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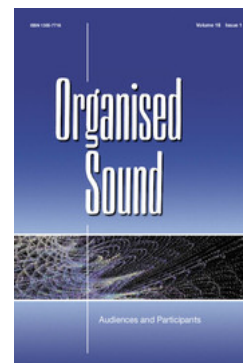
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The aesthetics of computer music: a questionable concept reconsidered

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The aesthetics of computer music: a questionable concept reconsidered

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1. INTRODUCTION

In some informal remarks I made at a conference in 1979, I expressed a reluctance to deal with the subject of aesthetics, which historically is a product of European philosophy and which remains a troublesome concept for contemporary music where an aesthetic term such as 'beauty' seems to be studiously ignored (Truax 1980). In a recent, also informal article (Truax 1999) addressed as a 'letter to a twenty-five-year old electroacoustic composer', I predicted that the term 'computer music' would probably disappear since in an age where the computer is involved in nearly all electroacoustic music production, this term, which once distinguished a type of music from that made with analogue, electronic equipment, seemed today to be impossible to define rigorously. Therefore, the concept of the 'aesthetics of computer music', proposed as a panel discussion topic, initially seemed to me to be doubly suspect as to its meaning.

If we agree to forego a definition of what we are talking about and proceed to talk about it anyway – a form of social myopia that seems commonplace in many areas of life – I am prepared to offer the following hypothesis. I will argue that computer music, however it may be defined today, has continued the Western, i.e. European, tradition of music as an abstract art form, i.e. an art form where the materials are designed and structured mainly through their internal relationships. In this model, sounds are related only to each other, what I have elsewhere termed 'inner complexity' (Truax 1994a).

Within this model (figure 1) we can identify a continuum between instrumental and electroacoustic approaches to this abstract organisation of sounds. At one end of the continuum, instrumental music practice is characterised by a separation of sound and structure, i.e. timbre is treated as separate from pitch/time organisation (even though our ears tell us differently). At the other end of the continuum, electroacoustic music practice tends to integrate sound and structure through its emphasis on sound design as integral to musical structure. The term 'spectromorphology' (Smalley 1986, 1997) neatly points to 'sound shapes' as well as their patterns of organisation as the principal concern of at least certain types of electroacoustic music, the ones that are argued to be the most unique to the medium, rather

than imitative of instrumental music. Moreover, as sound design moves increasingly towards micro-level control, I have observed that sound and structure become increasingly inseparable (Truax 1988, 1990, 1992a).

The addition of graphic images, live performers, or other media to computer music does not necessarily change the abstract character of these approaches since these other elements can be treated similarly. However, we also need to acknowledge the fact that Western music can never be entirely abstract and self-contained. It frequently imitates aspects of the real world, both in sound and pattern; it can also imitate or refer to itself in the style of 'bricolage'; and perhaps most significantly, it suggests and plays on metaphors and symbolism, some intended by the composer, others provided by the listener. Despite these dynamics of music as a form of communication, it is still usually conceived and articulated as an abstract art form – beyond words – in our cultural tradition.

Can we say that computer music somehow encourages this continuation of the Western tradition of abstraction? Probably the major factor that contributes to this direction is that, despite the trend in user interface design to make the process appear intuitive, computer music is ultimately produced by an algorithm – a program. There is always a high degree of formalisation involved, just

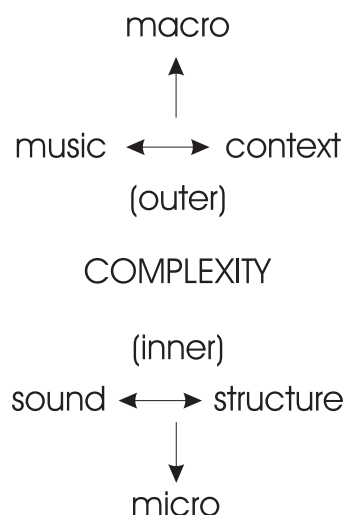


Figure 1. Schematic model of inner and outer complexity.

as all data is represented in binary form no matter what its provenance or use. It can be argued that the digital representation of music is the most abstract and context-free form it has ever taken.

Therefore, we can ask whether the aesthetics of computer music is destined to be the human response to increasingly controlled and precisely defined patterns of sound?

If so, what is missing? My answer would be, the external world of complexity (figure 1). Traditionally, this has been referred to as 'extra-musical' concerns, a term which, like the similar sounding term 'extra-marital', seems to imply dangerous territory, hence its irresistibility! Music which exhibits a significant degree of extra-musical association has been termed programme music, film music, functional music, and so on, with little doubt left as to its resulting status in the Western classical tradition.

In their study of various world cultures, some ethnomusicologists have attempted to analyse the music they find as 'text', looking for its abstract methods of patterning sound, often with the unstated conclusion that what they observe is less developed than its European counterparts. As a result, such approaches seem inevitably linked to colonialism and racism, despite their practitioners' claims to the contrary.

Other ethnomusicologists argue – more convincingly, I find – that music in other cultures is not merely text, but is integrated with its context in ways that are just as complex, if not more so, than what is found in the West (Shepherd 1992). According to this view, in oral cultures, sound-making is deeply embedded in all aspects of the culture, suggesting that, in contrast to the 'less-developed' conclusion of the text-based approach, there is an equal degree of complexity among cultures.

What makes an oral culture appear to 'progress' are changes in communication technology that allow sound-making – now called the more specialised term 'music' – to be increasingly detached from its culture and manipulated independently. First there was print and the development of musical notation which gave rise to polyphony and counterpoint (i.e. independently controlled parts designed to mesh into a whole), then opened the means to exploit the power of tonal and harmonic structures as the basis of musical language. Following print came the electroacoustic era, and the twentieth century as the first where listeners experienced music mainly through the audio media.

One of the important implications of the representation of sound as an audio signal is that it places all forms of sound, whether speech, music or the soundscape, on a continuum where the traditional distinctions between these forms of acoustic communication are blurred (figure 2). 'Music as environment' is one of those blurred distinctions. Reproduced sounds become paradoxical and undecidable; for instance, speech on a public address system can be recognised as human in origin,

but the 'speaker' must also be treated as inanimate, appearing as a surrogate vocal organ, but otherwise lacking consciousness and the ability to respond.

Moreover, electroacoustic sound may be reproduced independent of its original space/time context and embedded into other spaces in increasingly complex ways, this split between the original and reproduced being termed 'schizophonia' by R. Murray Schafer (1969, 1977). Accompanying this process of embedding may be the creation of various 'levels of remove' whereby various 'parentheses' may be opened where sounds from entirely different contexts may be intermingled within the schizophrenic experience. Such historical references may be 'read' by the listener as such, but in another sense this process of multiple embedding places all recorded sound in an ahistorical present. Listeners not only become adept at recognising historical recordings or period styles, but today we can also process sound (and images) as if they came from those contexts in order to evoke similar connotations. Advertising appears to be the driving force behind treating sound qualities as symbolic and creating increasingly complicated scenarios for listeners to decipher. After millennia of relatively slow evolution of the listening process, the twentieth century transformed that process profoundly and produced the electroacoustic listener as a consumer (Truax 1984).

The progression from orality to print to audio culminates today in the digital domain where all sound (and other forms of information) is reduced to data over which we have the utmost control, and where its distribution worldwide via the Internet makes it ubiquitous. Along the way, music and its forms of representation were turned into a commodity that could be bought and sold, owned, rented and distributed, a means of creating exchange value and wealth (Attali 1985). Today, five multi-national corporations control over eighty per cent of the music and entertainment industry as part of a trend towards concentrated ownership of global media (Herman and McChesney 1997). Surely this control over sound-making, both technically and economically, adds new levels of abstraction to its role in our culture.

2. ALTERNATIVE PRACTICES

Are there alternative practices, and hence alternative aesthetics, which are not based on these levels of abstraction? Is it possible to link inner complexity with the type of external complexity found in the real world? Can we find the kind of balance between internal and external complexity that creates a synergy, rather than a dominance and subservience, between them? If so, we may be able to heal to some degree the rift between music and context which has so characterised the past century. In doing so we are asking whether there are limits to abstraction, at least in terms of the human ability to absorb and understand. In asking this question in the

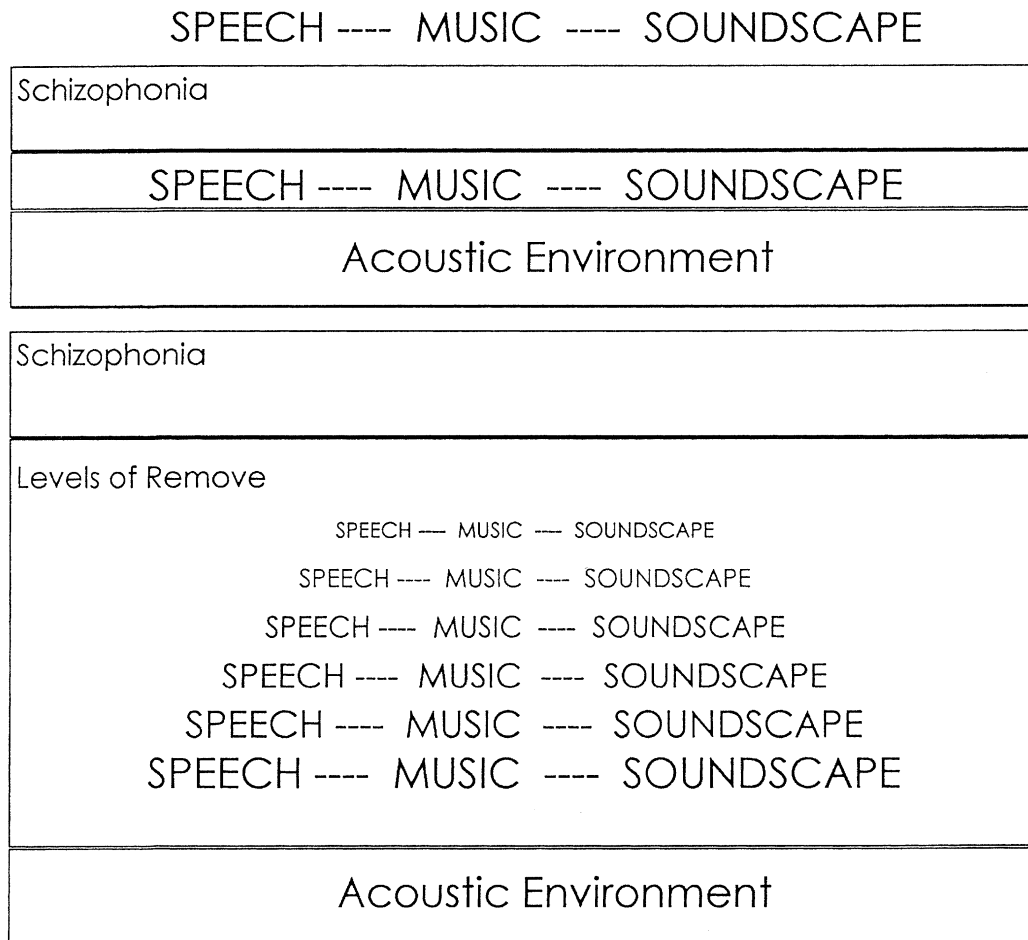


Figure 2. Speech, music and soundscape as a continuum (top), embedded within schizophonic reproduction (middle), and subject to various levels of remove in time and space (bottom).

manner of the environmentalist's query as to whether there are limits to growth, we are giving an ecological spin to the question and envisioning a more 'sustainable' relationship between artists and the public. Given the dominance of exploitative corporate culture over public culture in our society (Truax 1996a), this ecological metaphor may not be a coincidence.

The two directions which I have been exploring in my music that seem best to involve this relationship between the internal and the external levels of complexity are what I call electroacoustic music theatre and the soundscape composition. Each focuses on one end of the sound continuum which I referred to earlier (figure 2). Speech and the soundscape both anchor us in the external world, despite the reduction to an audio bit stream that technology creates with their physical manifestation as sound. There is a fifty-year tradition of involving speech and environmental sound in electroacoustic music (Chadabe 1997). Sampling technology is so prevalent that one might argue that a large percentage of the material that composers use today comes from

those sources. However, the way in which that material is used usually abstracts it from its origins, frequently making it unrecognisable, and treating it as 'raw' sound material for further quasi-industrial processing. Therefore, what distinguishes the alternative directions I am referring to is not simply the material being used, but rather the way in which the external complexity of the real world that accompanies that material is integrated within the work.

My interest in electroacoustic music theatre grows out of a love for the spoken voice, which I have used as source material in pieces such as *The Blind Man* (1979) and *Song of Songs* (1992), as well as its extension, the singing voice. As a graduate and then postgraduate student in the early 1970s, I created two such theatre works (which could also be called operas), *The Little Prince*, in one act, after the famous story of St Exupéry, and a full-length work, *Gilgamesh*, on a libretto by William Maranda. The musical accompaniment to the voices was achieved entirely with stereo and four-channel tapes, respectively. However, the lack of professional interest

in these works, combined with my own inexperience in dealing with the opera world, led me to abandon this direction and devote myself to the more pragmatic forms of the tape solo and solo performer with tape. In the 1990s, I returned to this interest and created a full-length electroacoustic opera, *Powers of Two* (1995–9), scored for six singers, two dancers, video and 8-channel tape, as well as a solo theatre piece for male double bassist and tape called *Androgyne, Mon Amour* (1997), based on poems by Tennessee Williams. This latter work has a companion piece for female cellist and tape called *Wings of Fire* (1996), based on poetry by Joy Kirstin.

It is my belief that the addition of an electroacoustic tape to live performance is not merely a matter of providing a (less expensive) technological musical accompaniment. The electroacoustic medium is inherently dramatic, despite its slow acceptance within the world of theatre and opera. All electroacoustic sound, unless performed live on some electronic instrument, is disembodied – it comes from a hidden virtual source. As such, it creates an immediate link with the imagination, memory, fantasy, the world of archetypes and symbols, essentially the internal world of human consciousness (Smalley 1992). Sounds can be transformed with the ease of protean dream images and often with the same sense of indescribability yet powerful impact. Sounds, even the most intimate vocal ones, can appear larger than life through electroacoustic processing and sound diffusion techniques. With multiple channel formats (Truax 1998), we can create surrogate environments and soundscapes of great immersive impact for the audience, which can change with the same ease as an innovative lighting design. The effect can be a diffuse sound field suggesting a timeless, mythic state, or defined with pinpoint accuracy to create a realistic sound field. Perhaps the most impressive of all is the ability to smoothly interpolate between such contrasting experiences, bridging the gap between the internal and external world.

A clue to how electroacoustic sound is able to perform such feats may be found in the mediation model of acoustic communication (figure 3). Whereas the objective approach of the physical sciences understands sound as a series of energy and signal transfers from source to receiver, the communicational model puts the emphasis on how information is created and distributed, and how sound creates relationships between the listener and the environment. Information is exchanged, but sound also mediates our relationships to the real world (Truax 1984, 1992c). Once that relationship is well established, it is only a small step for the sound to come to symbolise that relationship. Electroacoustic sound processing which preserves the identity of the original but somehow expands its qualities seems to take the reference to the source sound and allow its deeper, possibly symbolic meanings to emerge. Granular time stretching, for instance, which extends the sound without changing its

pitch, allows the listener to hear the ‘inside’ of the sound in slow motion, as it were, thereby allowing it to work on the listener’s imagination (Truax 1990, 1994b). Similarly, resonators with controllable feedback work on the frequency domain of the sound, bringing its frequency content to the foreground of one’s attention. These techniques, alone and in combination, are those which I have found the most powerful to evoke the symbolic level of sonic material.

My approach, then, in creating a dramatic work is to embody aspects of the relationships involved and their symbolism in the live performers and their actions. For instance, in both *Androgyne, Mon Amour* and *Wings of Fire*, the object of desire to whom the poetry is addressed is ‘personified’ as the instrument which the performer is playing (Truax 1998). The text itself is heard only on tape, but one can imagine it as emanating from the performer. In each work, the resonators used (based on the Karplus–Strong synthesis method) model a string and are tuned to the open strings of the instrument involved, or their octave equivalents. When stimulated by excitations other than bowing (e.g. bowing on the bridge, col legno, jeté, natural and artificial harmonics, pizzicato and snap pizz, etc.), the resonators at fairly high feedback levels act exactly as do the strings themselves when bowed. When these resonators process the poetic text, the illusion is created that the voice is being processed through the instrument, fusing the performer with the instrument, the lover with the beloved. Without this type of electroacoustic processing, the performer–instrument relationship would remain conventional and undramatic.

Even when the relationships between performer, instrument and tape work at a symbolic level, a narrative element needs to be added to make the work theatrical. Poetry itself seldom does this, at least in its shorter forms. The Williams’ poems, chosen from his collection of the same title, have no narrative component, and instead are linked by their lyrical tone and an implicit celebration of gay love. One of the better-known poems, ‘You and I’, consists of a pair of stanzas that I used as book-ends to the work, the first opening with ‘Who are you?’ and ending with ‘My lover’, and the second opening with ‘Who am I?’ and closing with ‘Your lover’. This direct address is portrayed by the performer being revealed at the start of the work astride his instrument which is propped up on a chair, using two bows to caress the body of the instrument. He is barefoot, with tousled hair and open shirt, and the audience is immediately cast into the position of a voyeur to a bedroom scene.



Figure 3. The communicational model of sound mediating the relationship between listener and environment.

The rest of the work is based on five other poems which have been brought together to form a loose narrative. The title poem, 'Androgyne, Mon Amour,' opens at noon in Union Square in San Francisco, where the poet, amidst the sexually charged atmosphere of the assembled youths and junkies, encounters a young hustler whose price he finds 'exorbitant for short lease'. His desire, which he describes as 'fox-teeth gnawing chest-bones through', turns inward as if reminded of some distant past when 'carnally I was to you/many, many lives ago/requiems of fallen snow'. The performer, now fully dressed, mirrors this action, starting with the jazzy beat of the noontime street music, a snap pizz on 'fox teeth', the forgotten modal requiem, and finally the lyrical descent into the distant memory. This poem is followed by 'Winter Smoke' which is a set of four couplets, each describing a specific gender and age, first women (who 'comfort you in winter'), then girls ('music to remember'), followed by men ('made of rock and thunder'), and culminating with boys who are 'fox-teeth in your heart'. The performer mirrors each text with an appropriate playing style, culminating with the dramatic contrast between lyrical desire and the snap pizz of the 'fox teeth'.

The next poem, 'Liturgy of Roses', is portrayed as the consummation of the poet's desire for the androgyne figure. The performer sits on the chair, cradling the instrument in his arms, playing incessant harmonic glissandi over a collage of the text, then mirroring the poem with ascending harmonics through all the strings. A dramatic shift ensues with the poem 'Wolf's hour', where the scene is 3 am, after 'an hour's sleep and a blond youth who declined to stay with me'. The performer lays the instrument down, removes his shirt and smokes a cigarette while the tape creates a chilly atmosphere with incessant tritones, distant half-heard music, and a stretched and gnarled version of the words 'wolf's hour'. The poet, however, is consoled that in his 'hands' curved remembrance there remains indelibly/the unclothed flesh of the youth who refused to stay longer', at which point the performer returns to caress his instrument and return it to an upright position.

The last poem, before the return to the 'You and I' text, is 'The Ice-Blue Wind', a hallucinatory poem supposedly about a musician playing a single tune on a wintery rooftop until he achieves a 'union with The Absolute'. The performer, still shirtless, dons a necktie, extends the spike of his instrument, and plays it while standing on the chair, moving like a mechanical marionette to the simplistic stanzas and banal melody on the tape (created from resonating a jeté rhythm). The final notes of the music are mimed by the performer. During the final scene, the performer returns to the instrument in normal posture, playing the scattered images suggested by the text, the tape ending with the title of the piece which finds the performer on the floor embracing the instrument.

The intent of this synopsis of some of the main techniques of the work is to show how a performer, instrument, text and tape can intimately interact in layers where each reflects and augments the other. Although the tape by itself conveys all of the text, narrative development and musical treatment, by itself it would have far less impact than when the live performer enacts, both physically and musically, the relationships being portrayed. The example also shows how the real-world complexity of sexuality and desire – themes that have been hitherto almost completely avoided by computer music – can be incorporated meaningfully into a work.

The larger-scale opera, *Powers of Two*, extends this type of symbolic drama to a more complex scenario whose four characters (a heterosexual couple, a gay male and a lesbian) are confused by the contradictions of the virtual world (e.g. video images and cell phones), and thwarted in their desires for love. Each goes on a spiritual and psychological quest which ultimately allows them to achieve a union with their desired other, even if by the last act they may no longer be a part of this world. The details of the work are too involved to summarise here, but perhaps a few examples will show how our theme of the disembodied virtuality of electroacoustic music and video can take on a dramatic form, rooted in the complexities of the real world.

I have described the work elsewhere (Truax 1996c) as an attempt to create a 'contemporary myth' because, in fact, myth is one of the oldest forms of communication which embodies and dramatises symbolic relationships which otherwise remain abstract. And because of their symbolic truth, such myths transcend their cultural origins and potentially speak to us today. However, we live in an age where advertising and the mass media are the main traffickers in myth and symbolism, not artists who insist on their pursuit of abstraction, thereby leaving a resounding vacuum of meaninglessness for a public starved for a reflection of themselves which is not exploitative.

The earlier article presented in some detail the scenario for Act 2, in which the gay male character, The Artist, a lyric tenor, seeks guidance from The Seer, a counter-tenor who cannot speak but can only sing and provide 'images' in the form of historical musical quotations (the 'l'homme armée,' Monteverdi's battle of Tancredi and Clorinda, Wagner's *Liebestod*, and Stravinsky's *Oedipus Rex*, plus video sequences relating to these). The Artist always misunderstands the Seer's utterances, distorts them to their opposite, but still creates beauty in the form of lyrical poetry which he sings. Frustrated by his failure to reach the idealised male image he sees in the first video, The Artist denounces the Seer (who proceeds on his own course towards blindness and insight), abandons his search for Rilke's 'god-like youth', and in searching within himself finds fulfilment. The audio tape resonates and stretches each of the musical quotations (sung by the counter-tenor)

into an immersive soundscape, including spoken versions of the texts, over which the performers sing settings of a variety of lyrical poetry.

Act 3, subtitled 'The Sybil', switches the genders of the performers from two high-pitched male singers with a female dancer, to two lower-range female singers with a male dancer. The lesbian Journalist (as the counterpart to The Artist) enters, seeking a story from The Sybil, a symbolic character who embodies traditional wisdom. Modal vocalises representing the Sibyl are processed in the same way the musical quotations were in Act 2, thereby forming the accompanying soundscape. Where the Sybil (as the 'teller of visions') extols the perfection of the Golden Age of long ago, the Journalist extols the modern perfection of television, which portrays the images of all one's desires. Two of the video sequences in this act portray this perfection by processing television adverts which feature female and male models. When the Journalist falls in love with these images, but is frustrated by their lack of attainability, the Sybil, who needs a successor or 'daughter', counsels The Journalist to renounce her materialism and become her successor. She agrees and undergoes a symbolic death and rebirth, accompanied by a musical quotation from Berg's *Lulu*, where the Countess Geschwitz sings her own Liebestod to the dying Lulu.

In the final act, 'Beyond', The Artist and Journalist are united with the dancers who accompanied them in Act 1, but whom they could not see. The baritone falls in love with the soprano's live video image in Act 1, but is rejected by the soprano who loves him but wants the ideal lover she calls Orpheus. He and the soprano reappear in the final act, but are divided by a barrier which must be crossed by the man. The solution is the reversal of the Orpheus and Eurydice myth, where Orpheus must not look at her but listen instead to her guiding voice. Representing the visually oriented, rational aspects of society, the baritone must relinquish that dependency before he can be united with his lover. These binary themes of the visual and auditory, male and female, heterosexual and homosexual, the real and the virtual, are threaded throughout the work, hence its title, and ultimately they suggest a message that these forces must not operate in opposition to each other, but rather in cooperation for unity to be achieved.

This lengthy description of the scenario of the opera is intended to show how the virtuality of contemporary electroacoustic and video technology can be used as subject matter to be reflected back into the real world via theatre and opera. By representing 'the other' and giving it a psychological and cultural form, whether through the images of desire or the media, this work attempts a synergy between the heavily processed source materials and aspects of the external world. The dramatic portrayal of these relationships in their psychological forms, such as desire, conflict, grief and acceptance, provides the audience with both a conceptual and an emotional experience of the various levels of symbolism.

3. THE SOUNDSCAPE COMPOSITION

The term 'soundscape composition' refers to a kind of electroacoustic work, much of which was initiated by members of the World Soundscape Project (WSP) at Simon Fraser University. Environmental sound recordings form both the source material and also inform the work at all of its structural levels in the sense that the original context and associations of the material play a significant role in its creation and reception. In other words, the soundscape composition is context embedded, and even though it may incorporate seemingly abstract material from time to time, the piece never loses sight of what it is 'about'.

In an earlier article (Truax 1996b), I have outlined the details of the history of the WSP and the development of soundscape compositional approaches in that context. I also outlined some general principles which seem to be followed by its practitioners, and which I would like to comment on again here. The first is the recognisability of the source material. In the more documentary approaches, most of the material presented remains largely intact and generally recognisable. There are obviously limitations to this practice, one being that many sounds become ambiguous when listeners do not have a visual reference to the source, and another being that those listeners who lack personal experience of the particular environment or subject matter may relate to it differently, or possibly not at all. Both of these pitfalls suggest that compositional technique and expertise are required to base a work on sound material that can survive in an acousmatic (i.e. sound-only) presentation – sounds and soundscapes that create vivid imagery by themselves. A typical hard lesson of one's first attempts at field recording is that the product seldom conveys the environment as well as first-hand experience of it. The sound-effects person relies on simulations as being more psychologically 'real' than actuality, and the soundscape composer relies on recording and sound design skills to do the same with real-world sounds. The cross-cultural problem may be equally tricky, but as with literature and other locally inspired art forms, the creator always hopes to suggest something more universal inherent within the specific material.

The second principle is that the listener's knowledge of context, together with associations and connotations, play a vital role in the reception of the work. Of course, this is true of all artworks, but in the case of the soundscape composition, it takes on a specific role, that of providing contextual meaning to the sounds heard. Although the composer may choose to have a 'point of view' or 'message' through the specific choice, juxtaposition and treatment of the material, to rely only on those intentions leads towards propaganda. Most soundscape compositions, I have observed, give the listener a generous role in their interpretation.

For instance, in my work *Dominion* (1991) for chamber ensemble and tape, and the short tape solo *Pacific*

Fanfare (1996), a technique was developed whereby the attack portion of an environmental signal, such as a whistle or bell, was not stretched (thereby facilitating its recognition), whereas the body of the sound was stretched up to a hundred times or more. During this extension, the listener can hear the spectral components of the sound, and thereby become a more analytical, acousmatic listener, but the context of the rest of the work also cues the listener to use this time to reflect on personal associations with the subject matter. In the case of *Dominion*, the narrative context is the creation of the country, its being tied from east to west by the railway, the experience of each distinctive region and travel between them (Truax 1992b). In the year the work was created, considerable debate was occurring over a proposed constitutional accord (which failed) and a threatened sovereignty referendum in Quebec (which later also narrowly failed). In the future, the piece may still elicit reverberations of those debates which are unlikely to disappear completely from the country's politics. Although the piece has yet to be performed abroad, it will be interesting to see how it 'travels' should that occur; even without the personal or political overtones of the piece, will it present an aural image of the country that perhaps complements the better-known visual landscapes that are so striking?

A third principle is that many or all aspects of the external context of the piece are allowed to shape its creation at every level from the micro aspect of the sound material, to its organisation and overall structure. This is perhaps the most challenging concept for the composer. To read their programme notes, one would think that every work has been 'inspired' by some real-world experience; composers cite everything from vacation encounters, to everyday family sounds, to media events, literature and philosophy as seminal to their work. However, most of the time, one can listen to the work satisfactorily with no hint of any of these sources of inspiration because, it seems, they are just that, relevant experiences which have acted as a catalyst for the composer, but the style and form of the piece can easily be related to previous practice.

I sometimes describe the difference in approach as that between the composer 'using' sounds to express some image or idea, and allowing the sounds to 'use' you, in order to see what they evoke, where they 'want' to go, and what form they need to take. The process typically works from the inside out. A simple example for me was my work *Basilica* (1992) which arose from the experience of stretching a recording of the three-bell rhythmic pattern of the basilica of Notre Dame de Québec (Truax 1994b, 1998). By expanding the bell resonances in time, it seemed as if the listener were entering a much larger space, such as the church itself. When those resonances also revealed vocal-like formants resembling a choir, the entire form of the piece was suggested – a representation of entering a basilica and

approaching the altar where a choir is singing, then exiting. Since the architecture of the basilica is a cross inscribed within a rectangle, with the lower arm of the cross being the longest (corresponding to the nave of the church), the lengthy opening section of the work, which expands the original bells (both in time and pitch), was established. To suggest the choir more explicitly, individual moments of the bell recording which had a strong vocal character were sequenced into a kind of chant-like repetition for the middle section. What remained to be decided was the ending – how does one leave the spiritual high point of the experience and rejoin the everyday world? It would have been tempting to let the metaphor decide, say by exiting into a cloister, or by retrograde back the way one came. However, in all such cases, I prefer to return to the original materials for guidance. The original bells slow down as they lose momentum until one by one each bell stops, and the city ambience once again dominates. Instead of using the original ending, I created my own where I artificially slowed down a unison ring and let the 'secular' traffic ambience of the real world creep back in, until finally one reached an acceptable cadence.

In the case of *Basilica*, the acoustic materials essentially generated the entire piece, both as sounds and as a metaphorical structure. In other cases it may be a site-specific or occasion-specific piece or installation, or else some unique subject matter (Truax 1994a). What all of these possible approaches will have in common is that the piece cannot be predicted *a priori* – instead, it will evolve as the context and materials guide it. It resembles functional design where the designer must decide whether to impose a design on an environment (and there are many out-of-place examples of such artifacts) or integrate the design with the environment. There still appears to be room for personal style and expression, but the work clearly is not merely that – in fact, in most of my own cases, the result surprises me as something I could never have imagined doing, but yet I did.

Finally, the idealism of the soundscape composition reveals itself when it attempts to carry over its influence into daily life and the listener's perceptions. Instead of exploiting environmental sound material for its quasi-musical qualities – and leaving the environment unchanged – the soundscape composition intends to change listeners' awareness of their environment (a goal of the original WSP group through their documentation of soundscapes). The composer may experience the change first. After working with environmental sounds in a concentrated manner in the studio, a curious phenomenon occurs if you hear similar sounds outside the studio – they appear to be a continuation of the piece! The audience's reactions may be more muted, but a clear bridge exists between the concert or radio experience and reality. It is difficult to imagine an abstract work having this kind of effect. Of course, something similar may occur when one listens to the piece again. In my

work *Pendlerdrøm* (1997) (The Commuter's Dream), which deals with the experience of commuting, naturalistic sections alternate with dream-like sections created with transformations of sounds selected from the realistic sections (Truax 1998). On a second hearing, one may recognise the original source of the transformation, just as one might listen differently the next time one is caught up in the habituation of the commuting experience. Therefore, with contextually oriented work such as the soundscape composition, it is not only a matter of the listener having, as Leigh Landy (1994) has termed it, 'something to hold on to', but that this point of entry into the artistic experience will feed back into everyday life.

4. CONCLUSION

I have endeavoured to trace the dominant trend of computer music and its aesthetic direction as constituting an extension of the Western art practice of giving priority to the abstract organisation of its materials and forms. I have referred to this practice as constituting a concern only for internal complexity which largely minimises extra-musical references, perhaps because of the lack of a meaningful way to integrate them within the art work, particularly given the history of music as a non-referential form of expression and the romantic notion of music expressing the ineffable. Even if the computer seems limitless in its ability to formalise and abstract sound data, it is not clear that an audience can follow this kind of complexity or that meaningful communication will occur. The political spin to this concern is whether public funding for such artistic practices which speak to so few is justifiable to anyone except artists.

In order to propose an alternative approach, I have presented two directions which my own work has taken over the last decade or so, namely electroacoustic music theatre and soundscape composition, both of which are highly context-embedded approaches to music creation. Listening and experiencing such works, as opposed to reading about them here, will hopefully convince the reader that the internal complexity of the aural experience is not lacking, even when external factors have played such a vital role in the creation of the work. Ultimately, that balance and synergy between internal and external complexity must be maintained for the approach to succeed. And if it does work, then the human response – which will have to replace what was previously termed aesthetics – will be decidedly different.

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