

Barry Truax keynote lecture
Gabriola Island, BC
CASE soundscape retreat - 2009

Good morning and again like everyone thank you to CASE and the Lulu Centre for inviting me to come. Even if it is a short distance, getting together on Gabriola as you discovered is a major operation, even for us on West Coast, but it is absolutely fantastic to be here.

My presentation today is really an overview and introduction to a DVD-ROM that I've just published on soundscape composition. This is part of a series that I've started. The first one was about my other passion – granular synthesis, micro sound and the analysis of the pieces *Riverrun* and *The Shaman Ascending*. The second one is about soundscape composition. It has a major presentation about soundscape composition mostly derived from the work at Simon Fraser University and what is published on my label Cambridge Street Publishing.

Something I started quite a few years ago is the analysis of specific pieces mainly for classes and archiving. I have completed this for about a dozen pieces, and about three of them I call soundscape compositions are in full detail. Every track, every sound, every process, all the notes and all the background are documented there. Usually when composers see that their jaws drop, because I don't think anyone has documented their work to this extent. As you get older you give more work to archiving, particularly with technology because it keeps changing.

The soundscape DVD works like a website. A lot of the text is from the website [www.sfu.ca/~truax/scomp.html] , but the DVD, unlike the website, has over 4 GB of sound examples.

In case you don't know Simon Fraser University, here is a shot of it on Burnaby Mountain. Of course Murray Schafer founded the World Soundscape Project there, but this is a particular environment with the modernism of Arthur Erickson's architecture and the natural environment being in such close proximity and of course the contentious area in between of logging and seaplanes, which particularly bothered Murray. And also, this is where the whole environmental movement and Greenpeace started. So, there is perhaps a reason why the WSP took off at this very modern McLuhan inspired university back in the 60's. It is still a wonderful place to work. I am still in my first job. I just don't want to retire from it. We are currently establishing a new faculty called Communication, Art and Technology. If that isn't cool, I don't know what is.

My website is where you can get more information [www.sfu.ca/~truax] , and the studio website [www.sfu.ca/sonic-studio] as well where other resources from the Soundscape Project such as the tape collection, the catalogue and the sound references in literature are available.

Many of you may know about the background of the World Soundscape Project. I think it might be useful for those that don't or if are aspects that you have missed, or simply for a little trip down nostalgia lane, we will start with the history of the project.

One of the documents which I think you are probably familiar with is the *Vancouver Soundscape*, the initial double LP that we later re-published as a double CD. We chose the picture on the original 1973 LP because the city seemed so incredibly modern and built up. You can hardly see any of those buildings now because they are all dwarfed by what has happened since then. The phonographic aspect or documentation of

soundscape was done as a collective. None of these tracks were [individually] authored. But some of the simple documentation techniques from 1973 gave rise to composers wanting to use this material in a compositional way.

Then in 1996 we re-recorded as much of the Vancouver soundscape environment as we could, often going back to the same places. Even those of us who are supposed to be paying attention to this were surprised by how many new sounds in over 20 years had emerged in the city. Even when you live there and are trying to pay attention, it's amazing how much had changed. Of course the city itself had grown.

But also soundscape composition had dramatically changed. We invited two Canadians, Darren Copeland and Claude Schryer, and two Germans, Sabine Breitsameter and Hans Ulrich Werner (who were more radiophonically oriented – in Europe or at least in Germany this tends to come through the radio rather than academia or through composition) to come and work with these materials. So you can see a lot of authoring. The harbour ambiances are similar on both CD's. Then Hildi [Westerkamp] and I did a documentary on the changing soundscape which was similar to the acoustic design documentary on the original LP.

Again in terms of the documents we will go next to *Soundscapes of Canada* for which there's been a lot of interest in the last few years. This series of 10 radio programs were first broadcast on Ideas on the CBC in 1974. I think it is fair to say they have not done anything as adventurous since. This series of radio programs exemplified the range of soundscape composition from fairly straight-forward documentary programs like Signals, Keynotes and Soundmarks to a guided ear cleaning talk by Murray Schafer. I guess at the other end we would find the Summer Solstice, a now classic 24-hour field recording that was done on the grounds of Westminster Abbey in Mission with a stereo Nagra. What that meant was recording 15 minutes out of each hour and doubling that at sunrise and sunset when there are major changes. And then transparently editing two minutes out of each one of those 15 minute excerpts into a 48 minute radio program with only minimal narration to identify the time. The natural cycle that we documented, because it was on a pond, the natural acoustic environment of the frogs and the birds and the transitions between those, interrupted of course in the day by a certain amount of aircraft, formed a circadian cycle that we could now experience in a one hour program. Because it is very hard to sit in one place for 24 hours and experience it. Let alone that it is a snapshot at midsummer of an annual cycle within longer terms of decades or millennia of how the acoustic habitat evolves. Later I'm going to show you some of Bernie Krause's and David Monacchi's ideas about this as well. So that formed a very pivotal point in the World Soundscape Project history of finding a naturally balanced acoustic ecology, which of course was in nature. We assumed the biological and acoustic go hand in hand.

Of course in terms of soundscape composition, there were a fair number of pieces that reflected the interests of the various participants. Bruce Davis for instance recorded a lot of the human activities that he organized around the theme of games and then another one on work and then he made a collage of those materials. Peter Huse who is also a writer was very interested in the dialects from coast to coast. Program 4 was his *Soundmarks of Canada* which is a coast to coast tour of soundmarks. Then later I took that same material and transformed it into concert piece called *Dominion*. Peter's other program was *Directions* where Peter and Bruce simply had the tape recorder running whenever they asked for directions – this was before you had to worry about ethics approval for everything – and people were captured that way. We think of Canada as having fewer accents and dialects than the US, but in fact as you listen across the country it is like a linguistic mapping of the country. Very innovative in that sense. And

then in other programs I did a piece called *Maritime Sound Diary* that juxtaposed three different stories and you jumped back and forth between them. There's also a lecture on soundscape design. The farthest out in left field program was of course by our dear friend, departed friend, Howard Broomfield, who did this totally schizophrenic ethnophonic radio collage piece that defies description. And then finally on the poetic documentary side, Bruce Davis did a beautiful portrait of the *Bells of Percé* in the Gaspésie in Québec where it was based around the bells, the history, the ambience, the stories told by the colourful parish priest, etc etc.

So without necessarily trying to be a compendium of soundscape composition, I would suggest that this series of programs is seminal in many ways both radiophonically and compositionally.

In terms of the acoustic community we have the *Five Village Soundscapes* publication. Nora [Vikman] gave you the update yesterday and we are so happy that this is being re-published. This village concept is one that can be applied even within an urban environment, for instance in the way that Jane Jacobs pioneered. In fact Vancouver grew up as a series of small neighbourhoods. Even now the most popular residential areas are those that are on a human scale, i.e. an acoustic scale, whether you are talking about Granville Island, or False Creek, or to some extent Yaletown and certainly the Drive, Commercial Drive and other areas. One of our grad students studied Bowen Island for instance which is very similar to Gabriola as a commuter island near West Vancouver. The quality of life issues, the acoustic balance, all of those are very relevant there. This model that came out of the European study of these five villages is one that is with us today and is still highly applicable whether we are talking about a home, a daycare, a school, a community or neighbourhood or any kind of residential area.

You have had the brief description yesterday, but let me show you just some elements from the '75 study that complements what Nora was talking about. The somewhat industrial light industry and very sparse soundscape of Skruv where even the industrial hums at that time did not necessarily blanket the entire city. And the thru-train, and even if there is evidently no local train today but we have recordings of that local train, the thru-train defined the acoustic horizon of the city then. And the stream even though it has been partly submerged was still a small presence there. That was a very sparse acoustic environment.

The second village was Bissingen in Germany. The famous bells there ring every 15 minutes as a soundmark but they are also almost a keynote background sound, because bells are just a natural regulator of German life. The one problem there was that it showed the beginnings of industrialization with a factory that ran 24 hours and therefore raised the ambient level as did the frequent aircraft traffic. There is a military base not too far away. This bowl shaped valley trapped the low frequencies from these activities. You could see the challenges from outside the traditional acoustic community that were raising the ambience.

I think probably like Nora our favourite village was Cembra [in Italy] because it was on such an active human scale. The labyrinthine streets that were mentioned do trap the traffic noise and so the exuberance of the Italians living in close proximity to the outdoors, that kind of attitude, made this a very busy but human and balanced soundscape. I am going to indulge my favourite recording from there which shows the subject of acoustic space. I am going to play this Easter Eve recording from Santa Maria Church, because it is a wonderful example of how complex acoustic space can be. There are literally three different perspectives and I think you will find it easy to identify all three. I will just tell you what they are. The foreground is the Piazza where

some people are just chatting and talking. And then there is a church on one side and from inside the church you hear the choir at some point. And then the church bell that you hear is not from that church but from the other church on the periphery of the community and that establishes the background. There is a lovely interplay or counterpoint between those three that catches the musical ear. But from the point of view of the community then you have exactly that kind of complex perspective, or what [Albert] Bregman would call the Auditory Scene, and note how easy it is for us to sort that out when we are in of course a hi-fi type of environment, and how vulnerable that would be to degradation by other types of noise. So here is that recording.

(plays recording of Santa Maria Church in Cembra, Italy)

Now of course you can hear that on any soundwalk, or at least we hope you could hear that effect on any soundwalk, the overlapping acoustic space, but in the context of the village and how that represents many of the elements of the village – the space, the inhabitants et cetera – I just find that a very suggestive example.

Now Lesconil [in France] has the tradition of fishing which evidentially has fallen off a bit. Here are some of the 50 boats from that day with their big catch that came in at a certain hour of the afternoon and sold the fish at auction; and here's a photo of the overall layout of the village around the bay. There is also a wonderful recording of a lighthouse that is close by. You may also have seen the acoustic horizon diagrams from the *Five Village Soundscapes*.

And then in Dollar [Scotland] there's the academy and the pipe band with their acoustic profiles that were documented, as well as the acoustic horizon sounds coming in – weather depending – from the train line from the Firth of Forth and the train whistles, all of which give the larger sense of the local and the larger acoustic space. And of course the city itself was bisected by the A91 [highway] and that issue of the traffic and the intrusiveness of it and the denial or ignoring of it that happened during the interviews was very much a part of what we are all very familiar with in the city.

Then of course one of the gems from Dollar was meeting the retired town clerk David Graham who had this wonderful aural memory. Because of course there were no linguistic barriers as in the other countries his reminiscences were classic about the details of the past. Interestingly enough, when Heikki [Uimonen] went back twenty years later he was still there and full of stories. I don't know if he is still with us but he was a truly amazing man.

Just to finish we will go back to show the two documents from the village experience [the *European Sound Diary* and the *Five Village Soundscapes*]. And these are photos of some of the early recording that was done with the stereo Nagra when things were not as light and portable as they are now. I am happy to say that all of those tapes with the exception of a few at the beginning experimental stages were made on very good analog tape – Scotch 206 and 207 – that has not deteriorated and eighty percent of which has been digitized so far.

My own book *Acoustic Communication* is another outgrowth of this and I'm proud it is now in its second edition now, along with the *Handbook For Acoustic Ecology*. And that is a good resource for teaching. The other one is the Handbook CD-ROM of terminology which is available separately.

(shows pictures of old and new studios at SFU)

We have these group classes [at SFU]. This was what I was talking about with the mentoring situation. This is a directed study group where the students come and do show and tell, whether they are working in the studio or on their laptop. That kind of mentoring is valuable and one of the reasons I am not retiring.

That was a brief tour of the history of the World Soundscape Project. We are going to go back now to this sense of soundscape composition. This is mainly dealing with the work that has been done at SFU and by Hildegard and myself and our visitors. But let's start with what I'm calling a set of commonalities, grandiosely called principles, perhaps that is too strong. When I started thinking about this in the early 90's has led to it becoming a genre. In fact I think of it as more than a stylistic aspect of electroacoustic music. I think it is a whole way of listening that then can be applied beyond environmental sound. When I started surveying what people had done and tried to generalize from that, there seemed to be four principles that most of them had in common in one way or the other whether they articulated it in the same way or not. And notable in this list is the absence of one thing that you might have thought of at the beginning. You might have thought, well, they all have in common using environmental sounds. No, that is actually not necessarily the case. They obviously may. But there are lots of examples where synthesized sounds can simulate and be organized as if they were a soundscape. And since nowadays almost all electroacoustic composers use sampled sound, and some of it is environmental – although technically everything is environmental if you record it – but even if you eliminate musical instruments and voice and use other things. I have heard lots of works that use environmental sounds, but they are not about those sources. Either they have been totally obliterated as to the source or they are collaged in such a way – like for instance a very boring random collage of environmental sounds. It is clearly not about the sounds you are actually hearing. It is quite clear as you go on that it is not about the context. The context is largely ignored. So using environmental sounds is not necessarily the sine qua non of soundscape composition. Whereas listener recognizability of the material is almost always maintained. Not necessarily 100 percent. It can always move away from recognizability. But the fact the listener recognizes and therefore brings their knowledge of the psychological context to bear. This is not just merely anecdotal – oh that reminds me of my summer vacation to the seaside. There is something more than that. You notice that when you play it back to the people from the same environment – Vancouver recordings played back to Vancouverites – they resonate in a way that is going to be different. But then that raises the issue of whether you never have been to Vancouver – from Europe or the US or whatever. You get an acoustic portrait but it is another step removed. Perhaps you have trains or boats or fog horns or bells or traffic or aircraft or something. There will be certain things that you will relate to on some analogous experience as well. But it is an issue for that. For instance when I did the Copenhagen train station piece [*Pendlerdrøm*]. Even though most of my students had never been to Europe, hardly to Copenhagen, but they related to commuting on the Sky Train in Vancouver. There were a couple of sounds that were similar – the way the engine revved and so on was just enough to trigger their experience. We are always trying to engage the listener.

Now Hildi said it really well yesterday and I won't try to repeat her words but here is my version of it. I feel that what she was saying was exactly the same as this – and this is very challenging for composers who have been traditionally trained – your knowledge of the environmental, psychological and cultural context of the whole thing – shapes the composition. Not just inspires you. Everybody according to program notes seems to be inspired by something. Because composers need to be inspired and I certainly don't want to deny that. But usually when you hear the piece inspired by something it is not really about the inspiration. That would just help the composer. And so they think that is a good thing to tell you, because they have to tell you something. Certainly it is better

than telling you the technical details of what they did – although that does not usually stop them. The inspiration isn't necessarily about that. Because often you can relate it to well known acoustic or musical styles of pieces. Sometimes I think afterwards when I read the note, Oh really, is that what you thought it was about? But from a listener's point of view it had nothing to do with that. Composers often fool themselves in thinking that what inspired them, as valuable as that is, may carry over to the composition. I just find in general that it usually does not. And in the pieces that it does, it is always clear in a soundscape composition what it is about. There is no doubt about it. It would be really weird to hear a piece like *Beneath the Forest Floor* and think of outer space. Or alien beings. Now there are some alien elements – the thump, thump, thump, that Hildi revealed the source of yesterday. But that is so [typical of the] west coast rain forest. People often down the coast relate to that. Other people accept it by analogy and so on and so forth.

When people ask me how you start a soundscape composition, [I say] you don't start by recording, you start by soundwalking. Just like Hildi and the others have been telling you all weekend. You have to listen and know the environment and that is what inspires you and you bring that knowledge back into it. First of all then you know what to record, what is typical and then you hopefully you get ideas of how the material 'wants' to be shaped. As opposed to the more industrialized compositional model of electroacoustics which is, I have 'raw' material and then I process it and then I package it and I post-process it and then I distribute it and download it and upload it and off it goes. That doesn't necessarily mean you couldn't be working in this area, which superficially we are doing the same thing too. Usually the sense of the composer is that they are ultimately in charge and they can do what they want and they can be abstract and go off on this trip. And is it surprising that the audience does not follow it? I don't think it is surprising at all, because you have to learn how to listen to that kind of music. Whereas with soundscape composition people already feel when they come into it – maybe they've never been to an electroacoustic music concert before, they have never experienced sound art – and they come to it and they already feel they can relate to it – probably if it is successful. I even had one very insightful novice listener get it even better than I could from that last bit. When she heard a more conventional musical piece of mine and then a soundscape one (because I didn't know what she would be interested in) she compared the two and just said about the latter one – the soundscape one – I participated more. Right! Sometimes the novice gets it absolutely bang on. Soundscape composition is about something and you expect the listener to participate more. That is the simple take home message.

And then also Hildi has articulated the discussion about activism and so on: we hope that it carries over into everyday listening habits. Both for us and the audience. We certainly know it does for us. I always tell this story that in Vancouver when I'm working on a piece about Vancouver and then I go outside – they are playing the piece! Not that it doesn't get played elsewhere. They are certainly playing it everyday 24/7. And so you find there is a relationship. Whereas with more abstract material you might hear it in the rhythms etc – there are no strict boundaries here. But this is a well known phenomenon about working with material – that is why I was asking the lady about when she was dealing with her horrible excavator how it changed going back. I find from our students it is absolutely the case. There is a potential there. We are not telling people to change the world. Since the soundscape is based on perception it is not just the objective sound, it is how people understand it – which makes it quite tricky methodologically, it is so subjective – but that also means that we are asking the listener to participate in it and that participation starts a process that could carry on and they can decide then what to do about the environment.

Here's the range of approaches – you probably got this already – tends to go from found sound or phonographic recordings through to what I would call not abstract but abstracted. Often in many cases there's a combination of both going on. There are more naturalistic realistic sounds and sounds that have been processed, but always probably have a relationship back to the original. That is abstracted, not totally abstract. Acousmatic [music] tends to go from abstracted through to abstract and that is another half of the continuum. We occupy this half of the continuum. It is possible that very abstract sounds can be put in as a provocative agent. This alien thing that comes into your soundscape and what is it? I am not saying you could not do it. But this is the range that people tend to work at.

Here are some of the simplest classification techniques. One set of criteria which would be based on spatial perspective is fixed perspective. Where you imagine yourself fixed in some kind of location and the flow of time then tends to dominate the structure of what you are listening to. Or it could be a discrete series of those. I already mentioned the time compression, the 24-hour time compression. We also have examples of narrative, oral history, all of these could be related to this. Now I am going to play this example of the Vancouver harbour ambience because an interesting discussion on my recent UK tour came up about this. I often skip over this one because it seems so simple. The student in York kept using these very idealistic and absolutist terms. What is the 'perfect' representation or 'ultimate' representation of a soundscape? I was a little taken aback by those absolutist terms. We played this example and then discussed it and I will just give you a bit of it and try to recreate the discussion.

(plays Harbour Ambience from *Vancouver Soundscape 96*)

I think the actual track on the CD goes a couple of minutes more but that gives you the essence of it. So is that an accurate representation of the Vancouver harbour? Well, it has many characteristic elements. Except that it never actually happened that way. This is a mix. It is layered in octophonic. I know because I did it. I know exactly how many layers there are. But consider this is the track we had for the *Vancouver Soundscape 96* that we wanted to compare to the other one [1973]. I don't know remember exactly how the first one was put together because it was slightly before my time. But with this one I know that we wanted four minutes because that is what fit and we wanted to represent Vancouver harbour. But if you were a purist you might say we will take a four minute excerpt out of our recording. What would happen during that four minutes? Would you get the Seabus that goes across every so often. Would you get a freighter? And how many seaplanes would you get? You would probably get the ambient sounds ok. Oh, but then that horn you just heard that is only heard at noon. OK, so now we are constrained to 3 minutes before noon and 1 minute after noon. Right? What if there is no seaplanes? This is where the discussion [in York] went. What would you be saying about the harbour, right? In the overall four minutes there are two or three seaplanes that are mixed in there. So people will accept this generally as, yes that sounds pretty much like Vancouver harbour. With memory foreshortening your experiences you would probably hear all of the sounds that in fact you would have heard in a hour in the harbour. You will think of them as not necessarily denser. If you are lucky as a recordist and you do happen to get that freighter and the Seabus and the seaplane all together, and you will think that is a really great take and we are going to keep that one. Because it happened to happen that way. But on the other hand, this is true but it didn't happen. How do we know it is true? Because we have done soundwalking there. We know what is typical of it. We also know how listeners perceive, which is that they won't perceive that as irrational. It could have happened that way. That is all they know. They know that it could have happened. And with compression of time and listening attention, four

minutes will give them a sense of it that is approximately correct. Whereas if you just did a one hour recording of what they listened to, it would give a sense of how it actually happened. That is how the discussion started. What if there had been 4 seaplanes in that four minutes, or what if there were 6 or 8, we could do put in as many as you want, we could do a wonderful seaplane symphony where we are listening to the spectral harmonic contents of Doppler shift and all sorts of [spectral] cancellation. But the listener would eventually say there are not that many seaplanes in the harbour. You are making a point. You are trying to emphasize that there are too many. You are trying to do something else. There is a point beyond which it was not plausible for someone who knew the harbour. So, there is intentionality, you are trying to say something about seaplanes, which in fact is a problem for people living in the West End. Their complaints about seaplanes are twice that of the rest of the city. But what if we have had no seaplanes. Suppose we were working the Board of Trade doing a tourist thing for them and 'airbrushing' out the seaplanes and saying no, no, there are no seaplanes in the harbour, there is no noise here, just all of the colourful things. That would be clearly intentionality of a different sort. We would be suppressing [the reality]. I don't know what the student with his ultimate perfect representation thought, but it provoked a very interesting discussion that I am giving you the synthesis of. When you are trying to represent, then you have to consider the audience and their listening and what seems to them to be realistic and then if you want to intrude and make statements about this or that or the other, then you will probably give the audience the cue that this is moving to the imaginary or whatever. I found that an interesting discussion.

Also from the *Vancouver Soundscape* we have the found recording [of New Year's Eve in the harbour].

By the way, just on a technical level on the harbour, if the sounds are recorded in the same place, even if they were recorded at different times, they will all fuse together like you just heard. It is totally transparent. And in the train station piece if we were hearing that in 8-channels around you, then in fact the beautiful [original] recordings are just placed [pointing to different points of the room] as stereo pair, stereo pair, stereo pair, and stereo pair and you are surrounded by it. Even though they were recorded sequentially. But there again someone would say, well, does that make it four times as busy as it was? Well, train stations are busy places. It could have been a little bit busier. Who is to say that cough, that PA announcement, that scraping over there could not have happened the way you are now hearing it. Unless you happen to know it in detail that north is no longer [correctly placed] you will accept it as a representation of it.

However, the New Year's recording from the *Vancouver Soundscape* double CD though is unedited. It is a recording that Hildi and I did back there at New Year's at midnight when all of the boats sound their horns. And every year is different and I don't know if they still do it, but it is a wonderful found composition. So that is the found aspect. I mentioned the Summer Solstice [recording] already.

Hildi, her beautiful piece *Talking Rain* has a very innovative transition between fixed perspectives that I like to share with students a lot, because the *Talking Rain* is rain in the natural non-urban sense, but then she uses this passing car on rain-soaked pavement as a transition between two natural fixed perspectives. Logically you would think that the intrusion of the urban there would be a problem. Of course if you know the piece, the urban comes in a whole section later, so you could think of this as foreshadowing the urban section. But it actually works because of the connection of the rainy surface. And I will also show you the spectrogram of that.

(plays sound example of car transition from *Talking Rain* by Hildegard Westerkamp)

Notice how you are going from one density of rain to a sparser; instead of using a conventional cross-fade, how effective that is at drawing your attention, making the transition as well.

Moving perspective, of course, is very powerful for listeners. And now with the 8-channel space and the various things we can do about spatial creation, then particularly if it is a time flow then it becomes like a journey and all of the possible symbolic interpretations of that. Like the novel, the journey through life, through space, whatever. There are lots of possibilities of simulated motion. I like the real and the imaginary as you heard last night obviously in the *Chalice Well* piece. Journeys can be multi-layered. Darren does quite beautiful things with multilayered vocal types of things as well. I can trace this back though to the *Vancouver Soundscape 1973* Entrance to the Harbour. This is the mundane reason. You probably heard this apocryphal story, that they wanted to represent coming into the harbour past Point Atkinson, the diaphone, under Lion's Gate bridge, and then into the harbour. Which was in fact the CPR ferry route, so you could actually take that route. But all you got [in an actual trip] was the engine noise and it lasted 15-20 minutes to get there. So of course they realized that was not a good representation except in the sense of being on the ferry. But it wasn't of the actual sounds of the harbour which were almost inaudible. Besides what if it wasn't a foggy day? So they quote "faked it", i.e., worked it out compositionally and rather crudely in fact in the studio where they recorded all of these soundmarks individually and then used very simple and – at that stage because they barely had a mixer – crude techniques to go from one to the other. I'm just going to play some excerpts of it. Even though it is 7 minutes which is itself a compression of time, because that is not logical that people experience it in a more listenable time scale. But it has an interesting compositional shape as well, starting from the big wide open reverberant space of the now replaced Point Atkinson diaphone through to the inner harbour and in fact where it ends up in a tiny little waiting room with high frequency scruffy floors and squeaky door and things like that. As domestic and banal as you can possibly get. So the whole arc of the journey then is that it enters not only the harbour but it also enters into the social and cultural life of the city and to the domestic, to the public from the natural. Not that the diaphone is natural but that it [is placed within] the natural.

(plays beginning and ending segments from Entrance to the Harbour from *Vancouver Soundscape 73*)

So we have not only entered the city but practically a domestic space as well. I won't play the other ones. I'm sure many of you know the recordings from the *Vancouver Soundscape*. A piece of mine that is a good illustration of that is *Pacific Fanfare*. That takes those soundmarks in the original recognizable form and then starts to stretch and play with them and allows you to meditate on those.

Back to the moving perspective. There are some other examples that could be referenced. Just to show you other techniques. The technical term is a parallel cross-fade, where you mix multiple copies of the original. Where you have the original here, the processed here, and another process here – I'm on a mixer here – and by gradually cross-fading or moving from one to the other, or a sense of moving from the realistic to the transformed or whatever the transition is you want to do. That is exactly what I did with the Salzburg bells. I won't play the examples from *The Blind Man* but if you look at the spectrogram you can see how it starts off with the incredibly rich bells and then how they thin out to just the prominent frequencies while other sounds come in. You can also fool the listener in some ways. My *La Sera di Benevento*, for instance. I have a little game involving guessing which elements of the train sound are separately processed.

In the listening examples, put your hand up when you hear a processed sound. I can always get two of them in there before anyone realizes. On the third one when the train horn is stretched, almost everyone hears that and they put their hand up. Then my punchline is, yeah but there were two other ones before that. Then I show them that one of them is a loop. That a squeak of the wheels could have been a looping squeak but in fact it wasn't. It was a singular event and I looped it and then I'm going to process that squeak. The first repetition of the horn was granulated but not stretched. You've heard it without the grains then with the grains. If you think you just heard the same thing over again, no, no it was slightly different. Then in the *Pendlerdrøm* piece, the example is to simulate the commuter going into a state of day-dreaming or just blanking out as we say. Which often happens in a commuting situation. Part of the piece then is guided by the commuter's experience and that admittedly gives me a chance to process the sounds and do lovely things with them which is always fun. But in fact it is guided by the experience of the commuter, particularly at the end of the day, going into this kind of haze.

(plays lead up to dream section of *Pendlerdrøm*)

Then finally there is basically everything else which I call variable perspective, discontinuous time and space flow. In some ways you can think of schizophonic embedding as being quite natural now because we are quite so used to having the soundscape having these electronic and digital sounds embedded into it, what Schafer classically called schizophonic – he emphasized the aberrational aspect. Of course what happens is today's aberration becomes tomorrow's banality. For instance, you can hear one side of a conversation inside a forest or anywhere else. Or a leakage from an iPod. Not to mention the classic ghetto blasters and radios. We are actually used to having this kind of discontinuity. Of course that has been an electroacoustic option forever. And in fact in one paper I offered the provocative opinion that perhaps the environment is becoming more electroacoustic and maybe electroacoustic music is becoming more environmental in the sense you can listen to it in a soundscape with multichannel playback. Claude Schryer's contribution to the *Vancouver Soundscape 96* then is like a collage of stream of consciousness that goes from one Vancouver sound to another one based on some level of connectedness like a stream of consciousness does. He tried to make it rational but the listener senses this or that energy and it is like a dream that takes you along with a variable perspective through it. Sometimes it is humorous and sometimes spectromorphological.

I also wanted to mention that there has been a lot of academic interest with theme issues of *Contemporary Music Review* and *Organised Sound*, theme issues where many, many authors have contributed. In fact, Leigh Landy's new book *The Art of Sound Organization* is the first textbook that actually mentions soundscape composition and goes into it in a very good summary. You may not quite believe that, but it has actually taken this long for it to be part of a textbook. Now I'm finding with this DVD-ROM people all over the world are wanting to use this for educational purposes. It is more than just our little thing here in acoustic ecology. It is something that is definitely making sense now to people at least in the electroacoustic community and presumably more broadly.

So, I have given you a lot of detail but I will risk giving you a big view at the end. I call it the connection of inner and outer complexity. The external complexity is what we have been talking about this weekend – the soundscape and real world contexts. As messy as those are we have all made it sound like it is quite easy. But in fact as soon as you deal with the real world it is going to be messy, because suddenly you are opening up yourself up to every social, cultural and environmental issue that may be understood or

contested in the whole world. You may be surprised where you find yourself. I will risk not giving any of my personal examples, but sometimes I'm surprised, how did I end up here?

The inner world is what electroacoustic composers are increasingly able to access with the computer. They focus on the abstract sound object and then they recontextualize it and so on right down to the microsound and granular level that I have been dealing with. So what is interesting to me is when the inner and the outer complexities start interacting. I've tried to show you in these brief examples, if we had more time I would go in more detail, but you have also heard the piece last night, where the micro level and the macro level can interact in interesting ways. Because I'm not happy to be just in the abstract world, partly because it would be hard for a lot of listeners to follow that even though I love a lot of abstract music. Increasingly in the soundscape composition we are using the techniques that come from that micro world of digital processing and the question is how to integrate them, and hopefully I have given you a few hints at least from this.

If you want to situate this in the macro [level], you can map the real, there is a whole area of sonification or audification where real world data is interpreted as sound. And often that is for a social, environmental or political purpose for instance, mapping environmental data onto sound so people can understand it as opposed to the scientific mumbo jumbo about it. Art in the service of science or is it science in the service of art? That is interesting. Sound sculptures and installations of course I am sure you are familiar with. Re-mapping the sound from the real world – Eric's [Eric Powell] wonderful Gastown example and many, many others – virtual worlds to phonography. There is a whole area there, and this is one of the reasons why there is so much interest, because this part of it is being developed simultaneously with what we are talking about as representing the real from found sound to phonography to imaginary worlds.

I did want to include though Bernie Krause's niche hypothesis. He is a nature recordist for many decades. One of the things he discovered on the spectrogram of his recordings was that different species occupied different frequency bands. So he formed the idea of an acoustic habitat as much of a biological habitat. In other words it would be like the frequency spectrum in radio where you would have to have non-adjacent bands. In human listening, even though our method of discerning listening is based on critical bands, our auditory system is designed to single out or favour 32 different bands. Even better is David Monacchi's recent Amazon recordings. They are beautiful recordings in the Amazon. This was a Greenpeace funded project. Then of course it is most obvious in the Amazon because there are so many species. So on the spectrogram you will see and hear the insects and other species in their various frequency bands.

(plays David Monacchi example)

So those examples at different times of day fall into similar patterns or formant regions. It is very provocative, just as we discovered in the summer solstice recordings, that there is a natural ecology and an acoustic balance that we find inspiring. We always go back to the natural world, some people think we are just tree-huggers here on the coast, but there is more to it than that. We find inspiration in the natural ecology, try to learn from it for the human social ecology – the acoustic community – and then extend it into our virtual soundscapes if I can call them that with soundscape composition.

Thank you for your attention. I don't know if we have time for comments or questions.

We have time for one question.

(question inaudible – off mic)

As long as you can control the playback space and make it a comfortable listening space for people which sometimes in galleries is tricky. How they are presented back to the public. There is something very immediate and community oriented.

Usually now it is relatively easier with self-powered speakers. You do need power. But generators can be used. The tricky part is not the technology – and you get any competent audio person and they will rent a system for you for a few hundred dollars probably – but it is the acoustic environment into which you are presenting, because of the uncontrollable aspect. There is a program called New Music in New Places. Every type of new music whether it is electroacoustic or acoustic has to deal with that. Not only the acoustics of your situation but the listening attitude of people. They are going to be different if you put it out at the airport than if you put it at the planetarium or at a resort like this or this type of space. That is the big thing. By soundwalking or listening, you will listen to a space differently when you visit it as a trial, thinking what if we were listening here rather than whatever else we do here. The technical is relatively simple.

(pause)

Good. Well, thanks for your attention. I hope that you find some points to connect with this. I didn't show you documentation of my compositional pieces but just take my word for it they are all there. They are more for study purposes than this kind of presentation. I have covered most of the stuff that is on the DVD-ROM. There is also a presentation on acoustic space. This is more of a lecture type of thing. Just so you know, it is trying to draw together examples from acoustics, psychoacoustics, environmental acoustics, electroacoustics and soundscape studies on the subject of acoustic space. It is geared more towards a university audience because it is a little more on the technical side. But it is that kind of interdisciplinary knowledge – what do the experts tell us that we can use? I always feel that is one of my jobs to do that because I have the ability to understand that stuff to some extent.