Truax: So here we are in the gardens of the Archevêché in Bourges, with its formal gardens and its walkways and roses.

Asymmetry: Maybe we should just talk about this, then, and forget about music for awhile.

Or perhaps this is just the place to talk about soundscape and how you got started in soundscape composition.

Truax: In 1973, at the end of my two years in Utrecht at the Institute of Sonology, Murray Schafer invited me to come to Vancouver and work with the World Soundscape Project, which he had just created, in a new department called Communication Studies. [At this point, a loud tractor came rumbling by.] Well, we're going to have some competition here. We thought this would be the quietest place. But that's always a good segue to any discussion of soundscape, because Schafer was dissatisfied with simply being anti-noise. He had taught a course in noise pollution in the nineteen sixties I think, and his particular bête noir was the seaplanes in Vancouver harbour. But he was also working with the idea of the soundscape as being a positive approach to the acoustic environment, based on listening and ear cleaning, which he had already proposed in an essay called "The Music of the Environment" and in his educational booklets, "The New Soundscape" and "The Idea of the Universal Soundscape," a Cage-inspired, listening to the world as if it were music type of thing.

And in '73, Schafer was bringing together a group of young, idealistic composers who would work as lowly research assistants. Of course, we weren't lowly at all. We were just having fun, and we didn't demand too much from the world in a material way.

When I arrived in Vancouver, they were just finishing up the *Vancouver Soundscape,* a systematic documentation of the city soundscape, with sound and a booklet, historical and contemporary. We later updated it in the '90s with new recordings and with soundscape compositions that were more individually rather than collectively put together.

Soundscape composition seems to go along a continuum between "found" soundscapes that are minimally altered and what John Drever and others have referred to as phonographic representations, which resist manipulation or use only transparent mixing or editing, because you can do that without people figuring out that there is a manipulation, as if it just happened that way. And of course in Europe, Luc Ferrari had done that kind of stuff, which at the time challenged the whole European notion of the composer as "author."

"What are you doing, just framing an environment? And daring to sign your name to it?"

The purpose of World Soundscape Project, however, was not artistic, it was educational. We were working as a collective, so we didn't sign our names to anything. Obviously, certain people had certain tasks in preparing the document, but we never even thought

about "authoring" it. But then, fairly quickly, because most of the people on the project were composers, individuals wanted to start doing personal documents and compositions.

Asymmetry: And that included you?

Truax: Yes. And Bruce Davis and Peter Huse and Howard Broomfield. And I'm specifically thinking of the series of ten radio programs we did in 1974 for CBC called *Soundscapes of Canada.* At one end of the spectrum are found soundscapes such as the *Dawn Chorus,* and the most spectacular I think, or seminal, is the

So I finished the degree in physics and math at Queens University in Kingston and got accepted to UBC in music. Did some make up courses in some areas and some composition and so on and so forth. And then I walked into the electronic music studio at UBC and never came out, essentially.

At the Institute of Sonology, Gottfried Michael Koenig and Otto Laske and a host of really excellent teachers were formulating the digital future. That may sound overly dramatic, but they had this wonderful set of analog studios, with a lot of custom made equipment and two and four channel machines for recording it and banks of voltage control equipment that defied description. It was very, very complex. A long way from the Buchla and Moog synthesizers I'd been weened on at UBC. Stan Tempelaars was teaching modern psychoacoustics that he had gotten from Reiner Plomp, which I now realize was pretty cutting edge at the time. Koenig was teaching composition theory but also programming and macro assembly language for the PDP-15, almost as fast as he was learning it himself. And suddenly, for the first time, I found myself with the mini-computer; that's what they were called, even though they took up one huge wall of a room. But they were single user, not mainframe computers like Max Mathews had. Although the only me

Truax: I'll come back to you in a day. See if you've got your first second!

At that time there was a whole parade of visitors through Sonology, John Chowning, Jim Beauchamp, Charles Dodge, and of course Boulez and his entourage, who came through

years that I've been there has provided this incredible framework for understanding sound as information-based, and generalizing it beyond music to every aspect of sound, including the enormous impact of technology in the twentieth century on that process.

That's what now appears to me now an almost humorous series of circuitous routes that brought me to this interdisciplinary organization of music, technology, and the social environment and always integrating those, bringing those together, and finding to me still very inspiring cross-fertilizations between those.

So personally I feel I could have had no better an interdisciplinary grounding, even though it took two continents and several disciplines to, almost randomly or just by chance, put this all together.

So that's the background. Now where do you want to go?

Asymmetry: Well, I'd like to hear more about that difference between seeing things as objects "out there," or seeing things as in a relationship.

Truax: OK. So communications started in signal processing; you know, the classic who says what to whom with what effect? Harold Lasswell and others developed this idea, and it obviously comes right out of acoustics: the source, broadcasting the sound, the medium of propagation, the receiver, et cetera, and composers have not been amiss with that as well. The composer writes the score and transmits it through the performer to the audience who's supposed to have an aesthetic reaction to it. We model it, in fact, we often come down to the point of thinking how could it be otherwise?

But communication postulates much more as, fir

Asymmetry: It may be adequate for

soundscape elements not as just material but as an idealized or virtual sonic environment. And with eight channel surround sound, you are immersed, just as you are in the soundscape all the time, so you're recreating the soundscape experience rather than stereo frontal experience of acousmonium or the traditional orchestra.

Asymmetry: Yes, I've noticed that they favor the orchestra set up here.

Truax: In Bourges, the French tradition of diffusion, which I adore and have found very inspiring since I started coming here in the mid seventies, is literally an orchestra of loudspeakers. But gradually even Bourges has incorporated more rings of loudspeakers around you. And also knowing that I prefer the circular configuration of speakers, they're usually able to accommodate that nowadays. It is very enticing and seductive to be in an eight channel sound space with the sound all around you.

Asymmetry: It is very enticing. And I'm always amazed at how few people manage to be enticed. Last year, my first time in Bourges,
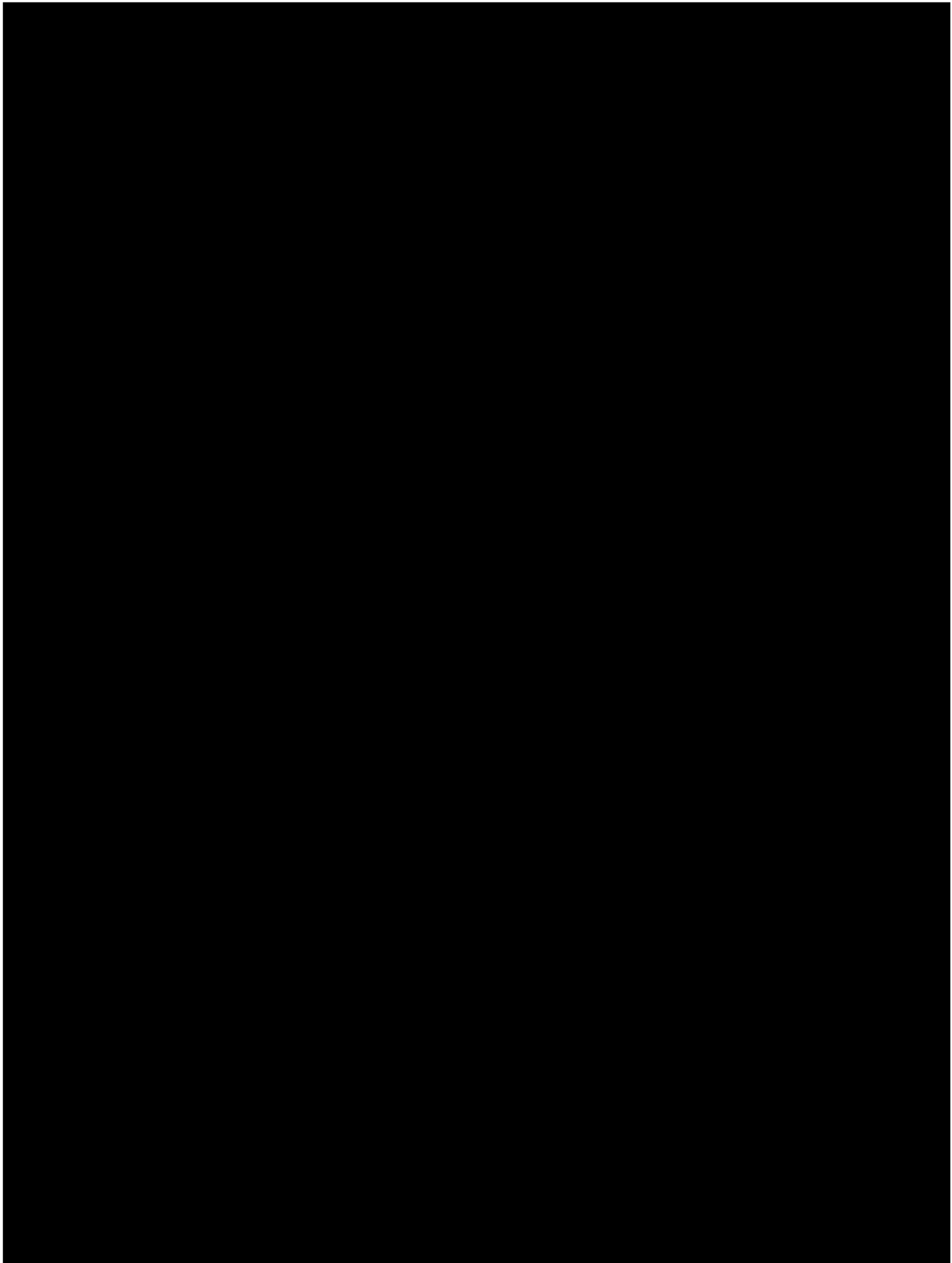
the rhetorical strategies I use to get this idea across is I say "The arts have this quaint idea that you spend 90% of your budget on creating the product and then you figure out if you have anything left over to advertise it. The mass market spends as little as possible on creating the product and massive amounts, at least ten to one, on creating a consumer for it."

And you're going to mix those two and talk about the relationship of those two practices? They have nothing in common, economically. And that's simplified, but then maybe people begin to start to get it, that the popularity isn't in the content, it is in the promotion of it. This is like 001 Communication Theory or Political Economy of Media or Media Studies, things like that.

I do think, however, that the composer should be thinking about communication to the audience, at every level. Title, programme note, I'm always overemphasizing to my students, because they always have trouble with their titles. I do too, but that's probably the only thing the audience is going to know when the piece starts: how are you using the title to prepare them; *are* you using the title to prepare them? That's probably the only thing other than the piece itself that they'll know, because they may or may not read the programme note, but that's your second line of defense, that's your second chance to give the listener something to expect, how to listen to it, not, you know, what inspired you, what got you going, what you read, although it may, if it's integral enough.

The naïve person approaching this would like to know "What am I getting into? How should I listen to this?" And particularly in electroacoustic music, because it's so variable, and it's so unexpected, and so unconstrained by the normal physical laws of what a violin or a piano can do, which already kind of prepares you, since you've heard violins and pianos before. Given this open-endedness, not to mention the possibility that you can be suddenly blasted by enormous power at any moment and shocked out of your skin, right? I can certainly understand how the naïve listener could feel. Naïve, but with yet a kind of cautious positive wanting to be open to this. That's the person for whom the programme notes should be written.

I always find it curious to read programme notes, particularly from students, and then hear the piece. They're almost always disconnected. "That's what you were thinking? That's not what I hear!"

Composers, even if they're thinking abstractly, they have their own process, and the stories they tell themselves, and what they think the piece is about. But usually that a) doesn't make a good programme note, b) it doesn't really help the listener, and c) the listener might as well take the approach of just simply ignoring it. Or maybe afterwards, if they're curious. "Oh, were did this come from?" But you don't need to know. It's extra musical.

Asymmetry: And I think the autobiographical stuff, particularly, is probably more interesting, more useful, after you're already familiar with the piece. I don't think it leads you into it very well at all.

the imagery and the shape of the piece—approaching the church, going inside and down the long nave, that's the opening six minute section, where it's just the bells. Almost the literary idea of the part standing for the whole. In the eight channel version they swirl around as well and create this very large sense of space. And in the process, I also started to hear these vocal-like sounds coming out, vocal resonances that came out of the stretched bells. And so I thought, hmmm, vocal resonances in a church.

Asymmetry: Yes, let's see. Has that ever happened before?

Truax: Alright! So I'm not afraid to be so obvious about it, because I want it to be about that, right? Another type of composer might say "Oh, but that's too literal. We'll abstract that." You've heard lots of examples of that where if you don't read the programme notes, you won't figure out that. Did you know that piece the other night was about Mao Tse Tung?

Asymmetry: Only because I read the program note.

Truax: So how dare a composer say that that piece was about Mao Tse Tung!

Asymmetry: Exactly.

Truax: And I'm sorry to pick on that one person, but nine times out of ten, that's the disconnect between the piece and the programme note. The person thinks it's about this, and then goes out of their way to obscure that fact in the piece but writes about it and tantalizes you by saying "Oh, but it's really about this." So why does a composer do that? I suppose one reason may be that they're young and insecure and afraid to be too literal, because their composition teachers have told them that abstract is best; and maybe it's also because they're at a university and, as one of my students said—I hated the expression, but I had to appreciate the sentiment—"this is my school music." And I suddenly realized, he's got his garage music, his punk music, his world music, his et cetera music, and then there's his school music. Oh dear. Who taught him that his school music was different? I'd been working all this time to show him that it wasn't school music, it just was music. So even if you don't want them to be academic and abstract, they still think of it, because of the institution. They have absorbed abstractness as the way to go, and it is a sore point with a lot of composers in teaching. So there's a lot of work to be done about that.

I'm teaching a course for the second time this fall. We just call it, for a label, Soundscape Composition, but the real topic is context-based composition. Soundscape just happens to be a well-defined term and communicates a little less abstractly than context-based. But imagine that, music engaging with the real world and not in the business way of dealing with the real world, but informing the actual music—suddenly even the really good composition students say "Wait a minute! That's gonna be difficult. It sounds good, but I haven't been taught how to do that. I've been taught how to write all these notes. I've been taught instrumentation, I've been taught.... But I haven't been taught about the real world. And I'm not encouraged to use the real world except maybe for the title that I put

on my piece and maybe a little programme note. That doesn't seem to cut it with this prof, who says it should inform the compostition in some way."

I'm over-dramatizing this. But it is a scary thing. And then, furthermore, the things that have engaged with the real world have been put down as second class, programme music, film music, sound effects, et cetera, et cetera. We only have those kind of models. And electroacoustic music? Well, that depends on who you're listening to. If you're listening to Trevor Wishart's *Red Bird,* well then you've really heard something, and one reason a piece like that was so shocking in the 1970s was that it did dare to have this narrative structure, but so complex and abstracted that with its sophistication of the sounds and the level of its syntax, you couldn't just pass it off as a radio play, or an existing genre. It clearly was a piece of music that would stand on its own, even if it is forty minutes long.

Other pieces broke through that prejudice, too, early prizewinners at Bourges such as Jack Body's *Musik Dari Jalan,* which got a first here in the seventies and then later the *Euphonie d'Or.* When they did a retrospective, they went back and awarded some other prizes to the prize winners of the past, and it was interesting how some pieces had survived and some others had become a bit dated. *Red Bird* and *Musik Dari Jalan* were two that picked up a *Euphonie d'Or.* I don't know if you know the latter piece, but it's one of my favorites; it alternates between the Indonesian street cries (which is what the title means in Indonesian) abstracted as sound objects and then put back into their environmental context. Done completely transparently. And the moments of transition are beautiful.

Asymmetry: That sounds really stunning.

Truax: It was. It was stunning in the seventies, and it still is. So I take moments like that, and you could multiply those by many others, as ones that were striking and did get recognized and even celebrated later as landmark pieces, to the community's credit and particularly to Bourges' credit. So those are examples of challenging this "abstract is best" structure that unfortunately a lot of acousmatic music, as much as I love it, does tend to fall into, taking the sound out of context as an object of perception with reduced or focussed listening and ignoring the source.

And of course that can be traced back to Pierre Schaeffer's dislike for what he called the anecdotal quality of the sound. He wanted to get away from that as fast as possible. The result has been of course wonderful in the sense of the primacy of the ear and the classification of sound and the sound world of the acousmatic, but then gradually composers started, like Parmegiani for instance, to bring back an environmental context into their music.

I think we'd better pause here. We're being invaded by the daycare, the local school or daycare center here. Probably we should move.

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So I was mainly talking about how soundscape compositions have this kind of dual purpose of relating you back to the environment and the environmental experience. We hope that it will carry over into everyday life and will challenge the assumption that music is independent of the real world. It's a peculiarly Western, probably European-derived concept that music can be abstract and not functional, and of course anything that's functional or programmatic or things like that is definitely second-class, right?

On the other hand, one of the things that really bugs me about people trying to communicate for instance about nineteenth century romantic music is that they read so much into it. Take a Schumann sonata, for instance; they'll go on and on about his love for Clara, and how the themes represent this or that, which is projecting this soap opera onto the music. Is that the relationship we want to have between abstract musical form and the real world? Projected fantasy stories of composer's biographies or whatever?

Asymmetry: Well, you still get people saying that the story that was made up to accompany *Symphonie Fantastique* is autobiographical, in spite of the fact that none of the details of that story correspond to anything that had ever happened in Berlioz' life.

Truax: Yes, it's fiction. So you have the fiction model for abstract music!

sense that composers tell stories afterwards, you know, how you made this or that, with this superhuman effort, intending everything, putting everything in place, and creating this masterwork.

No, not really.

A lot of *Riverrun* is done with grains that are enveloped sine waves. There are FM grains in it, so I can't say it's entirely done with sine waves. The sampled sound stuff came later. But *Riverrun* is now an almost classic example of using the lowly sine waves, which Stockhausen, by the way, had called "little brutes."

I love Richard Toop's article about the correspondence of Stockhausen with Goeyvaerts—in *Musical Quarterly,* of all places. Richard Toop's analysis of that correspondence is valuable, because he demythologizes some of Stockhausen's later autobiographical glosses of how early and how all-intended this was. That he was basically what we would now think of as a graduate student, hitchhiking to Paris and back to Cologne, hearing about this, that, and the other. That he got Eimert to show him these things. It's not clear if he heard any sine waves in Paris during that period, but he obviously discovered sine wave generators in the Cologne studio and in the correspondence with Goeyvaerts he literally says "These little brutes. Surely you can't mean composing with these! They are so irritating, and it goes on and on like the whistle on a radio." He says what everyone thinks listening to a sine wave generator after only a few seconds, that this is not wonderful, OK?

And we know that as early as 1946/47, Dennis Gabor wrote a seminal article on understanding what the alternative was, what is now called the Gabor grain. He said what we need is not the timeless Fourier abstraction of piling up sine waves and then later figuring out how to put some envelopes on them, *à la* Jean-Claude Risset. He said what we need is at the quantum level, and there was enough psychoacoustics in the nineteen forties to know that there really was a quantum concept, that as you got shorter in the time domain, you got broader in the frequency domain. And the Gabor grain is the point at which the waves match perfectly, the Gaussian shape in the time domain is the same as the Gaussian shape in the frequency domain. And it's only taken us 60 years to read what Gabor said, in theory of course, although he did some experiments. He's a seminal figure, and fortunately Curtis Roads has taken it upon himself to revive Gabor's memory and his contributions.

Asymmetry: That's incredible. That's at the very beginning of things.

Truax: That's right. If there had been Gabor grain generators around instead of sine wave generators, the whole history of electroacoustic music would have been completely different, because it would have been based on a psychoacoustic principle rather than on an instrument-based principle. The closest that they could have come was the impulse generator. The impulse could have been a grain, but it was only controllable in its frequency of repetition, not in its shape.

modulation; suddenly all the dimensionality collapses to one dimension, and we think "machine," right?

At the granular level, when you introduce even one or two or three milliseconds of asynchrony between those grains, it suddenly explodes into the three dimensional granular texture that we've come to know and love. And I was shocked that it only took a few milliseconds to do that. Whenever you find such a discontinuity, you should stop and think. Because there are not usually such discontinuities anywhere. And it's not a discontinuity in the mathematical sense; it was a perceptual leap. And I've tried to write about this. The experience of it was very, very striking, and I now realize that we were then talking about uncorrelated grains. That's the problem with fixed wave forms. All of the frequency components are correlated. And there's a question of what degree of quasi-correlation is useful for recognition; for instance sounds that fuse together have a certain degree of correlation that the brain picks up and sounds that are clearly uncorrelated are called different sources. Particularly if they come from different locations.

So we're back to again the soundscape kind of approach. How do we manipulate the auditory stream? How do we put together the soundscape? How do we make sense of these two little vibrating ear drums, of all these complex sound sources that are all around us all the time? Not to mention how to balance those like we just did when we moved to an environment here where there's somewhat better balance! [Away from the kids taking lunch in the park where we'd started out.] We just redesigned our acoustic space by choosing a different location. So it's fun to hear the little bird over there and the little bird over there and that bird over there and I can quite easily follow all of those and the crunching steps behind me and so on and so forth.

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have found that work. There's still lots of work to be done, but I see these different elements as all coming together in some very exciting ways, around the computer, around