed separate in his mind and creative output. Acoustic Ecology may have been inspired by music but never became music and, conversely, some of his music may have been influenced by Acoustic Ecology but never became "Acoustic Ecology" except in the most rudimentary and academic of cases.

In recent years this has somewhat shifted. As composer Warren Burt has reminded me, Schafer has been staging a series of ritualistic operas in the remote Canadian wilderness called *Patria*. Warren has made the excellent point that these events require a real commitment on the part of the audience—sometimes several days of hiking to, and living in, the performance locale—and therefore represent a serious attempt at a renewal of the social function of music, one that moves much closer to reconciling Schafer's earlier music and his Acoustic Ecology concerns.

In many ways the current expansion of the term Acoustic Ecology—which otherwise seems historically appropriate—is reinforced by a largely conservative musical establishment—especially in academia—interested in placing experimental musical activity into a zone of non-musical status. The term provides for a convenient outlying conceptual domain where much sound-based art that otherwise is threatening to traditional musical values can, from that perspective, be exiled without uncomfortable argument. This can also be said about the split that has taken place between "concert music" and "sound art," where the latter has often been a forced categorization for certain kinds of experimental practice that aesthetically conflict with more conservative musical assumptions: if it doesn't conform to certain preconceptions about music, then call it something else so those assumptions won't be seriously challenged.

As a composer, Schafer has essentially been a Romantic Modernist (by no means meant as a pejorative) here defined as an interest in expanding the expressive palette of music while maintaining an essentially 19th-century aesthetic concept of

what the social role and purpose of music should be. As such he could not accommodate his insights about environmental sound into his music, and the logical way open to him was to define a new intellectual discipline. I believe that Romantic Modernism is still the dominant aesthetic paradigm of 20th-century music—both popular and classical—but that there are other parallel paradigms that have existed and continue to thrive in the world today. One of the most important of these is an experimental tradition that bifurcated away from the predominantly European 19th-century belief that music must express "self" and "emotion." It is also a tradition concerned with achieving many of Schafer's Acoustic Ecology concerns but through active creative strategies that emphasize the materiality of sound, listening, environment, perception, and socio-political engagement.

Rather than focusing upon the special talents of a composer at "expressing" self through a dramatic structure and highlighting their compositional training and skill at doing so, this is a tradition that is more interested in making a form of music that draws attention to the structure of auditory perception itself and/or issues of sound as an organizing factor in both human and non-human living systems. While it is convenient in this context to pose these paradigms as dichotomous in nature, it is readily apparent that the two can also be compatible. There are a large number of creative musicians who not only move back and forth between these sonic worlds, but also manage to combine them in extraordinary ways.

For example, Larry Polansky has often managed to keep one foot firmly planted in each of these worlds, integrating musically expressive concerns with an exploration of new mathematical and psychoacoustic concepts. His compositions often simultaneously succeed on two different levels. Similar statements can be made about the aforementioned Warren Burt. He constantly moves in and out of a diverse array of musical sound worlds, sometimes purposefully confounding our preconceptions about both experimental process and traditional musical expression. David Behrman's live computer works harvest leading-edge technologies and perceptual theories to create a highly sensuous concert



David Behrman  
Photo by Terri Hanlon

experience. Annea Lockwood has created works that are classics within the Acoustic Ecology tradition, but also highly expressive instrumental works. We can also see how some of the most highly recognized composers of our time (Philip Glass and Steve Reich) began their careers in one of these modes of interest, experimenting with the perceptual effects of entrained repetition, and then moved into being almost exclusively concerned with quite conventional forms of musical expression.

The antecedents for the experimental view also extend back through the 20th century. In fact, much of the project of modernism can be seen as attempts to focus human consciousness towards the reality of the street and the forest. How music has participated in this process was summarized by Australian media theorist Sean Cubitt at the Seventh International Symposium on Electronic Art (ISEA 96): "Music and information dominate the hearing of the twentieth century, and their dialectic has only recently begun to evolve a third mode of hearing, the soundscape. Music from Russolo to Cage strips itself of inessentials—melody, harmony, counterpoint—to encompass all hearing, transferring the musician's mode of listening to the sounds of the world."

Clearly Schafer's desire to hear and compose the soundscape as a piece of music was earlier expressed by Cage—within a more philosophical wrapping—who insisted that his activity was always essentially musical in nature. Starting at least a full decade before Schafer began to articulate the basic assumptions of Acoustic Ecology, John Cage, and the musicians closest to him (David Tudor and Morton Feldman), had transferred creative emphasis away from acts of self-expression towards perceptual acts of listening to non-semantically organized sounds as a strategy for focusing awareness to the reality around us. At the same time, two other associates of Cage, Christian Wolff and Earle Brown, and another composer who was not part of Cage's New York circle, Herbert Brun, applied similar aesthetic breakthroughs to explorations of music as a model for social interaction.

During the two decades (1960s and 1970s) that Schafer was first formulating

Acoustic Ecology, other musicians set out to achieve similar goals through different means. The concern for achieving a deeper understanding of how sound and our sensory modality of hearing are unique organizing forces within human society, and our physical/ecological environment, was coming into foreground attention, especially within the North American avant-garde.

Out of the plethora of sound-based activities from that period, I will merely discuss an emblematic handful. In the late 1960s and early 1970s, Pauline Oliveros began her lifetime concern with exploring the links between sound and meditative processes, forging techniques that expanded upon the ancient world traditions of music as contemplative practice. James Tenney, under the aesthetic influence of Cage and other prior American experimentalists, focused upon formal (non-dramatic) perceptual processes for musical organization that largely influenced his contemporary colleagues towards the rise of early minimalism. Annea Lockwood began her river sound archive and use of recorded natural soundscapes as compositional material. La Monte Young, Max Neuhaus, and Alvin Lucier all began to explore—in individual ways—the idea of organized and composed sound as environment itself. I also began my early experiments in interactive, wilderness based, site-specific sound works and interspecies communication, more influenced by the land art of the period than Schafer's thinking. It would still be a few years before I would hear of Acoustic Ecology. Essential to all of these composers, and Cage and Tudor, was an embrace of the creative potential of the ever-expanding electronic sound arsenal.

A comprehensive list of creative musicians working in similar fashion at that time would be absurdly long and an inclusive list that includes today's active soundscape recordists, noise composers, installation sound artists, phonographers, microphonists, audificationists, and sonification researchers—or whatever new genre is put forth to define intellectual autonomy within an ever-burgeoning field of practitioners influenced by both the experimental music tradition and that of Acoustic Ecology—would be even longer by an exponential factor. In the face of such creative diversity, old distinctions become progressively problematic to maintain and, in many ways, all of these activities are now being referenced by different observers as facets of a current usage of the term Acoustic Ecology.

Here is a list of 20 such diverse practitioners just off the top of my head:

- Richard Lerman—media artist and virtuoso microphonist
- Steve Peters—installation sound artist
- Francisco Lopez—composer, entomologist, and radical listener
- Michael Prime—composer of bioelectrical fields and fungi sonifications
- Douglas Quin—soundscape recordist and composer
- Andrea Polli—sonification artist
- Gustavo Matamoros—sound artist and community designer
- Norman Lowrey—mask maker and river sound composer
- Maryanne Amacher—electroacoustic/soundscape composer
- David Lumsdaine—soundscape recordist
- Phil Dadson—media artist, composer, and soundscape explorer
- Peter Cusack—composer and soundscape recordist
- Hildegard Westercamp—soundscape composer and acoustic ecologist
- Mamoru Fujieda—composer of plant-life sonifications
- Yolande Harris—composer of map and navigation sonifications
- Steven Miller—electroacoustic/soundscape composer
- Yannick Dauby—soundscape recordist and phonographer
- John Bullitt—soundscape recordist and seismic sonifications
- Eric La Casa—soundscape recordist and composer
- Chris Mercer—composer of primate vocalizations



Andrea Polli

In addition to the artistic activities that were evolving parallel to those of Acoustic Ecology, many developments were taking place in scientific fields concerned with the relationship of sound to the environment. Most notable among these were advances made in the discipline of bioacoustics, largely due to technical innovations and refinements to both field and analytical methodologies. This period also saw the initial formulation of theoretical ideas that were later realized by the emergent discipline of

data sonification, the aural equivalent to computer visualization techniques through which streams of data are made more direct and experiential to researchers and the general public. The intervening years have also seen the emergence of a new research area known as bio-musicology as an attempt to formalize thinking about the biological origins of music.

While all of these events have to some extent more precisely advanced issues originally put forth by Acoustic Ecology, further blurring its original meaning and intellectual focus, Acoustic Ecology has itself influenced other disciplines beyond music and the arts. In several articles since his original fieldwork in Papua, New Guinea, anthropologist and ethnomusicologist Steven Feld has acknowledged Schafer's influence upon his thinking about the role of sound perception as a unique organizing force within culture. He has even gone on to further innovate the methodological assumptions of his disciplines by pursuing a form of creative soundscape composition that is firmly grounded in the ideas of Acoustic Ecology.

Taken together, all of these developments, whether originally based within the arts or the sciences, have blurred former distinctions while attempting to delineate new ones. While some of the emerging genre categories seem arbitrary—and in some cases as rather transparent attempts by individuals to stake out turf boundaries—others may stick for some time and even stabilize into fully-fledged research or aesthetic domains. It is obvious that some commentators within the traditional music world have seen the development of these new events and genres as directly hostile to traditional musical values. Meanwhile, many "sound artists" have seemed eager to part from the music world's aesthetic and educational expectations. They often reinvent concepts that the experimental music community has always embraced but can now be retrofitted into the art market gallery system. My position is that many of these new fields are a logical evolution in musical practice rather than a break with it. If music in any way reflects the evolving human condition, then this is what we should have expected music to become in the 21st century.

As a parallel way of thinking to the visually dominant metaphors of human speech and written symbols, music is also a kind of conserving strategy for ways of communicating that are closer to how other forms of life may communicate. Even though it has been a means to organize and perceive communicative sonic patterns, it is only remotely related to human linguistic structures. From an environmental viewpoint, music may have been a means through which humans structurally coupled to the larger systems of mind that comprise our natural and social environments. Beyond the cultural richness and entertainment that recent uses for music afford us, assumptions about musical authorship, communicative intention, emotional expression, and musical genius may—in evolutionary terms—be short-term phenomena and even distractions from a more profound significance.

Failed attempts to identify objective content of expression within the musical object are as numerous as those that have tried to assign the phenomena of mind to a specific locus. As a distributed network of signification, musical semantics emerge from an infinite set of superabundant associations and uses that cannot be fixed except through somewhat arbitrary and geographically limited cultural agreements. The continued dominance of 19th-century assumptions about musical value being determined by our belief in its capacity to convey self-expression and emotional content arises from this condition. The cliché that music is a universal language is a chimera.

While there may be certain physiological constants that contribute to stable perceptual factors that we associate with musical experiences—the fact that we have yet to discover a human society without it seems particularly significant, as do discoveries about the ability of music-making to alter the hardwiring of brain development—we are only beginning to scratch that particular research surface. We currently know very little, and too much of the psychoacoustic research tends to grind an ideological axe from aesthetic biases or is fooled by simplistic semantics and false distinctions. For example, composer Kenneth Gaburo told me about a telling conversation he once had with a prominent psychologist, who—in attempting to discuss musical phenomena in the context of current theories concerning hemispheric lateralization and localization of brain functions—had assigned *melody* to the left hemisphere of the brain (as a supposedly linear perceptual function) and *chord* to the right hemisphere (as a supposedly non-linear perceptual function). Kenneth pointed out how, in the process of composition, one often conceived of a chord as *verticalized* melody and a melody as a *horizontalized* chord. Therefore—given this potential for a creative shift in functional understanding—could such a simplistic hemispheric assignment be made? The psychologist responded by accusing Kenneth of being an

Aristotelian.

In the light of insights inherited from the experimental music tradition and the broader meaning for Acoustic Ecology previously outlined, I am willing to contend that this capacity to hear the soundscape as music is simultaneously one of the most archaic ways of listening and the most modern. Music is both a conserving action for keeping alive a mode of communication similar to non-human forms of cognition and an intuition to a future communication modality that we are actively evolving.

Given the superabundance of how music as a human activity has been used, I believe that music has simultaneously been a strategy to evolve our capacity to structurally-couple with our environment through our aural perception, and a significant force for defining the boundaries of group affiliation and for the affirmation of cultural status, giving voice to an evolutionary heritage of an abundance of other coupling modes that are greater than the rational mind alone.

These admittedly controversial ideas are echoed in a recent hypothesis by paleoanthropologist Steven Mithen in his book, *The Singing Neanderthals: The Origins of Music, Language, Mind, and Body* (Harvard University Press, 2006). Mithen has built upon the work of linguist Alison Wray, whose "holistic" theory of proto-language evolution has challenged the mainstream of "compositional" theories to assert that early hominid proto-language was a root communication modality from which both human speech and music bifurcated. Mithen's principal contribution to this debate has been his theory that early human proto-linguistic communication must have had attributes of both speech and music. He argues that early hominids communicated through a kind of proto-linguistic music-speech, what musicologist Stephen Brown has termed *musilanguage*. While music and language exhibit too many inherent distinctions for either to have evolved from the other, they also share too many features to have had completely separate evolutionary origins. This leads us to the conclusion that both have evolved from a proto-linguistic precursor, something that possessed characteristics shared by both extant language and music.

Besides how intriguing such research into the origins of language and music can be, it is directly germane to the current discussion about Acoustic Ecology and the experimental music tradition through implying that musical function can change over time. What is particularly impressive about Mithen's discussion of music is an underlying respect for its great diversity and potential for continual evolution. If music evolved from a proto-linguistic precursor then it never has been something fixed in form or purpose but rather continually changes as a measure of what it means to be human. Like species of life on Earth, there have probably been more forms of music—both individual and cultural—that have come and gone than are currently manifest on the planet. This inheritance of musical perception from our proto-linguistic consciousness may also be a conservator of archaic ways of observing and understanding the profound spectrum of ways that we have—and still might—communicate between humans, and between humans and the non-human world.

There is one final caveat to include before concluding this discussion of the link between Acoustic Ecology and musical experimentalism. Such attempts to increase our collective awareness of environmental issues by sensitizing us to the soundscape are now four decades old. So what's next? Undoubtedly musicians, artists, scholars, and scientists will continue to use established practices and technologies to bring issues of the natural environment into foreground awareness through sound. They will also invent new techniques and tools for this purpose. I also believe that awareness of the historical moment—signaled through extensive loss of biological diversity, global climate change, and the impacts of human over-population—will demand an even further shift in how the sonic arts move beyond purely expressive concerns, or documentary and sensory heightening strategies alone, towards participation in both scientific research and subsequent interventions in growing environmental dilemmas. This is just another stage in how music has always congruently evolved with human needs.

I want to conclude by explaining my own stance regarding the necessity for respecting the diversity of intellectual and creative opinions that make up our musical multiverse. My position is not intended to negate prior musical forms and assumptions. Such things do not disappear as long as there are those among us who understand, appreciate, and value them. As one of my mentors, Harry Partch, was fond of reminding me, one can choose to live in the little world of one idea and one reality, or the big world of many ideas and many realities. I wish to argue that music is never fixed, and that its evolution into new forms and uses is not hierarchical. The

existence of one thing does not cancel out the existence of another, even if they are contradictory. Like any living ecosystem, a near infinite diversity of musical realities can coexist and be widely valued and that is the true meaning of our human heritage of music. As it becomes more and more evident how serious our environmental challenges truly are, the dual heritage of Acoustic Ecology and experimental music—in foregrounding our aural perception of the Earth—seems more urgent than ever. While no one can predict the exact outcome of the changes we bear witness to, it occurs to me that one of the best uses of our time as musicians is to find creative ways to listen to some of nature's changing messages and pass them along to others.

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