

Sounds of the Seasons

Learning to pay attention to the sounds around us

By IVARS PETERSON

A sharp crackle, then the silky strains of violins tingle my ears. I reach over and click off the alarm. The bedsheets rustle.

I lie back and listen, straining to catch the sounds of the early morning outside my window. At this time of year, I know not to expect the incessant twittering of birds, but the unusually pervasive hush puzzles me.

A lone car grinds by, signaling its passage along the street with a curiously muffled sound—as if the sound itself were wearing a thick winter coat. I smile, and a glance between the slats of the window blinds confirms my guess. Fresh snow blankets the lawn, sidewalk, and street.

People live immersed in a sea of sounds, their ears buffeted by road noise, elevator music, electronic beeps, and other acoustic assaults. They also seek sound—in the enjoyment of music, the pleasure of conversation, and the sighing of the wind through bare branches.

"The sense of hearing cannot be closed off at will," Canadian composer R. Murray Schafer once noted.

"There are no earlids. When we go to sleep, our perception of sound is the last door to close, and it is also the first to open when we awaken."

It's easy to take the acoustic environment for granted in daily life. Barry Truax, a communications professor and composer of electroacoustic music at Simon Fraser University in Burnaby, British Columbia, has been teaching acoustic technology to a wide variety of students for more than 20 years. "It doesn't take much to convince the students that they really haven't been paying much attention to sound," he remarks.

People certainly react strongly to bothersome noise, whether from a neighborhood construction project, low-flying aircraft, or leaf blowers. Many pay close attention to various kinds of music and to the quality of the sounds that come out of stereo equipment and other audio gadgets. Speech is pervasive. Few people, however, fully appreciate the extent to which sounds in the environment influence and condition human behavior.

"Everyone hears, but very few listen,"

comments Gary W. Ferrington, a teacher of audio design at the University of Oregon in Eugene. It takes a real effort to open one's ears.

About 25 years ago, Schafer, who was then at Simon Fraser and now lives in the relative seclusion of Indian River, Ontario, spearheaded an ambitious effort called the World Soundscape Project. Its aim was to document and elucidate the relationship between people and the acoustic environment in which they live. Of particular interest was what happens when those sounds change, as they have with the industrialization of society and, more recently, the advent of the information age. Schafer's concern wasn't just the cacophony of the industrial age and urbanization, and his focus wasn't simply on noise abatement, which he described as a negative approach to the issue of undesirable sound.

"Noise pollution results when man does not listen carefully," Schafer argued



Designed by Bill and Mary Buchen of *Sonic Architecture* in New York, the playground at elementary school P.S. 23 in the Bronx highlights activities involving sound. Here, a child tries out a rotating tower with a periscope and parabolic dishes for listening over long distances.

in *The Tuning of the World* (New York: Alfred A. Knopf, 1977). "We must seek a way to make environmental acoustics a positive study program. Which sounds do we want to preserve, encourage, multiply? When we know this, the boring or destructive sounds will be conspicuous enough, and we will know why we must eliminate them. Only a total appreciation of the acoustic environment can give us the resources for improving the orchestration of the world soundscape."

By the late 1970s, when the World Soundscape Project wound down, it had compiled an archive of 300 audiotapes of audio environments throughout British Columbia, Canada, and Europe. Its publications included an examination of the Vancouver soundscape and a handbook

of acoustic ecology.

Schafer turned his attention from soundscape studies to musical composition. However, diverse groups of researchers scattered throughout the world continued the investigations, though often in isolation or only in special contexts.

Now, electronic communication and the Internet are helping to create a worldwide community of musicians, scientists, engineers, and others concerned with environmental sounds. "There are a lot of people working in sound that involves the environment, and they really haven't had a place to come together," Truax says.

In the nascent field of acoustic ecology, they pursue a broad range of interests, from mitigating the noise of vacuum cleaners to shaping the sounds of the environment. In these interdisciplinary studies, social culture, science, history, geography, technology, and the arts all play important roles.

"At a very practical level, the central ideas of acoustic ecology could benefit everyone in a society struggling with the impact of technology," Truax contends.

When people do think about sound, it's usually in the form of annoyance at something unpleasant or loud. Indeed, noise control has been a community concern for centuries.

However, it isn't always easy to define what constitutes bothersome, unwanted noise. A list of noise-control regulations and laws adopted by various governments over the years serves as a register of nuisances and phobias and provides clues to changing social attitudes.

In 17th century England, for example, acts of Parliament attempted to suppress the shouts of hawkers and street criers and particularly the strains of street music in London and other urban centers. The constant outdoor uproar bothered an upper class that had its own chamber music to savor. The much louder din of church bells and massive pipe organs escaped such regulation.

Nowadays, many communities are considering or have passed laws to ban leaf blowers. Yet the roars of the blowers are often less loud and intrusive than

other neighborhood noises, including the sounds of lawn mowers and trucks.

So noise control isn't simply a matter of loudness and a search for silence. Cultural factors and human perception play an important part in determining what may be undesirable in various situations.

"Sound quality means different things to different people," says Richard Cann of RH Lyon, a company in Cambridge, Mass., that specializes in analyzing and adjusting the sounds of commercial household products.

"Quieter isn't necessarily better," Cann notes. "People make judgments on the types of sounds they hear, and some [sounds] are interpreted as annoying and others as useful."

Indeed, sounds provide important cues and convey crucial information. It's not unusual, for example, to detect an impending problem or a malfunction in an automobile or washing machine because the product's characteristic sound has suddenly changed.

Conversely, the absence of noise can pose problems. Drivers of expensive cars so quiet inside that no engine noise can be heard have been known to try to start their cars when the engine is already running.

When people are asked to evaluate the sounds of household appliances and other products, they generally say they prefer to have them silent. Yet, when Cann and his colleagues test people on how much they like various product sounds, silence rarely wins.

"We find there's an optimum quality for the sound a particular product makes," Cann notes. When people are unhappy with the way something sounds, they usually prefer a different sort of sound rather than its absence.

Much of the evaluation of sounds by people happens unconsciously. That makes systematic study of the effect of the acoustic environment on human behavior a tricky proposition.

"Often, you get to know sounds so well that you don't pay attention to them," Truax says. That can be handy if you're trying to get to sleep and every creak and groan of your house is so familiar that you can safely ignore it. This familiarity gets in the way of finding out how people react to particular sounds.

At the same time, the acoustic environment leaves impressions that can survive for years. Certain sounds, tunes, and other acoustic cues heard decades later can trigger vivid memories of times past.

Truax notes that advertisers can take advantage of such strong associations to suggest certain product affinities and characteristics, thereby avoiding the

need to make verbal claims that can be challenged.

In carrying on the tradition of soundscape research initiated by Schafer, Truax and others have recently tried to establish a framework for studying sound from a human perspective. Truax uses the term "acoustic communication" to emphasize the study of sound not just as vibrations of the air but as an exchange of information.



Two vertical dishes that reflect and focus acoustic waves at the P.S. 23 playground allow children to manipulate sounds.

He also emphasizes the importance of context in understanding the messages delivered by sound. "A sound means something partly because of what produces it but mainly because of the circumstances under which it is heard," Truax contends. For example, the cryptic boings, bleeps, and whines of a computer connecting to the Internet now herald a successful contact.

Musicians and composers are among those most likely to be sensitive to the nuances of sound, and they have long sculpted and molded sound for various purposes. In recent years, Truax, who first started composing computer-based music in the 1970s, has delved into the possibilities of working exclusively with environmental sounds.

Modern technology has provided versatile tools that make it easy to record and sample vast libraries of natural sounds. A composer can then select, modify, and assemble these sound bites into musical compositions.

Truax has exploited a technique, which he calls granulation, for stretching a sound in time without altering its pitch. "You literally expand the sound wave as if it were in slow motion," he says. "It changes the way you experience the sound. You hear more detail. It's like you're going inside it."

Truax's music represents an alternative channel through which hearers can learn to become listeners. Sometimes, he uses particular soundmarks—familiar sounds closely associated with particular locations or events, such as a harbor foghorn—in his recordings.

"In a soundscape composition, we try to use the listeners' associations as part of the composition," he insists. In contrast to commercial sound environment generators and certain strains of mainstream music, he says, "We're not just feeding them sound effects."

To Truax, Ferrington, and others inspired by Schafer's vision of the soundscape, the acoustic environ-

ment seems fragile, neglected, and endangered. "Because we don't understand the importance of sound, when it's either channeled differently or even absent, we often get effects that bewilder us," Truax remarks.

"Beyond fighting sound pollution, the task of sound ecologists is to design healthy and attractive sonic environments," Hildegard Westerkamp of Simon Fraser commented in a recent article describing the legacy of the World Soundscape Project. "Continual sensitization of the ear, creative town planning, legislative action (noise abatement regulations), the design of acoustic parks and playgrounds, and the innovative preservation of worthwhile sounds of the past and present may be among the means to achieve such ends."

The idea is to turn the negative specter of a world polluted by unwanted sound into a positive vision in which the sonic environment becomes a place of renewal and creativity, she said.

Building aural awareness and analyzing the social and cultural impact of sound require a comprehensive approach that involves a wide range of people, including musicians, psychologists, civic planners, and scientists.

Such interaction has been slow to develop, however. At last year's Acoustical Society of America meeting in Washington, D.C., for example, a special session on acoustic ecology represented one of the very few times that the noise and musical acoustics divisions of the society had ever sponsored a joint gathering.

The recent formation of the World Forum for Acoustic Ecology, based in Vancouver, is one sign of growing interest in the field. The forum has an active site on the World Wide Web.

Ferrington, who now runs the Web site,



Children can speak and listen to the acoustic properties of an underground echo chamber at the P.S. 23 sound playground.

first became fascinated by natural sounds as a child when his parents bought him a big, open-reel tape recorder. He took it out on the patio and started recording bird songs and other sounds.

"That's what began to open my ears," Ferrington says. Living in a small farming community in the Columbia River Gorge, he could also climb the surrounding hills and sit for hours listening to the wind in the grass, distant dogs barking, and the cries of birds wheeling in the air above.

Many years later, when he finally made contact with Truax and the others at Simon Fraser, Ferrington was thrilled. "They were ear-minded people, sensitive to the acoustic environment," he says. "I had found a group of people who would understand what I'm talking about." □