

Barry Truax. *Acoustic Communication*. Second edition. Westport, Connecticut: Greenwood Publishing, 2001.

Reviewed by James William Sobaskie

At first glance, the title of this book might seem a bit out of place: “acoustic communication” certainly represents a hot topic to biologists investigating avian or cetacean behavior, but few musicians think about their own activity that way. Indeed, communication remains a matter some music theorists shun in favor of more objective, defensible issues. A text that addresses electroacoustic music may thus appear irrelevant to analysts preoccupied with sketches or sets. How could a medium organized around timbre and dependent on computer technology have much in common with the traditional repertory? At first encounter, idiomatic terms such as “acoustic community” and “soundscape” smack more of New Age than serious art music. Could such ideas have any bearing on the classics?

Undoubtedly, such responses are rather hasty, and may well betray conditioning that stifles imagination and limits insight. The remedy? We must be willing to “think outside the box” of our discipline. Indeed, the author of *Acoustic Communication* invites us to consider what it would be like if there *were* no box!

Barry Truax is a pioneer of electroacoustic music, a prolific composer, a widely published scholar,¹ and an experienced educator. Each of these pursuits influences and informs his book, now in its second edition. *Acoustic Communication* presents a comprehensive, perceptually based approach to the study of sound in

human society. Founded on the premise that listening drives a dynamic, multilateral process of *information exchange*, this approach impresses by the sheer breadth of its purview. Truax synthesizes research on acoustics, audiology, communication, economics, geography, psychology, and sociology, as well as electronic technology, computer science, and music to demonstrate that an interdisciplinary—even *metadisciplinary*—perspective is required to comprehend fully how sound communicates in the artistic and the quotidian domains. In fact, he argues that such a perspective is essential to addressing problems that plague both realms today, such as the communication gap that exists between some composers and audiences, ever-intrusive consumerism, and noise pollution. Further, he contends that musicians bear significant responsibility for meeting these challenges.

Perhaps not surprisingly, *Acoustic Communication* also carries an artistic subtext. Designed as a pedagogical aid for a like-titled course at Simon Fraser University, it naturally embodies Truax’s creative philosophy, as one might expect with a composer’s own teaching materials. Yet these attitudes never really overshadow the author’s instructive purposes or weaken his primary argument. Even so, this book reflects essential aspects of a new aesthetic that has begun to emerge in recent years, one that abandons the irony of modernism and the cynicism of postmodernism for a more optimistic, inclusive, and accommodating outlook.

Acoustic Communication thus comprises speculative theory, socio-cultural commentary, systematic instruction, and aesthetic rationale within its covers—an ambitious undertaking to say the least. Casting a wide net, its author aims to identify unsuspected connections among apparently unrelated areas and thereby improve our understanding of the role of sound in society. Fourteen chapters fall into two parts. Part I, “Sound, Listening, Soundscape,” establishes the framework of Truax’s approach. Part II, “Electroacoustics—The Impact of Technology on Acoustic Communication,” explores ways in which twentieth-century technology has changed the nature of sound and modified its place in society, bringing insidious problems as well as exciting possibilities.

¹For examples of Truax’s publications, see “A Communicational Approach to Computer Sound Programs,” *Journal of Music Theory* 20 (1976): 227–300; “Composing With Real-Time Granular Sound,” *Perspectives of New Music* 28 (1990): 120–35; “The Inner and Outer Complexity of Music,” *Perspectives of New Music* 32 (1994): 176–93; “Discovering Inner Complexity: Time-Shifting and Transposition with a Real-Time Granulation Technique,” *Computer Music Journal* 18 (1994): 38–48; and “Composition and Diffusion: Space in Sound in Space,” *Organised Sound* 3 (1999): 141–46.

Chapter 1 proceeds to show why the energy-transfer model of physical acoustics and the signal-processing model of audio engineering offer only compartmentalized, idealized views regarding the nature of sound. Truax asserts that these models, which focus on the linear movement of waves and voltages respectively, fail to tell us what we really want to know: how sound *functions*. Instead, Truax examines the vital, reciprocal flow of hierarchically organized information that connects soundmaker and listener. Since meaning depends on context, Truax reasons that social, cultural, and environmental factors play determining roles in the interactive process of aural information exchange. He uses the term *soundscape* to refer to any space within which a sound's meaning is understood, be it concert hall, cathedral, theatre, drawing room, or the great outdoors.² His concept of *acoustic community* refers to the group of listeners who derive meaning from sound within a given soundscape.

Ecology permeates Truax's thinking, so it may come as no surprise that he would consider listener, performer, composer, community, and soundscape as an integrated *system* whose relationships are created and mediated by sound. This facilitates proactive intervention, a practice of improving aural communication he calls *acoustic design*: "Acoustic design, in the most general sense, seeks to modify the functional relationships within the listener-environment system. It may involve changing the sound environment itself, but because the listener is always included within the system, it may also mean modifying the listening or thinking habits of the listener as part of the design strategy" (14). Truax's emphasis on "environment" in this book is pervasive and strategic; the term continually reminds us that our musical activities are not isolated from real-world circumstances, but are integrated within

a much larger social and environmental context. It also calls attention to the spatiality of sound, an aspect often ignored and underexplored.

The opening chapter assumes a general understanding of acoustics equivalent to that obtainable in a college-level physics sequence, and it covers a great deal of ground in short order. It includes none of the practical demonstrations and lab exercises typical of the "physical acoustics of music" courses offered at many universities, so instructors who might consider adapting the text for such purposes probably will want to augment it with classroom experiences of their own device. Fortunately, the book is accompanied by a hypertexted CD-ROM entitled *Handbook for Acoustic Ecology*, suitable for Macintosh and PC, containing hundreds of term definitions, brief sound examples, and various graphics, which should be welcome. In addition, a bibliography lists over three hundred references, some as recent as 1999, and its selected discography of electroacoustic music features over one hundred recordings, most available on compact disc, so students may pursue their own remediation and research independently.

Chapter 2 explores listening, a faculty our visually-dominant culture only vaguely understands and sharply underestimates. Truax distinguishes listening from hearing, the latter of which he regards as passive and physiological: "a sensitivity to both the detail of physical vibration within an environment, and its physical orientation as revealed through its modification of those vibrations." In contrast, Truax characterizes listening as active and cognitive: "the ability to interpret information about the environment and one's interaction with it, based on the detail contained within those vibrations" (18). More specifically, he imagines the listening process as a complex interpretive matrix in which there are three levels of attention, including listening-in-search, listening-in-readiness, and background listening, and three levels of perceptual immediacy, including foreground, middleground, and background focus. Beyond this, he notes that the ear is capable of variable scope, sensitivity to minute change, and spatial discernment. Indeed, Truax regards the latter "as the most basic function of

²The term "soundscape" originates with R. Murray Schaefer, Truax's former colleague at Simon Fraser University. See Schaefer's *The New Soundscape* (Vienna: Universal, 1969), and especially *The Tuning of the World* (New York: Knopf, 1977), which Truax acknowledges as a profound influence on his own work (xxv).

listening—detecting information about the environment through acoustic cues” (21).

Chapter 3 posits the voice as the foundation, norm, and inspiration for human acoustic communication. While many of us might agree with this assumption, few are likely to have given it much critical consideration. Indeed, we often try to emulate the sound of the voice in instrumental performance without fully realizing *why* we seek to do so. Unquestionably, no medium of human communication is as rich, direct, or persuasive as human speech and none conveys interiority better. As Truax explains, “just as the physical environment ‘colors’ all sound waves passing through it until the sound reflects the current state of the environment, so the body and mind color the voice until it is the reflection of the whole person” (35). Surely any performance that truly “sings” or “speaks” to us must do so because of our natural sensitivity to the vocal medium.

Most stimulating is Truax’s examination of *paralanguage*, which refers to the often nonverbal nuances that clarify the meaning of verbal utterances and convey aspects of mood and persona: “Sometimes it is called the ‘musical’ aspect of speech, because it involves inflection (pitch contours), rhythm, phrasing, emphasis (or accent), punctuation, timbre (or sound quality), silence (or rests), and even cadences—exactly those variables that are used to describe a single voice melody” (39). Anyone who has taught composition or orchestration knows all too well that beginners devote more attention to *what* they are trying to say (pitches and rhythms) than *how* it will be said (phrasing, articulation, dynamics, and timbral effects), so at the very least Truax’s disquisition ought to encourage instructors to find new ways to help students increase their appreciation for the metasyntactic aspects of music.

The fourth chapter of *Acoustic Communication* presents some of Truax’s most innovative ideas. Among these is his theory that speech, music, and environmental sound—commonly regarded as discrete sound sources—constitute a *continuum* of acoustic communication. He observes that in moving from speech to music to

environmental sound, there is a corresponding increase in the acoustic repertory, but a *decrease* in the strictness of syntactic structure, the temporal density of information, and semantic specificity. Speech, music, and environmental sound function similarly, however: “At the most basic level of each system we find that sound is in some way ‘organized,’ and that through the structure of the organization, meaning can be inferred. Therefore, structure has a mediating role between sound and meaning” (55). In order to perceive meaning in verbal utterances or music, an individual depends on appropriate knowledge of structural relationships, as well as practical interpretive experience, the sum of which represents his or her linguistic or musical *competence*. Truax postulates that we may likewise speak of *soundscape competence*: “our life-long exposure to environmental sound gives us a complex body of knowledge about how to recognize and interpret the structure of environmental sound in order to obtain information that we can use. Soundscape competence permits us to understand environmental sound as meaningful” (58).

While there is much to admire in Truax’s communicational model, particularly its assumption of an acoustic continuum and its emphasis on aural spatiality, this exposition provides only a hint of the many factors involved, particularly in the musical domain. For instance, missing are demonstrations of the roles of gesture, association, expectation, and process in music, all of which are integral to its conveyance of meaning. Undoubtedly this is due to the book’s origins as a text for the author’s own course in acoustic communication, one that adopts a broad scope and addresses a wide audience. But here, as with the opening chapter, some instructors will be moved to supplement Truax’s presentation in order to offer a rich portrayal of the ability of music to communicate.

Chapter 5 examines the nature of the acoustic community, perhaps an unfamiliar notion for many of us. As musicians, we are still burdened by the Romantic image of the composer—a sensitive, introspective, and often misunderstood tone poet; a mystical,

even quasi-religious figure whose every artistic statement demands admiration and appreciation, whether comprehensible or not. Rarely dare we admit that much of the responsibility for communicational dysfunction in our domain lies with the composer who fails to respect listener competence, or chooses to compose for a non-existent and perhaps never-to-exist audience, or writes only for self-satisfaction. Yet such an individual surely has opted to withdraw from his acoustic community, whether or not by conscious choice.

Truax's studies of acoustic communities around the world, including some in rural, urban, and indoor settings, suggest that three features characterize successful soundscapes. These include: (1) a *variety* of sounds that are rich in meaningful acoustic information, (2) a *complexity* within those sounds which nevertheless remains decodable and interpretable by listeners in the community, and (3) a functional *balance* resulting from spatial, temporal, social, and cultural considerations (76–8). Perhaps when composers recognize that they serve specific acoustical communities, rather than preside over imaginary ones, when they opt for integration rather than isolation, their artistic soundscapes will feature the same multilateral flow of information and exhibit the same functional equilibrium as natural ones.

Chapter 6 examines what Truax considers the greatest threat to effective soundscapes and the greatest impediment to acoustic communication: noise. Dissatisfied with its common attributions as nonperiodic vibration, loud racket, or simply unwanted sound, Truax offers a multifarious definition of noise:

First, it can refer to sounds that are recognizable and even meaningful, but which have negative associations, whether the purely subjective reactions of like/dislike, or actual physiological stress, annoyance, or disruption of other activity . . . Second, noise may function as the obscuring of the auditory image, that is, as an agent that lessens the clarity or definition of the acoustic information gleaned from an environment . . . Finally . . . noise, in the sense of information that is unpatterned and unordered by the brain, is the only source of new information. The foreign language or musical

style that once seemed unintelligible becomes meaningful once the cognitive structures that are required to decode and understand it are in place. People often use the word 'noise' in a nonperjorative sense to mean any undefined or unrecognized sound that is *potentially* meaningful. (96–7)

While these views of noise are not altogether new, the author's achievement lies in their synthesis and placement within a broad socio-cultural context. To explore problems associated with noise, Truax examines a variety of myths and misconceptions, which he fancifully characterizes as: "What You Don't Hear Can't Hurt You," "If You Can Get Used To It, It Can't Be All That Bad," "If It's No Worse Than Average, Nothing's Wrong," "It's Got To Be Loud To Be Bad," and "You've Got To Have Noise To Have Progress" (98–104).

The last chapter in Part 1, "Acoustic Design," surveys features of positively functioning soundscapes in order to provide a basis for remedying dysfunctional acoustic systems and creating successful new ones. For the composer, this centers on managing the dynamic balance of variety and coherence within a communicational context, always cognizant of the flow and patterning of aural information. Two dissimilar means, the *stochastic process* and the *symbolic archetype*, receive special attention.

The second half of *Acoustic Communication* revisits many of the ideas introduced in the first, reviewing them in the context of contemporary technology. Throughout Part 2, the author maintains that we are often oblivious to changes wrought by new tools, but need to recognize these changes in order to confront new challenges. In Chapter 8, "Electroacoustic Communication: Breaking Constraints," however, Truax argues that listening has become a substantially different process due to electroacoustic technology: amplification, storage, transportation, repetition, and contextual transposition—all made possible through technology—change the essential nature of sound. He asserts that these possibilities for transforming sound have given rise to new listening habits and expectations demanding acknowledgement and address. Composers find numerous positive benefits, of course. For instance, the process

of storage objectifies sound, making it available for analysis, documentation, commodification, and creative manipulation. Unfortunately, composers now must attempt to satisfy listeners who have come to prefer the edited, compressed, two-dimensional quality of recorded sound over that of live performance!

Chapter 9, "The New Soundscape," digs deeper into the impact of technology on contemporary life and listening. Particularly disturbing is the possibility that redundant, uniform, low-information sounds, such as electrical hum, machine whir, and traffic roar, all of which effectively mask soft sounds and blur distant ones, also stress and desensitize listeners, perhaps with permanent effects. More encouraging, however, are the potentials of digital synthesis, computer control, and recording technology for creating vast varieties of sounds and new types of tonal fabrics.

The next three chapters investigate how sound is used to manipulate us not for artistic purposes but for material gain, often without our awareness or approval. Truax persuasively argues that we cannot avoid thinking about the issue, since it shapes the listening patterns of students and concertgoers, and it influences as well those who fund higher education and the arts. Chapter 10 surveys some of the ways in which our listening needs and habits are exploited to motivate the purchase of technology and related products. Chapter 11 offers a close analysis of one familiar form of media manipulation, radio programming. Chapter 12 assumes a broad economic perspective to consider the acoustic community as a market.

The last two chapters of *Acoustic Communication* describe some of the creative alternatives afforded by electroacoustic technology. Chapter 13 begins by discussing the use of recording technology for purposes of documentation and as an independent medium of artistic expression. Text-sound compositions and various kinds of electroacoustic music also receive attention. However Truax's main interest as a composer is the *soundscape composition*, a specific form of electroacoustic music that draws upon a listener's past experience, associations, and perceptual awareness

with environmental sound. As he explains, the principles of this art form include:

(a) listener recognizability of the source material is maintained, even if it subsequently undergoes transformation; (b) the listener's knowledge of the environmental and psychological context of the soundscape material is invoked and encouraged to complete the meanings ascribed to the music; (c) the composer's knowledge of the environmental and psychological context of the soundscape material is allowed to influence the shape of the composition at every level, and ultimately the composition is inseparable from some or all of those aspects of reality; and ideally, (d) the work enhances our understanding of the world, and its influence carries over into everyday perceptual habits. (240)

Such works often simulate environmental effects such as reverberation, directionality, and spatiality via a multichannel speaker system. In addition, they commonly draw upon sampled sources as well as acoustic and electronic ones, and they may even incorporate essential visual components. Truax surveys some of the antecedents and early instances of soundscape composition, including Henri Pousseur's *Trois Visages de Liège* (Three Faces of Liège, 1961) and Jack Body's *Musik Dari Jalan* (Street Music, 1974), before turning to projects by fellow World Soundscape Project composers, including Anne Holmes's *Wood on Wood on Water* (1978), Hildegard Westerkamp's *A Walk Through the City* (1981), and the collaborative *Vancouver Soundscape* (1973).

Chapter 14 presents an overview of principles for electroacoustic design. Truax believes that composers should adapt their work to specific environments, taking advantage of various means now available for creating and controlling spatial diffusion. Further, they may choose to create multiple versions of the same piece to fit differing acoustical conditions or to exploit the possibilities of different media. In addition to simply creating new sounds, composers may develop musical structure from sound itself through techniques of granular synthesis and timbral analysis. Finally, computer control enables the reintegration of composer

and performer through interactive musical systems and protocols that facilitate unique and compelling aural experiences.

Acoustic Communication gathers ideas from many different disciplines to lay the foundation for a new one capable of addressing issues relating to sound in today's society. It may prove attractive to instructors thanks to its expansive scope, lucid style, and

engaging aesthetics. Theorists will encounter a diverse array of stimulating perspectives and intriguing ideas that invite further development. Indeed, the book's central message—that eclecticism is not a virtue but a virtual imperative for today's musicians—reverberates from cover to cover.