



MWCD 79

**A RENOWNED COMPOSER WHO FOUND HIS NICHE THIRTY YEARS
AGO AND REMAINS THERE TODAY—IN THE FOREFRONT OF
ELECTROACOUSTIC COMPOSITION WORLDWIDE**

Stretching TIME Stretching SOUND

The Compositional Achievements of Barry Truax

by Randy Raine-Reusch

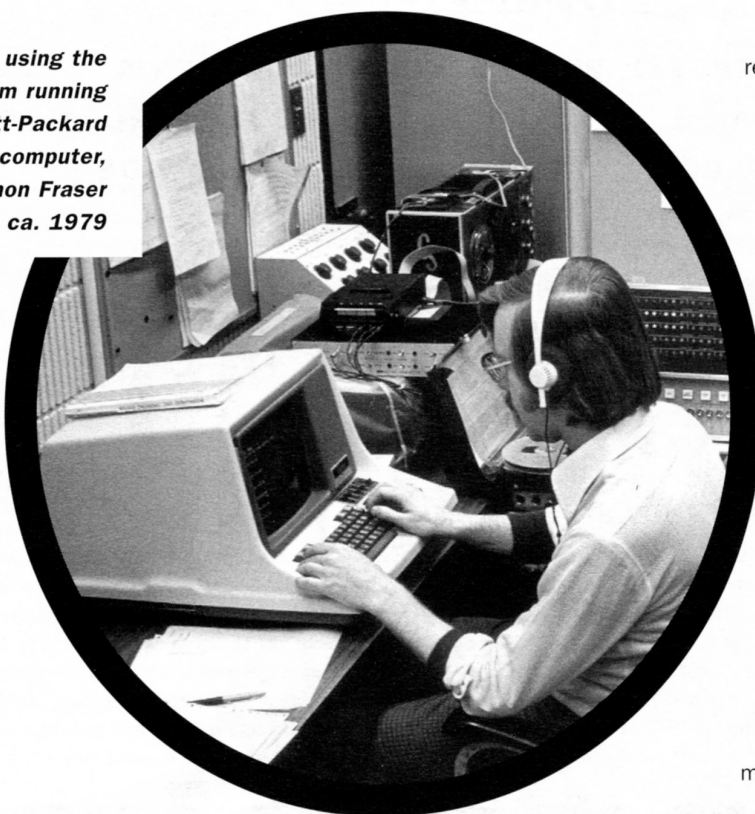
The looming mountains of Canada's West Coast, its deep forests, and the unrelenting grayness of its winter have a powerful influence on the human psyche. This is a climate that takes you inside both your house and your mind. It is a rich place for artists: the weather stimulates the artistic mind, and contains many elements that take a person to the depth that artists often go to in themselves. It has produced numerous artists, especially composers who work with the environment and soundscape. One of the most important of these is Barry Truax, a composer, teacher, writer, lecturer, and innovator, who has always remained on the leading edge of sound exploration.

He is one of the world's foremost composers, innovators, and programmers in the field of electroacoustic and computer music, and was the first North-American-born recipient of the Magisterium Award at the International Electroacoustic Music Competition (1991) in Bourges, France, a distinction accorded only to composers of twenty or more years experience. Truax has lectured and performed at universities, conferences, and performance halls throughout North America, Europe, Asia, and Australia.

Born into a musical family, Truax studied piano at an early age (although he was more deeply fascinated with his father's marimba).

**Barry Truax using the
POD system running
on a Hewlett-Packard
mini computer,
Simon Fraser
University, ca. 1979**

photo by Alan Shapiro



Family influence caused him to put aside his passion for music and the arts in order to achieve an undergraduate degree in math and physics at Queen's University. But his passion for music was re-ignited at Expo '67 in Montreal when he first saw synthesizers. On display in the Jeunesse Musicale Pavilion were the serial generators designed by Hugh Le Caine. Truax comments, "I spent a whole afternoon trying to figure out how they worked. No one else was around, and these were the first synthesizers I ever saw, and I was totally intrigued by them."

The following year, Truax took a job in a physics lab where everyone was expected to pick up a manual and write a computer program. "Then," Truax explains, "you didn't actually study computing. You just did it." Truax was appalled at his own lack of creativity working in the lab. After taking some initial courses in musical composition, he soon found himself at a crisis point. "So there it was: this huge promising physics and math career, complete with a scholarship, waiting for me—a career I knew my heart was absolutely not in, even though my head could do it. In 1969 it felt like jumping off a cliff, to go from the secure world of science to music composition."

Truax took the leap without telling his physics professors, and drove across the country to Vancouver to study composition in the electronic music studio at the University of British Columbia (UBC). "Vancouver from '69 to '71 was very experimental and avant-garde," he

recalls. "There were a lot of activities: the Vancouver Art Gallery was in its radical phase; there were Happenings there all the time; and there was experimental theatre that I haven't seen the likes of since. It was really quite a hotbed of artistic activity of all kinds. Even the Symphony gave a radical spin to things for a year. Of course, there was also this amazing composer, Murray Schafer. I attended the premiere of his first string quartet, and it was like a lightning bolt out of the blue—very passionate music."

After receiving his master's degree in music in 1971, Truax was awarded a Canada Council grant to study at the

Institute of Sonology in Utrecht with Gottfried Michael Koenig and Otto Laske. "It was a historical time, as the digital future was really being plotted there. Although the high-profile MIT lab might spring to mind, most of the concepts of digitization, computer-assisted composition, sound synthesis, psychoacoustics, and everything that has really informed the field of computer music were being hatched in Utrecht. I was in the middle of one of the best analogue-voltage-controlled electronic studios anywhere in the world. You could really experiment at a level that ordinary synthesizers couldn't touch, because there was so much customized equipment at the highest technical level there. And in the middle of all this highly developed analogue equipment, the first, almost trivial, baby steps of computer programming were taking place. The studios were excellent for developing large-scale works and new sounds, but from a technical point of view, you eventually reached a limit. There was a complexity barrier in the electronic circuitry. You could create and play pieces, but if you didn't get it on tape, you wouldn't get it again, because of the complexity of the technology. So it was basically improvisation. There was a point where you



couldn't control any more complexity, and you needed some kind of automation, you needed programming."

At Utrecht Truax met John Chowning. When Truax demonstrated for Chowning his first attempts at sound synthesis with fixed waveforms and amplitude modulation, Chowning sketched out the principles of frequency modulation (FM synthesis) for him. "FM synthesis," explains Truax, "is a simple and powerful method for creating and controlling complex spectra. In its simplest form, it involves a sine wave carrier whose instantaneous frequency is varied (i.e., modulated) according to the waveform of the so-called modulator." Within two months Truax had realized an algorithm for the first real-time FM synthesis. Working with FM was a turning point for Truax, and resulted in his first computer music piece, *The Journey to the Gods*, a part of his opera *Gilgamesh*.

After two years in Utrecht, Truax was invited by R. Murray Schafer to come to Simon Fraser University (SFU) to teach and to assist in the World Soundscape Project. "It

was a breath of fresh air. I was in this noise-riddled European city, with trucks and traffic, that was just awful ... and I was being offered the best first job anyone could have ever had."

Truax arrived in Vancouver in 1973 and helped complete the *Vancouver Soundscape*, a landmark series of recordings of the city, which have

recently been re-released on a double CD. After a few short years, he went on to replace Schafer

in the Department of Communication, establishing a program in acoustic communication as well as contributing to an interdisciplinary program in contemporary music in the SFU Centre for the Arts, giving it a very strong emphasis on computer music.

During this time Truax also edited the *Handbook for Acoustic Ecology* and published the book *Acoustic Communication*. Through Truax's support, the fledgling

World Forum for Acoustic Ecology made its first home at SFU, before expanding into an international organization.

Through his many activities at SFU, Truax has worked with and helped to guide the careers of many of the West Coast's most influential artists. Hildegard Westerkamp, a soundscape composer and the driving force behind the World Forum for Acoustic Ecology, says, "Barry has been a friend and colleague since the early '70s. Quietly and persistently, he has had a significant influence on my life. Initially, he introduced me to the world of electronic studios and electroacoustic music, while we were both students at UBC in Vancouver. Later



Barry Truax performing in the Palais Jacques Coeur, Bourges, France, 1979

he was a fellow researcher during the World Soundscape Project days at SFU with R. Murray Schafer. In the '80s, he accepted me as his colleague in teaching acoustic communication courses, and for a while he was my supervisor,

when I was his graduate student in the School of Communication at SFU. Most of all, Barry was the first person who recognized that deep inside me, there lurked a composer. His ways of listening to and commenting on my first compositional attempts caused me to examine more seriously my relationship to sound, listening, and music. Indeed, his encouragement and practical advice opened unexpected possibilities and created an important base for a career that I had never anticipated nor planned."

Truax similarly influenced composer Arne Eigenfeldt, who is now a lecturer in music and technology in the School for the Contemporary Arts, at SFU. Eigenfeldt describes Truax's influence on him. "I have known Barry Truax for over fifteen years, as a teacher, colleague, mentor, and friend. As for so many other young composers, Barry was the reason that I first went to SFU to study electroacoustic music. In 1984 I had only a vague understanding of what this new music was, but after hearing Barry present his work in a lecture that year, I knew this was what I wanted to pursue. As a teacher, he was without doubt, one of the best I have ever had (after spending eleven years in post-secondary education, I have had many teachers!). He has the uncanny ability of making complex issues understandable—he was able to clearly explain



Barry Truax in the Sonic Research Studios, Simon Fraser University, 1999

photo by Instrumental Media Centre, SFU

binary and hexadecimal number systems to a math illiterate. But, more than just teaching new material, Truax provided to us what is often lacking in universities—the role of mentor. He presented his own research to us with excitement, and allowed us to investigate on the same software systems he created. We were not exploring in the dark: Barry was providing the light.”

Truax’s dedication to teaching was recognized by Simon Fraser University in 1999 with the presentation of an Award for Teaching Excellence.

While not busy with teaching and administrative duties, Truax somehow finds time to continue experimenting and composing. While working with FM in the mid ’80s, he made another breakthrough—granular synthesis.

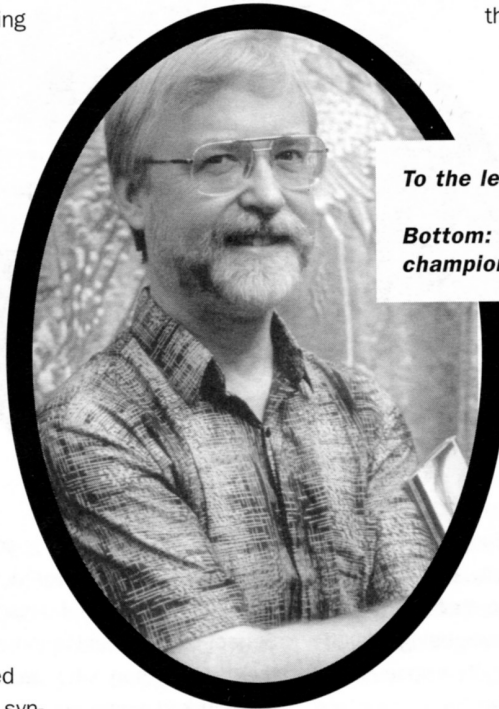
Truax explained for me how this came about. “One of the problems that I realized with FM after the initial surge of interest in the dynamic timbral control is that there were clichés that the ear can hear, even in complex synthesis. To counteract this, I used smaller and smaller units in synthesis. The FM units were getting so small—for instance, in *Arras* in 1980 and in *Solar Ellipse* in 1984–85—that they were actually becoming trivial and banal elements that I used to create larger and more complex timbral structures. I think that around 1980, my FM pieces started to not sound like FM anymore. I used the FM element as just a building block—and often a very simple one—in an additive approach to timbre. So, as the component events got smaller and smaller, I eventually ended up with a grain, which is a sonic event less than fifty milliseconds.

“As it turned out in retrospect, *Solar Ellipse* is actually at the granular level, even though I had no concept, and was not trying to do granular at the time. So, the morning in 1986 when I woke up and wrote the first real-time granular synthesis program—that was not such a leap forward as I felt it was at the time, because I was already there.”

Granular synthesis seems to have been for Truax a natural progression from the point of his interests in the soundscape. Says Truax, “Granular makes a small

acoustic event at the micro level, which is the basic unit of aural perception. It results in incredibly beautiful sounds—even when made from sine-wave grains—that suddenly start you thinking in terms of wind, water, and sounds associated with the complexity of the natural world. Granular gave me a renewed respect for the acoustic sound of the environment and its complexity. Never underestimate how complex the acoustic environment is, as it has defied most scientific analysis and re-synthesis. It is still a terra incognita. We are pretty good at recreating instruments, but there is very little work in acoustic environmental sounds and our perception of them.”

photo by Leslie Burke



To the left: Barry Truax

Bottom: Barry Truax and one of his home-bred champion Scotties, Thistle

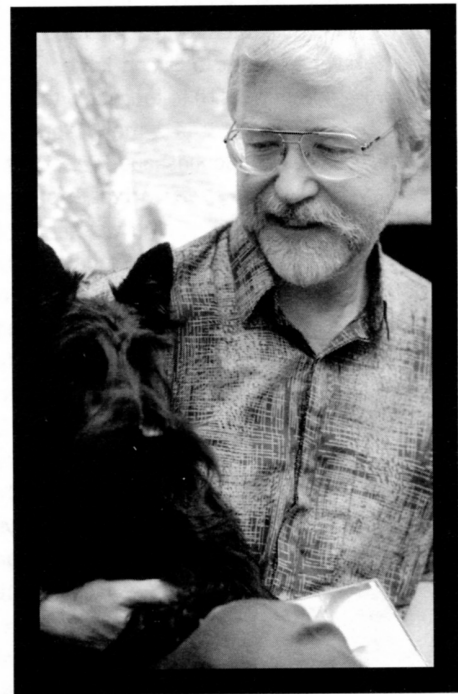


photo by Leslie Burke

Truax is quite comfortable working simultaneously in the micro world of granular and the macro world of the

acoustic environment, and is aware of a kind of duality often evident in his activities. “I seem to have two of everything and they are always opposites. You can call it left brain and right brain, art versus science, or rationalism versus emotion, but it is the integration that counts, and it is the interplay of these things that has always inspired me.”

Truax’s work integrates psychoacoustics and the exploration of sound recognition, which led him to collaborate with researchers in audiology at UBC on environ-

mental sound perception for the hard of hearing, and to participate in the City of Vancouver's Urban Noise Task Force. He is also interested in symbolic meanings of sound, its metaphoric possibilities, and its social references. He is clear in his perception of composers' responsibilities in regard to such issues.

"We have a lot to learn from the soundscape," he notes. "Sound functions socially. Many composers are so caught up with notions of style or other matters that they don't realize that they often deny the extent to which the acoustic environment subconsciously influences them. They think of artistic trends rather than soundscape influences. It is also clear that the listening habits of the audience are influenced by the large amount of time they spend in noisy acoustic environments and in "mediated" environments, such as radio, television, and film. They have highly developed listening attitudes based on that exposure and of course some "non-listening" attitudes as well. Composers need to have a social concern for the acoustic environment of their listeners. If composers want their audiences to be highly sensitive and acute people, they need to take some responsibility for the acoustic environment that surrounds their listeners outside of the concert hall."

Not content to perform his work in the darkened stageless room that stigmatized computer music in the 1970s, Truax sought to extend the boundaries of presentation, which led him to work with visual artist Theo Goldberg. "I have been inspired by Theo's computer graphic work for over twenty years. He certainly is a wonderful example of an older artist who has experienced half a century of contemporary art and is younger in mind than many of my students today. His work is always sensual, symbolic, and full of psychological depth, with a kind of subconscious layer you could never put your finger on. He has been a tremendous influence on me, with the way he worked with sound image relationships back in the '70s. We worked on five to six pieces together and we always seemed to work in parallel."

While creating numerous works for solo tape, and for tape and performer, Truax was led by his interest in spoken word and the sound of the human voice to bridge the worlds of electroacoustic music and music theatre. He wrote his first electroacoustic opera, *Gilgamesh*, in 1972–73, but it was too far ahead of its time to be appreciated. His recent work, *Androgyne, Mon Amour* (1996–97)—a music theatre work for amplified male double bass player and two digital soundtracks, with text by Tennessee Williams—was far more successful, receiving at an international computer music conference what one reviewer called "rapturous applause," a difficult task to accomplish.

His current work, *Powers of Two*, is a powerful multifaceted piece of music theatre, combining dance, video, six singers, and eight-channel tape. In this work, Truax

brings myth, melody, gender issues, emotion, and meaning to electroacoustic music. "I think there has been a problem with the avant-garde in not paying attention to meaning. We went through a period where it wasn't important to communicate anything and almost got to the point of performing an art of nonsense. I think that was a necessary phase, because it freed things up, but it also lost us an audience. Often it became so esoteric that there was nothing to hold on to. I think that people want art to somehow answer questions on life. This has been one of



photo by Susan Wilson

Shaun Phillips and Sue McGowan performing in "Powers of Two": The Sibyl, SFU Theatre, 1998

art's traditional roles, but lately artists have not wanted to deal with this. Even I am hesitant to deal with this and wonder if this is a role we really want to take on. However, we are in a new century and I think it is time to re-examine this reticence. I think if music is going to survive, it really has to touch people's hearts, minds, and souls, as it has in the past. We lack a contemporary myth—except for what the advertisers and the movies provide us—and I think artists need to reclaim this territory."

In *Powers of Two* Truax challenges current attitudes

toward melody and the use of the voice in music theatre. "I emphasize melody because it has been so devalued in the harmonic era and people don't realize how complex it is. All the expressiveness of tonal and chromatic music come from harmony. It doesn't come from melody at all. Language and melody are the root of all music. Melody in world music, and music prior to the harmonic era, is complex and angular. Melody was simplified, and made banal in the harmonic era, becoming just the top line through the harmonic structure. In my work, melody comes out of timbre when I amplify and expand a sound. I find the melodies and modes within the inner harmonics of the stretched vocalizations of the singers or other sounds. Some of these are highly expanded modes, yet they seem to go very well with lyrical poetry, and are friendly to the voice. In *Powers of Two*, I also worked with assigning pitches to the characters. Using the cycle of fifths, one character sang in flats and the other in sharps (this is the heterosexual couple; the gay and lesbian characters occupy the pitch space in between). They only had A-flat and G-sharp in common although it was lower than one singer's range and higher than the other's. They eventually met on the same pitch, but it was beyond both their ranges."

Another one of the many layers that *Powers of Two* explores is that of gender issues. "Being gay certainly gives me a different attitude towards gender issues in music," says Truax. "In the last few years, I've gone from thinking of myself as a composer who happens to be gay to wanting to incorporate that aspect of myself directly into the music—something that is almost totally lacking in electroacoustic music. If art is a mirror and you see no reflection of yourself, then the message is, 'You don't exist.' It makes me realize how much we cut ourselves off from other possibilities—or, as Alberto Manguel so cleverly puts it, 'meanwhile, in another part of the forest.'"

However, like any innovator, Truax fights an uphill battle to gain acceptance for his electroacoustic operas, especially in a country that has yet to accept the validity of electroacoustic music as an art form. "I regret the lack of recognition in Canada for electroacoustic music. It doesn't seem to be regarded as part of Canadian culture, at least not in the way other art forms are. Can you imagine anyone in this field having the profile (or audience) of Margaret Atwood, Michel Tremblay or Atom Egoyan? Instead, we get ill-tempered reviewers who expose only their ignorance or cultural institutions that have no interest in what electroacoustic composers have to offer. The wasted opportunities are enormous."

Why is it that Canadians do not recognize their own when it comes to artists like Truax? Eigenfeldt reports that "When I finished SFU and went abroad, the mention of Truax's name would bring expressions of awe. How easy it is to forget that Truax is one of the seminal figures of computer music." The list of composers he has influenced, in

Canada alone, is long and weighty, and contains such innovators as Wende Bartley, Paul Dolden, Arne Eigenfeldt, Susan Frykberg, Martin Gotfrit, Damián Keller, sylvia macCormac, Josh Thorpe, Hildegard Westerkamp, and Scott Wilson. His influence worldwide is almost immeasurable.

Unlike many who reach positions of influence, Truax has remained accessible. As Martin Gotfrit notes, "Barry has been designing musical computer systems since the late '70s. Despite a rigorous schedule, and his own needs as a prolific composer, he has made his system available to countless composers from around the world, and spent much time adapting and altering the system to address the needs of other composers. It is still a very unique and personal system, but Barry has been generous in his assistance to other composers."

It is this aspect of Truax that led me to work with him as well. In 1991, I asked him how to get granular synthesis programs for my computer. Barry explained that there was nothing yet available as good as his own system, and said I was welcome to use it. I was very excited at the offer, and brought him a number of sampled sounds that he ran through his system. These became the bed tracks for my first formal electroacoustic work, *Bamboo Forest ... a Stone ... Wind Bells* (1991), for Japanese *nigenkin* and tape (available on *Musicworks* 57 CD).

In 1994, I approached Barry again with a new project. After listening to his CDs, I was deeply impressed by his use and understanding of granular synthesis, and I realized that it would take me years to develop that kind of command of its intricacies. I therefore, asked him if he would compose the granular part of a piece and I would write the parts for the acoustic instruments. The result was our composition, *Bamboo, Silk and Stone* (1994) for Korean *hun*, Indonesian *suling gambu*, Chinese *zheng*, and two digital soundtracks, released on Cambridge Street Records Inside (CSR-CD 9601).

I found this method of working with Truax highly rewarding. As well, I discovered that we shared similar approaches to sound and composition. "It has always been my ear," Truax claims, "that tells me if it works or if it doesn't. Whether it is soundscape or composition, it has to work in my ear. I don't care how fancy the theory is behind it." I couldn't agree more. And I also share his view of notation: "The use of notation as the primary way of expressing musical creativity is weakening, and we are going to have to replace it with something else. What would be more useful would be some way of increasing the aural experience of sound. Notation will continue, but it may not be the cutting edge."

Truax continues to teach, lecture, write, compose, and create. His plans include exploring the new frontier of soundscape compositions designed on the micro level and projected through eight or more loudspeakers; doing more

work incorporating gender issues into electroacoustic composition; and continuing his efforts to raise awareness of the acoustic environment. His love of voice and lyric poetry and the growing interest from a number of sources in the medium of electroacoustic music theatre has him wanting to write more such work. In conjunction with everything else he is doing, Truax also manages to find time to breed and show Scottish Terriers.

How does Truax achieve so much? Well, as Martin Gotfrit, a composer and fellow SFU lecturer, puts it, "The interaction between the various aspects of Truax—composer, sound ecologist, programmer, thinker—result in a unique signature expression which reflects a very deep and sophisticated artist." I certainly agree with that. And further, I think that through his invention of granular synthesis, Truax has discovered out how to stretch not just sound, but time itself.

Randy Raine-Reusch is an improvisationally based composer and concert artist specializing in new and experimental music for world instruments. A prodigious multi-instrumentalist with a collection of over six hundred world instruments, he has studied music around the globe, from that of the former head-hunters of Borneo to national treasures in Korea and Japan. He has premiered works on concert tours to fourteen countries, and has worked with a wide range of artists, including Pauline Oliveros, Barry Guy, Robert Dick, Sainkho Namtchylak, Aerosmith, Yes, and The Cranberries. Randy helped to found the Rainforest World Music Festival in Sarawak, Malaysia, and recorded two CDs of traditional music there, released on Pan Records.

Books by Barry Truax

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Barry Truax Discography

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www.sfu.ca/~truax/

RÉSUMÉ FRANÇAIS

Barry Truax est l'un des plus célèbres compositeurs, innovateurs et programmeurs dans le domaine de la musique assistée par ordinateur et électroacoustique. Il fut le premier récipiendaire nord-américain du prix Magistère du Concours international de musique électroacoustique de Bourges (France) en 1991, distinction accordée seulement aux compositeurs dont la carrière dépasse vingt ans. Il a étudié à l'Institut de sonologie d'Utrecht avec Gottfried Michael Koenig et Otto Laske et fut un pionnier dans le développement de la synthèse FM et granulaire en temps-réel. Successeur de R. Murray Schafer au département de communication de l'Université Simon Fraser (SFU), Truax a mis sur pied un programme en communication acoustique et contribué au développement d'un programme interdisciplinaire en musique contemporaine au SFU Centre for the Arts, accordant une place importante à la musique assistée par ordinateur. Truax a donné de nombreuses conférences et performances dans des universités, colloques et salles de concert à travers les États-Unis, l'Europe, l'Asie et l'Australie. Son œuvre actuelle, *Powers of Two*, est une performance impressionnante de théâtre musical combinant la danse, la vidéo, six chanteurs et une bande octophonique. Chez Truax, l'interaction des diverses facettes de son activité – compositeur, écologiste sonore, programmeur, penseur – confère à son travail une expression unique qui laisse entrevoir un artiste profond et raffiné.