
Sound, Listening and Place: The aesthetic dilemma

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A purely aesthetic approach may be problematic when artists wish to deal with the external world as part of their work. The work of R. Murray Schafer in formulating soundscape studies is described, as well as the author's extension of that work within a communicational framework. Soundscape composition is situated within a continuum of possibilities, each with its own practice of mapping or representing the world. Current technological possibilities as well as ethical issues involved in the production process are discussed, along with the author's work in creating a multi-channel imaginary soundscape. The evolving nature of the listener's relationship to acoustic space over the last century is discussed in comparison to developments in soundscape composition.

1. AESTHETICS AND THE SOUNDSCAPE

If artists wish to deal with issues involving the environment, particularly if they decide to incorporate those issues directly into their artistic work, they will encounter significant problems that their training may have left them ill-equipped to deal with. In the case of musicians, composers and sound artists, the lack of formal training in dealing with real-world issues, as well as acoustics, may be problematic to the extent that artistic concerns have been traditionally framed in terms of musical sound – that is, sounds primarily related to each other, and only secondarily to their possible relationships to the environment or society at large. I often refer to this distinction as that involving the ‘inner complexity’ of sound, whether acoustic or electroacoustic, as opposed to the ‘outer complexity’ of the real world (Truax 1992, 1994).

The issues of relating inner and outer complexity become particularly problematic if the subject matter is drawn from the soundscape. Do the composer and sound artist become caught in the dilemma of either aestheticising the sounds of the environment, for instance, or else subordinating artistic values in order to convey a social message? How can the composer's skills be best used to deal with the external world? The Canadian composer R. Murray Schafer attempted to deal with this problem in his writing in such publications as the booklets *The New Soundscape* (1969) and *The Music of the Environment* (1973), through to his major work *The Tuning of the World* (1977).

The titles as well as the arguments presented in these works heavily rely on musical metaphors to suggest that we are all composers of the universal soundscape which we can become attuned to if we learn to listen to it as if it were music, as also suggested by John Cage if perhaps from a different aesthetic stance. Schafer often referred to acoustic design as ‘orchestration’, so much so that a recent critic argues that his work ‘is a prescriptive text that is often referred to as a descriptive one’ (Kelman 2010: 214).

Schafer's call for musicians and the public at large to become involved with soundscape issues stemmed largely from his frustration with urban, technological noise, as exemplified in his highly rhetorical *The Book of Noise* (Schafer 1970), and his experience in framing the issue within the tradition of anti-noise lobbies (Thompson 2002; Bijsterveld 2008), a negative approach which does not lead to positive action or solutions, only bureaucratic legislation and public apathy. He wanted to inspire individuals through ‘ear cleaning’ by applying a musician's innate sensitivity to sound in order to value what is positive in a soundscape, while raging against the negative aspects. However, his background was humanistic and artistic, not grounded in the social sciences, and hence, inspired by the Bauhaus' insistence on functional aesthetics, his arguments relied heavily on acoustic design as composition, with all of the attendant aesthetics that such a musical approach implies. Nevertheless, his legacy in founding the World Soundscape Project (WSP) at Simon Fraser University (SFU) during the 1970s inspired several generations worldwide as evidenced by the 1993 founding of the World Forum for Acoustic Ecology (WFAE), with its website (wfae.net), listserve, occasional conferences, and the *Soundscape* journal.

Despite my own lack of formal training in the social sciences, I had the good fortune to benefit from Schafer's positioning of the WSP in the fledgling Department of Communication Studies at SFU, now the School of Communication. This interdisciplinary school based in the social sciences provided a different conceptual paradigm based in information processing and communication understood as a system of relationships created by that information, including all

technological mediation. I saw that a communicational model could transcend, as well as incorporate, both the objective scientific model of sound as energy and signal transfer, and the purely subjective listener-centred approach of soundscape studies. The basic model of acoustic communication is grounded in the understanding that information and meaning arise through listening from both the inner structure and patterns of sound itself and also the listener's knowledge of context. In other words, both inner and outer complexity inform our understanding of sound. Further, sound is not merely information exchange, but is capable of creating relationships between listeners and their environment in a dynamic process of embodied cognition. This mediating role of sound creates the possibility of the 'acoustic community', examples of which are outlined in the Finnish study of six European villages (Järviluoma, Kytö, Truax, Uimonen and Vikman 2009) that re-visited the five villages the WSP had studied in 1975, hence providing a longitudinal dimension to the study. This updated study showed how fluid the cultural dynamics of an acoustic community are, as it evolves with economic and social change and deals with issues such as tourism, which commodifies the community and its character.

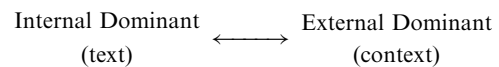
When I came to write about acoustic design in the first edition (1984) of my book *Acoustic Communication*, I was able to base the criteria for acoustic design not on musical aesthetics but rather on 'the analysis of positively functioning soundscapes' in a shift 'away from artifacts, and causes and effects, towards process' (Truax 2001: 109, 110). One advantage of understanding acoustic communication as a process relating listeners and communities to their environments through sound is that interventions in the sense of design can be effective at any level of the system, the effects of which will have their own dynamic behaviour. Change can begin with the sound itself, or the listener, or the context, as opposed, for instance, to a situation where an 'expert' imposes change without involving listeners in the process. Listeners are entirely capable of negotiating their own relationship to the environment to achieve their functional goals, as seen by the current popularity of personal portable audio systems (Bull 2000, 2006, 2007).

Where does the communicational approach leave the artist and composer? At the very least, it would seem to require a broadening if not an actual re-definition of that person's role. Some new roles may be as an aural educator, an informed mediator, a social activist, or as a contributor to an interdisciplinary team. Clearly, not all such roles may suit any particular individual, and, also clearly, the education of future artists will require a broader base of studies for them to be well equipped for this work. Of particular interest, however, is work that combines artistic creativity with social concerns, work

that I broadly refer to as soundscape composition. By its sheer diversity and use of technological innovation, it presents opportunities and challenges that surpass more traditional forms of composition.

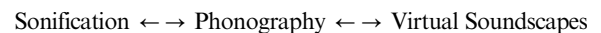
2. SOUNDSCAPE COMPOSITION: MAPPING AND REPRESENTING THE REAL

In order to situate soundscape composition, it may be useful to consider it in relation to two continua, the first of which represents possible musical relationships with outer complexity:



On the left side, where the composer concentrates on the structuring of musical sounds, we can say that 'text' is dominant and the relation to the outer world is most often expressed as musical 'inspiration'. In fact, if one were to believe composers' programme notes, one would think that every piece of music reflects the outer world, as references abound to personal experience, books read, non-musical intellectual concepts, poetry, travel experiences, and so on. However, most of these influences can be read as having an inspirational role for the composer, hence of great value, but not necessarily to the listener. If one reads these notes only after hearing the work, these sources of inspiration may be curiously surprising, but unnecessary to understanding the work itself, which usually falls into a familiar style. At the other end of the continuum, one can imagine work that is almost entirely contextually driven, as in sonification or site-specific sound installations that are discussed next. Real-world data is mapped onto sound, hopefully with some aural sensitivity but not necessarily. In between is the range of a balanced interplay between text and context that is characteristic of soundscape composition.

Soundscape composition may be situated along another continuum of practices:



The left half of this continuum involves processes that map the real world onto sound. The direct use of real-world data can be called 'audification' if it is literally interpreted as an audio waveform, or more commonly 'sonification' if a mapping process is made of that data onto sonic parameters to create some kind of auditory display. In some cases, sonification is the aural counterpart of the visualisation of data, where it takes advantage of the aural perception of pattern in appropriate mappings, for instance, which may not be apparent in a purely visual approach. This kind of sound design may be thought of as art in the service of science. Installation artists can turn the approach around as science in the service of

art, where scientific data is mapped onto sound (and possibly visuals) for the purpose of communicating that data to the public. Most of the work of Andrea Polli (www.andreapolli.com), for instance, embodies this practice in the communication of environmental issues such as global warming to a public unfamiliar with the purely scientific discourse around those issues. Likewise, sound sculptures and other installations can be activated and driven by forces or data from the real world, which may direct the listener's attention back to an understanding of some facet of that world.

In the middle of the continuum, phonography (by analogy to photography) endeavours to map the real world onto sound recordings that are usually not further manipulated other than undergoing transparent editing or mixing (Drever 2002). All recordists, as well as photographers, understand that the act of recording is far from objective or neutral, both technically in terms of microphone characteristics and strategically in terms of recording perspective and other choices with regard to location. However, the further manipulation of those recordings raises ethical issues for the artists as to representation, of what, for whom, and in what future context. John Drever himself argues for a more self-reflexive ethnographic approach – as opposed to what he calls 'sonic tourism' or 'sonic fetishism', which we will return to later.

The right half of the continuum clearly involves issues of representing the real, and it is here that activities of composers influenced by the WSP generally situate their work, moving from a more documentary approach to that which is more clearly abstracted, though never completely abstract in the sense that sounds and context remain easily recognisable (Truax 2002). I am going to suggest that further right along the continuum we move from the abstracted to the virtual, first in the sense that compositional manipulation is intended to invoke the implicit aspects of soundscape perception – that is, the inner world of memory, metaphor and symbolism. Even further along the continuum is the creation of a purely imaginary or virtual world, one that perhaps seems 'hyper-real' with recognisable elements and structure, yet logically impossible, and possibly interpretable as mythic.

This entire range of possibilities in soundscape composition is based within a technological environment where it has never been easier to obtain, through recording or filesharing, and to process environmental sound. I should point out in passing that in the traditional definition of 'soundscape' (dating from the 1978 edition) in the *Handbook for Acoustic Ecology* (Truax 1999), it is emphasised that the soundscape depends on listeners' understanding and interpretation of a sonic environment, and that it can refer to both acoustic soundscapes and electroacoustic compositions interpreted as such. Elsewhere,

I have argued that the everyday soundscape is becoming increasingly electroacoustic in its constituents, and contemporary electroacoustic composition, particularly with the multi-channel format, is becoming more environmental (Truax 2008).

With soundfiles so freely available (e.g. www.freesound.org) and portable memory-based recorders so inexpensive, it is not surprising that the younger generation often seems bewildered by the opportunities available, and perplexed by the issue of what one can or should do with all of this material. In other words, one can easily obtain and arbitrarily manipulate environmental sounds with no contact or experience whatsoever of the original context. In fact, one may question whether one has any obligation to do so. Just as Drever's reference to 'sonic tourism' implies a transient relationship as an outsider to some particular context, so too online sound libraries create a potentially even more distanced relationship to the material presented. Besides being of usually limited sound quality in the recorded representation, these 'samples' or files (note the generic reference to them) are usually accompanied by only cursory information as to their provenance. One is tempted to treat them as 'text', not 'context'.

Sound maps have become increasingly common on the Internet, where instead of files organised by subject matter (or not at all), a Google-style map is used to situate the geographic origin of the recordings (e.g. www.worldlisteningproject.org). I have found that the sound map is useful to orient people who are unfamiliar with the soundscape concept to the idea that soundscape recordings are markers of place. However, lacking any coherent temporal perspective, and usually lacking any interpretative analysis, the listener is left trying to imagine what has been recorded and what significance it has. An interesting variant of this approach is a live microphone in a fixed location that is constantly streaming audio, thereby linking it to a surveillance camera, even if the intent is different.

The issues involved with such recording and sampling are reminiscent of the ethics of appropriation with respect to other cultures. Robert Gluck has provided a nuanced survey of the motivations and strategies that have been used by a wide range of composers, and argues for a 'reflective practice' (Gluck 2008: 143) involving a repeated self-reflexive process at every stage, including feedback from those directly involved with the culture in question. The tone of respect and appreciation for the culture being represented seems appropriate for the practice of soundscape composition being discussed here, and in fact Gluck makes reference to that practice.

An excellent example of deep involvement by recordists in the soundscape they are documenting comes with Gregg Wagstaff's Touring Exhibition of Sound Environments (TESE) in the Isles of Harris

and Lewis in northern Scotland (Drever 2002). In this project and its meticulous documentation, the recordists not only engaged the local public via the recordings they made, but enabled the locals to make their own recordings and facilitated a group composition as an outcome. In addition, listening exercises and sound journals were practised in the local school and examples recorded. In other words, the soundscape was not interpreted as raw material to be exploited in a quasi-industrial mining and post-production project, even if it left the soundscape more intact than the physical counterpart does with the landscape. In fact, it seems quite likely that a learning experience was initiated with the local population whose eventual influence and results could not be foreseen.

My own practical suggestion with regard to soundscape recording and composition is to begin not with recording or processing in the studio, but rather with the experience of soundwalking in the soundscape. Soundwalking is best done with the only intent being listening, without the distraction of operating a recorder. It is arguably the most direct aural involvement possible with a soundscape and one where repetition does not dull its effectiveness, since each walk is unique and unrepeatable. It is also a good practice to open one's ears and self to whatever is inherent in an environment, with minimal preconception, ideally treated as a phenomenological experience. Several soundwalks in the same area are desirable at different times of day or even seasons, since any one exposure is a small slice of the totality. This advice is as true for one's own community as for where one is a visitor (but preferably guided by a local). After various soundwalks have been completed, the listener can make a more informed choice about recording, along with what is the best way to represent the soundscape through recording. Later in the studio, the question as to what is a reasonable representation of the soundscape can be judged based on that experience. This is not to say that an intentional emphasis or exaggeration cannot be contemplated for a specific effect or to raise an issue. I often use the example of mixing the Vancouver Harbour ambience track on the *Vancouver Soundscape* recording from 1996 (Sound example 1). In order to parallel the 1973 recording of the harbour, we wanted a four-minute mix that would include the most typical elements: waves, gulls, seaplanes, boat-horns, ferry whistle, and the noonday "O Canada" horn soundmark (which plays the first four notes of the national anthem), now situated at the harbour. If a single take had been used, only those sounds occurring just before or just after noon could have been included, and therefore many of the typical sounds of the area would probably be missed. Instead, up to four simultaneous stereo tracks were mixed together, all recorded from the same vantage

point, such that even the Seabus ferry whistle (which does not occur on the hour) was present. The issue also arose as to how many seaplanes to include, since the choice was arbitrary. In the end, three occurrences were included, which most listeners find reasonable. But the possibility existed that, in the spirit of a tourism agency wanting to present an 'air-brushed' image of the city, we could have erased all such references; or else, in order to reflect the high proportion of complaints about seaplane noise from local residents, we could have 'made a point' by including so many that a listener would realise we were making a protest statement. How to achieve a more neutral, plausible representation was determined by the experience of soundwalks in the area that noted the actual frequency of this element.

3. THE VIRTUAL SOUNDSCAPE

Soundscape composers use a variety of electro-acoustic techniques to expand the communicational scope of their compositions beyond a seemingly literal representation of actual soundscapes. It is beyond the scope of this article to survey all of their approaches, but perhaps a few illustrative examples will give a sense of their practices. Hildegard Westerkamp includes a running commentary on some of the processing she uses in *Kits Beach Soundwalk* to simulate how listening to small foreground sounds on the beach might interact with one's awareness of the ambient city sounds in the background. In *Beneath The Forest Floor*, she includes a mysterious low, thumping sound along with the forest ambience to suggest a hidden, perhaps symbolic aspect of the forest soundscape; in fact, the sound is a processed version of one of the other sounds in the piece, but she does not reveal the source to the listener, and instead plays on its ambiguity in the listener's imagination. With *Into The Labyrinth*, she transforms the spectromorphological shape of the hammering sounds she recorded in India to give them a clearly musical and symbolic identity. With my *Pendlerdrom* piece, the commuter waiting in the train station and travelling in the local train falls into a daydream in which sounds heard previously in realistic sections of the piece return in loops, surrounded by stretched and resonated versions of other sounds from the immediate environment. In the various scenes in *Island*, I deliberately juxtaposed eight surround-sound tracks of realistic ambiances with eight tracks that processed the same sounds in order to suggest a mysterious and somewhat magical character to this island visit. At times, the transformed sounds signify a distinct, 'other' element, whereas in other sections, the two types of sounds fuse together.

Since the early 2000s, multi-channel playback of soundscape compositions has provided listeners with a compelling, immersive sonic experience. Even a

simple ring of eight speakers around the audience creates a convincing simulated soundscape. Multiples of those eight speakers, particularly if positioned at different heights, can create a three-dimensional sense of space and volume. If independent (i.e. uncorrelated) sounds are fed to specific loudspeakers, sound sources appear highly localised, and, with computer-assisted diffusion, sounds can also appear to move in trajectories around the space (Truax 1998). Compositional techniques (Baalman 2010; Wilson and Harrison 2010) incorporating spatial elements, along with models for their importance in perception and cognition (Kendall 2010) have been well documented in recent years, and will no doubt continue to develop as more composers gain access to multi-channel formats.

As soundscape compositions incorporate both narrative and abstracted elements into their language, a further development is to create completely imaginary yet hyper-realistic spaces. Purely synthetic sound design for environmental sounds lags behind the synthesis techniques for instrumental and vocal sound that have been developed over the last decades, particularly in terms of the possible complexity and realism of the sound material. On the other hand, processing of recorded environmental sounds tends to suggest a level of abstraction that leads one away from realism, even if fruitfully as described above. I have discovered an interesting hybrid approach that involves convolution of different classes of environmental and synthetic sounds that I used exclusively to create my eight-channel work *Chalice Well* (2009).

Convolution is traditionally used to place a dry recording within a reverberant space by convolving it with the impulse response of that space (Roads 1996). The process simulates the way in which each reflection in an enclosed space colours the original sound and adds together with all other reflections to create a reverberant field. The theory behind the technique is described as a multiplication of spectra in the frequency domain such that frequencies that are strong in both the source and the impulse remain strong in the output, whereas weak frequencies in either spectrum get even weaker. However, it is the combination of the frequency colouration with the temporal character of the impulse that give the results the realism of sound placed in a real acoustic space.

The approach I used in *Chalice Well* was to convolve different types of textured sounds, those with a particulate quality, mainly water drops, splashes, streams and trickles, but also glass breaking, bubbles, percussive locks and doors, transposed male consonants, and differing densities of granular synthesis textures (as used in my work *Riverrun*) as both sources and impulses. Normally when one convolves continuous sounds together, the result is a smeared and quite blurred texture, but because these sounds comprised numerous impulses, the results of the convolution were

highly detailed and well defined. Moreover, the spatial qualities of the original soundfiles ranged from dry to reverberant, and so each combination produced a well-defined sense of space: dry convolved with dry producing a foreground texture; reverberant with reverberant a distant, background texture; and dry with reverberant a middleground sound. Each combination (approximately 200 were used) could be described as a hybrid sound, situated somewhere between synthetic and processed and incorporating elements of each of its parents. Families of sound textures were created and documented, since each possible permutation of sources resulted in a different but related output. Moreover, convolving file A with file B is not equivalent to convolving file B with file A if one uses a window function that is not a rectangle, hence the number of variants is potentially doubled.

While experimenting with this technique, I quickly began to sense the type of imaginary soundscape the results were suggesting, which was an underground cavern in which many types of water flows were present. One class of splashing and dripping water had in fact been recorded in a resonant well (and had already been used in the third section of my piece *Island*), and these sounds made me think of the aura surrounding wells and caverns in general, and that of Chalice Well in Glastonbury in particular. Chalice Well is a holy well situated at the foot of Glastonbury Tor in south west England, thought to be originally the island of Avalon from Arthurian legend, and the site where Joseph of Arimathea placed the chalice known as the Holy Grail. According to legend, the Tor, a masculine symbol, is hollow underneath and the entrance to the underworld, guarded by the Grail. The well, on the other hand, is a symbol of the feminine aspect of deity, and its waters are believed to possess healing qualities. The narrative idea emerged that a soundscape composition could simulate a journey down the well into the legendary and highly symbolic caverns (which have never been proven to exist). Although the convolved sounds were bright and distinct, their hybridity blurred the edges of the more realistic source sounds, and supported the illusion that one was in an imaginary space.

The well, as noted, has been gendered as feminine for centuries, and therefore I convolved a female speaking voice (that of Thecla Schiphorst as used in my work *Song of Songs*) with the various water sounds in order to create a disembodied female vocal texture that could float around the space. The sounds of the Underworld are symbolised by percussive locks and male consonants (those of Norbert Ruebsaat as used in my piece *The Blind Man*) transposed down one or two octaves and convolved with each other. I created a sonic image of the Grail by convolving a resonant temple bowl with itself and mixing four transpositions of the resulting sound. The piece has

four sections, beginning with the descent into the well and the first cavern, followed by what I call the Chamber of the Feminine (Sound example 2), then the Glass Chamber and the entrance to the terrifying Underworld, followed by the appearance of the Grail that quells the menace, and finally ending in the Chamber of the Spirits, where both masculine and feminine gendered sounds (with wind and water qualities respectively) appear to coexist.

The spatial deployment of the tracks was achieved with four sets of eight tracks each – that is, four stereo pairs spread evenly around the listener. Because of the familial nature of each set of eight tracks, and their individual spatial qualities in terms of apparent distance, it was relatively easy to create an illusion of a coherent space of great depth as well as presence. The 32 tracks were mixed to eight in a circular format, though when performed in halls with speakers on various vertical levels (such as the premiere at the Sonic Arts Research Centre in Belfast in March 2009), it proved very effective to double the eight tracks onto more than one height of loudspeakers, supporting the illusion of being in an underground cavern.

Chalice Well represents for me a breakthrough in my personal compositional evolution related to the soundscape theme, one that might be indicative of a wider trend as well. The goal of this evolution can be expressed as a realistic, but entirely synthetic, soundscape. Although one occasionally encounters claims about such a realisation, I have yet to hear a convincing example involving only sound synthesis, mainly due to the complexity of synthesising a wide range of environmental sounds. My 1986 work, *Riverrun*, now available in an eight-channel version, might be cited as an example of a synthesised soundscape because of its overarching metaphor of a river from source to ocean, realised with granular synthesis. However, none of its sounds and textures could be mistaken for actual water. The piece is intended to evoke the grandeur of a powerful river, and my original choice of the river metaphor (using Joyce's more active version of the word from *Finnegan's Wake* in the title) was designed to give a simple, coherent form to the aurally rich material that emerged from real-time granular synthesis. The fact that grains as 'droplets' could form high-density textures that had the depth of actual accumulations of water was an inviting solution at an aural level, just as the 'lifecycle' of the river flowing towards the ocean and eventual evaporation gave the piece its structural rationale.

The example of *Chalice Well*, though not satisfying this goal, suggests at least two avenues of approach. The first is a purely compositional evolution, as I have sketched out above, that proceeds through various degrees of processing sounds in ways that create abstracted representations of the real world. I suggest that these processed sounds appeal to the inner world

of memory, symbolism and metaphor. The listener is invited not merely to identify the elements of a soundscape, but to meditate on their associations and inherent meanings. In other words, the soundscape composition is not entirely focused on the literal, outer realism of its constructions, but regards the listener's mental participation and interaction with its sounds as equally important. In *Chalice Well*, the disembodied female and male vocal material, and the symbolic representation of the Grail, are clear examples of abstracted elements.

The second approach addresses the technical issues of simulating realism. Sound synthesis of musical instrument sounds has traditionally followed approaches that model either the instrument (physical modelling) or its sounds (synthesis by analysis) (Roads 1996). Both approaches are computationally challenging for synthesising environmental sounds. Likewise, realistic environmental processing such as reverberation can also be quite complex. However, the use of convolution in *Chalice Well* to combine an environmental sound with either another such sound or a synthetic one is an efficient technique for synthesising particular types of soundscape material, one that integrates timbre with spatial colouration in a manner that is similar to actual environments. Each impulse or impulsive element in the first file triggers a timbrally coloured version of the second file, and just as multiple reflections add together to produce reverberation, so too do the various convolved versions combine to produce a synthetic texture, one that acquires whatever reverberant character is present in the original sound. One can argue whether the result is truly synthetic or merely processed, but I would suggest that it lies between the two extremes. Just as the computational simplicity of the waveguide approach simplified physical modelling (by avoiding having to solve differential equations), so too convolution by analogy presents an efficient technique for simulating certain kinds of environmental sound textures, even if lacking in the type of generality that synthesis techniques aspire to.

The goal that is currently attainable, and in some ways more attractive than synthetic realism, is the creation of virtual soundscapes using multi-channel diffusion (for instance, multiple eight-speaker configurations) with abstracted sounds that evoke the realism of the natural world while offering a space for reflection by listeners about their relationships to that realism. To bring us back to the theme of sound, listening and place, one might ask whether such experiences in virtual reality will enhance our involvement as listeners with the real world, or further remove us from that kind of interaction. In order to gain some insight into this controversial contemporary issue, it may be useful to examine the evolution of soundscape composition with the parallel evolution of the soundscape from a social perspective.

4. THE EVOLVING NATURE OF LISTENERS AND SPACE

One of the many implications of electrification in the twentieth century is that it fundamentally changed listeners' relationships to their everyday acoustic spaces by allowing sounds originating from a different space and time to be introduced arbitrarily into both public and private spaces. Whereas mechanical technology had introduced a different scale of noise intensity into the soundscape, often with negative effects on individuals, electrification introduced a choice of sound, most notably music, to be added to a space, with varying degrees of public acceptance. Although the early experiments with the Telharmonium allowed music to be piped into upscale New York restaurants in 1907 to create a pleasant musical ambience, and coincidentally to increase liquor consumption (Weidenaar 1995), it was the electrification of sound recording and reproduction in the mid-1920s that permanently changed the soundscape via the loudspeaker. The city of New York's noise study in 1929 identified the sound of radios in homes, streets and stores as the third most prevalent source of complaints (after traffic and other transportation sounds), which led to a ban on outdoor loudspeakers outside stores, most notably the vendors on Radio Row in lower Manhattan (Thompson 2002).

However, recorded music (and radio) found favour in factories, its use peaking to an estimated 90 per cent of British industries by the Second World War (Cardinell 1948), with the norm not being a continuous presence, but where its effects were considered optimal during one-third of an eight-hour shift. Radio and music were also popular in private homes as a background ambience during this period, prompting George Orwell in 1946 to comment that 'In very many English homes the radio is literally never turned off, though it is manipulated from time to time so as to make sure that only light music will come out of it. I know people who keep the radio playing all through a meal and at the same time continue talking just loudly enough for the voices and the music to cancel out.' In the same essay he predicted that in the 'pleasure spots' of the future, besides creating a completely controlled, artificial environment, one would never be out of the sound of music (Orwell 1968: 80). The modern theme resort or even some larger shopping malls would seem to have fulfilled his prediction. In a 1961 survey of 1,000 listeners in New York and New Jersey, Harold Mendelsohn (1964) discovered that 78 per cent considered radio to play an important role in their lives, mainly in functional ways such as bracketing the day, as companionship during the routine of boring tasks or to counteract loneliness, to control mood and to provide information that could function as

shared experience with others, what he termed 'social lubrication'.

The practice of audio documentation of sounds other than speech or music was much slower to develop or was confined to specialised bioacoustic collections such as birdsong. Although there were isolated early experiments, such as Walter Ruttmann's 1930 radio piece *Week End* about the sounds of Berlin, field recording was not sufficiently portable, accessible or of high enough quality until after the Second World War with the advent of analogue tape recording. Tony Schwartz adapted an early 'sound mirror', as the tape recorder was then called, to allow him to record the everyday sounds of New York City, and produce various LP records for the Folkways label (Schwartz 1973). Once the microphone was turned towards the everyday soundscape, it reflected a different attitude towards what was worth recording from a social perspective, and gradually the larger soundscape became not incidental sound effects or background noise, but the subject of deliberate representation.

By the early 1970s, both of these trends – music as soundscape, and soundscape as music – converge to what I call soundscape composition. Not coincidentally, both approaches use the same analogue technology of a recording medium where sounds can be edited and mixed with usually modest amounts of processing such as equalisation and filtering. Compression started to be used in music recording, but was thought to be unnecessary for soundscape composition except perhaps for a limiter on peak sounds. If we use the 1973 publication of *The Vancouver Soundscape* as a reference point, the techniques that were used were largely edited collages of unprocessed recordings with minimal mixing, the only exception being the 'Entry to the Harbour' sequence where a ferry journey into the harbour was simulated, fairly crudely in fact, by simple mixing techniques that appeared to make sounds approach and recede. The compositional techniques were largely fixed perspective, or a series thereof, with the one example of a moving perspective (Truax 2002). However, unlike the intention of background music at the time to be ignored by what I call the 'distracted listener' (Truax 2001), these early examples of soundscape composition were designed to engage the listener in a more active form of listening, even to the point of becoming the subject of analytical listening. In other words, whereas the practice of music as an accompaniment medium was intended to impose a mood onto an existing space, one that the listener could easily ignore and accept as normal, the soundscape composition's intent was to bring the listener's existing relationship with everyday spaces into a sharper aural focus, both in listening to the composition and in daily life.

Today much has changed on both fronts. Background music gave way to foreground music with greater specialisation of the choice of music to fit the environment, and, starting in the late 1970s, the cassette-based Walkman, followed by the portable CD player called the Discman, and then today's iPod digital files, progressively gave the individual listener greater choice of sonic material in everyday surroundings. Whereas background and foreground music could be said to impose themselves on a soundscape, and thereby raise issues of public versus private space, the portable accompaniment medium of the iPod might better be described as a voluntary *embedding* of one soundscape within another, with the listener controlling not only the material but the degree to which it mixes with the surrounding environment. Michael Bull (2000, 2006, 2007) refers to this embedding as creating an 'acoustic bubble' for the listener, and has extensively documented the functional uses reported by his informants. Many advertisements as well as personal testimonials refer to this practice as creating a 'soundtrack' for everyday life, implying perhaps that the listener views the daily environment as a kind of film for which one is a somewhat detached spectator.

There are some fairly superficial comparisons one can make between the iPod user and the soundscape composer. Both can download tracks or files for their personal use, both can sequence or shuffle their materials, and both can adjust levels and perhaps apply some form of equalisation. No doubt, applications being currently introduced for the myriad of handheld devices now available will provide much more sophisticated signal processing models to the point where we can imagine that the resources for users and composers may become more or less the same. It is the degree and type of user control that has changed over the last century as briefly documented here that brings about this potential convergence. Even if aspects of this control are tightly controlled by the industry to work within accepted scenarios and formats, the appeal to the listener remains the opportunity to create a sense of order in what otherwise might seem uncontrollable daily circumstances.

I have argued above that soundscape composition during recent decades has moved towards a more abstracted approach, one that leads to the creation of virtual soundscapes. The digital game world has undergone a similar evolution, but within the form of a fairly small number of narrative scenarios. It would be a simplification to say that the distinction is merely between art and entertainment, though those identities are still very much present. From the perspective I have offered here, the most significant differences between the evolution of music as soundscape and soundscape as music are the respective concepts of the listener's relationship to place. Whether using an iPod or a game

device, the listener is choosing to imbed him- or herself within a virtual environment that is set apart from the real world, often characterised as an escape from it. The soundscape composer, on the other hand, always seems to be drawing the listener back into the real world, perhaps to stress an ecological perspective, or to rejuvenate the listener's aural sensibilities. The progression from phonographic documentation to a more abstracted approach to ultimately a virtual synthetic soundscape is one that takes the listener from surface level of an environment, recognising its sound sources and ambiances, to the mental world of psychological and cultural associations, memories and symbolism provoked by those sounds, and then to the unbounded world of the imagination.

5. CONCLUSION

The aesthetic dilemma referred to in the title is the question of how artistic practices and concerns can fit with the real-world issues of listening and place, as well as the social and environmental issues that are related to our being in the world. There is a potentially large audience ready to listen if artists have something meaningful to say about their concerns, even if (or perhaps because) the communication arises from outside the domain of commercial culture. Clearly, sound-based art has a strong potential to communicate (and I personally believe that art is about communication) if it appears to be contextualised in real-world experience, as distinct from a purely abstract world. Soundscape composition, in its varied and diverse forms, now has a lengthy tradition of working with contextualised sounds, as well as educating aural perception around everyday listening. Contemporary technology and communication channels provide new opportunities for this kind of work, most of which are only starting to be explored. However, what will give depth to this new form of artistically inspired communication is, in my opinion, a deep involvement with particular social, cultural and environmental contexts, and careful thought about what needs to be said about them. The result may not always be a personal creation, but rather emerge from a grassroots process of community engagement. It may involve technology guided by artistic intent, or it may remain purely acoustic and unprogrammable like a soundwalk. Whatever path it takes, the role of the artist composer will need to be re-defined and expanded, if not replaced by other roles such as sound designer or acoustic ecologist. But what all of these roles will have in common is the desire to creatively engage with the world through sound.

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