Sound Artists and Scientists as Complementary Partners in Inquiry

By Barry Blesser and Linda-Ruth Salter © 2007

1. Introduction: A Personal Perspective

During the last 5 years, we have been studying auditory spatial awareness and how people hear space in a variety of cultures (Blesser and Salter, 2006). This project forced us to reexamine assumptions that we had taken as immutable truths throughout our careers. If nothing else, the project elevated our intellectual humility.

The spectrum of disciplines for exploring sound is anchored by artists at one end and by scientists at the other. Artists are best able to observe phenomena and create predictive hypotheses from their experiences working with natural soundscapes and aural compositions. Scientists are best able to validate, refine, deconstruct, and extend those hypotheses using formal tools and techniques. The artist relies on a holistic view of aural experiences that arise in real life with real people; the scientist engages in a segmented exploration of well-defined phenomena that can be best understood in the laboratory under controlled conditions. The artist is interested in breadth and variety, while the scientist values predictability and repeatability.

All disciplines have strengths and weaknesses. Each discipline has its own structural limitations regarding data validity, research scope, acceptable questions, useful answers, and legitimate paradigms. Structural limitations always prevent a discipline from gaining a complete picture of a phenomenon; these limitations are like filters that allow only some aspects of a phenomenon to be observed. A full characterization is never revealed by any single approach. When the insights of the aural arts and sciences are integrated and reconciled, we understand far more than using either approach by itself.

2. Different Ways of Understanding

The motivation for joint activities among soundscape artists and auditory scientists is far more than an academic exercise: there are tangible rewards for both as they struggle with the limitations of their paradigms while trying to understand similar phenomena.

On the one hand, artists often embrace free-form creativity by conceiving of aural experiences that do not yet exist, searching for novel ways of expressing themselves. Through their aural compositions, intentionally or accidentally, sound artists establish human relationships with their audience. In doing so, aural artists must have an intuitive understanding of cognitive and perceptual psychology.

On the other hand, scientists embrace the power of their formalism and techniques, focusing on the details for discovering and validating insights. Consider the ways in which cognitive scientists relate to auditory perception. They observe brain activity or behavioral reactions when subjects are presented with well-defined sound stimuli in controlled laboratory environments. Such experiments in thousands of research laboratories over the centuries have created a large amount of data about specific aspects of aural phenomenon.

Serving as complementary views, each discipline has much to teach the other. Cognitive scientists can acquire an appreciation for phenomena that only manifest themselves in natural environments. Artistic creations can become an application of scientific phenomena. Ideally, an individual should have both kinds of tools available, whether functioning as an artist, a scientist, or both. Neither artists nor scientists have a complete view of the total phenomenon.

In a similar ways, artists and scientists can inform each other in many other fields. With active collaboration among a large number of disciplines, we increase our understanding. However, this assumes a desire to become comfortable with alternative languages and paradigms for exploring complex questions. Crossing intellectual boundaries requires disciplinary multilingualism. Not only do such skills teach us new ways of looking at the world, they also elevate our appreciation for the limitations of our own discipline. Because modern culture emphasizes narrow specialization, very few artists and scientists speak each other's language. A half-century after C.P. Snow (1959) published his plea for bilingualism between artists and scientists, our culture has become even more a collection of isolated islands of specialization.

3. Folk Science and Formal Science

Folk scientists observe, analyze and learn from experiences, combining insights with observations that arise from paying attention to the events in normal life. The value of folk science is rarely recognized. Consider two examples of successful cross-discipline folk science: a formal scientist using folk knowledge, and a sound artist making contributions to biology and ecology.

Robert Johannes (1981), a marine biologist, studied what Pacific Islanders knew about fish behavior. He commented, "The native fisherman searches with his eyes and ears and he is more in touch with his prey and their surroundings than his modern, mechanized counterpart." According to Johannes, the knowledge gained from native fishermen advanced the state of knowledge of marine science further in sixteen months of fieldwork than in the previous fifteen years using conventional research techniques. Johannes was a formal scientist realizing the power of folk science by incorporating indigenous wisdom. An auditory version of this would be an acoustician or sound artist exploring the ways in which tribal groups intuitively use the natural soundscapes to modify and enhance the aural components of their ceremonies.

David Dunn (1999), a sound artist and composer recorded the sounds of beetles below the bark of a particular species of pine trees in New Mexico. After an extensive review of the scientific literature, he noted the sparseness of bioacoustic studies focusing on the kinds of acoustic phenomena that he discovered as part of his combined artistic and scientific activities (Dunn and Crutchfield, 2006). After having heard Dunn's resulting soundscape composition, several research scientists are evaluating the implications of his discoveries (Cummings, 2007).

4. Final Comments

Becoming broadly educated in a wide range of disciplines has pragmatic value for both artists and scientists. Rigid paradigms limit the range of inventive creativity; researchers come to know more and more about less and less as they repeat minor variations on well-trodden themes. Artists, too, can fall prey

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to re-exploring familiar ground with minor changes.

At the same time, as advances in technology open up new tools, methods, and possibilities, all of us face another problem: handling exponentially growing choices. How should one choose something worthwhile to study as a scientist, or to implement as an artist? With modern technology, artists can create variations forever without necessarily producing anything of enduring value, and scientists can study questions that exponentially growing choices creates a burden, and a broader view provides the means for sorting choices. An active collaboration helps both artists and scientists sort their choices. By cultivating more comfort with each others' languages and methods, artists and scientists can both respond to the challenges before them: scientists can dig deeper into experiences that manifest themselves in aspects of real life, and artists can incorporate cognitive psychology and other sciences into their work, thereby enhancing a listeners appreciation of soundscapes and aural compositions and producing sound art that initiates practical changes in the listener's awareness and actions.

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