
Aural landscape: musical space¹

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This paper seeks to examine how sound in general (and electroacoustic music in particular) can evoke a sense of being and place which may be strongly related to our visual experience. The auditory system has evolved to seek the reasons for the soundfield it encounters and this property cannot meaningfully be ignored by composers in this medium. The acousmatic condition stimulates and enhances this response. The science of acoustics cannot any longer alone explain sound phenomena and requires psychological and ecological dimensions. The idea of the 'frame' is developed from large-scale to small-scale soundfields: 'landscape', 'arena' and 'stage' are seen to be flexible components of this approach to composition. The paper concludes that a mature relationship of audio and visual art forms requires a greater acknowledgement of these attributes of sound.

1. INTRODUCTION

I am a sound chauvinist or perhaps (better) a sound evangelist. I believe the medium in which I work is fundamental to life; indeed I believe it has a life of its own, potentially independent of visual accompaniment. I shall argue that a recognition of this independence and its strengths is essential for a mature relationship of sound art to visual art.

It is often implied that the future of music (especially electroacoustic music) lies in combination with the visual. This remark cannot strictly be justified; it is an observation based on experience of potential and real concert promoters and media coverage. The origins of this promotion of 'cross arts' activity (sound art with dance, film, video, theatre, installation, etc.) has laudable intentions – essentially the healing of deep wounds within western cultural traditions. With the decay of tribal, community and religious ritual, the 'high' arts of sight and sound went their separate ways and developed their own traditions, although the relationship was never strictly lost in popular forms.

For me, personally, most audio-visual events retain this dual nature: a kind of *gestalt* switch occurs

between the two elements, sight and sound. For example, if the music at a dance performance demands my attention, my eyes glaze over and I become aware some time later that I have missed a section of the stage action. If, however, I concentrate on the action, the music 'disappears' – or at least works on my subconscious – which is sometimes the director's intention, especially in film music.

Thus the best sound to accompany visual action is often in practice supportive, secondary and hence fails to survive as an autonomous entity without the visual element. So much music for dance and film disappears without trace in this manner. Diaghilev's *Ballets Russes* commissions or the Cage/Cunningham collaborations are magnificent exceptions – the latter quite deliberately allowing the music and dance to go their own way for our individual interpretation.

The experience of such collaborations has often left musicians and sound artists wary of their fellows in the visual and kinetic arts. The era of the imperious choreographer or film maker has been slow to pass: 'Cut two minutes from here, extend the ending and slow that section down.' In response, our musician most often shows the craft side of his/her character and complies with the request. As such this is no bad thing. A mature collaboration must include externally prompted modification or development. But that cuts both ways and sound art has too often given way to the demands of the visual/performance side without reciprocation.

The preceding argument presupposes two groups of players and a separation of audio and visual artist training and practice. Of course many of the experimental traditions of this century have been more collaborative; but the emergence of audio art from within art colleges has been conspicuously more significant than the emergence of a visual art as an indigenous co-product of music creation.²

I want to pinpoint some of the ideas that many visual artists seem to have not fully understood and

¹ This is a reworked version of a paper originally given as a talk at *Digitale '96* (Cologne) to an audience consisting largely of video artists and, in a shorter version, to the first Sonic Arts Network Annual Conference (Birmingham, January 1998). The section on 'The Darwinian ear' develops a short part of Emmerson (1995).

² Music Theatre is a notable exception with, for example in the UK, groups such as *Vocem* and *Idee Fixe*; and most recently Joseph Hyde's work *Zoetrope* combining electroacoustic music and video.

which I feel are still far from being exploited in a proper relationship with the visual medium.

2. THE ACOUSMATIC DISLOCATIONS

It is within the French tradition of *musique concrète* that the term *acousmatic* was first applied in a contemporary sense.³ The acousmatic dislocations of the late nineteenth century (recording, telecommunications and electronic synthesis) have been discussed extensively elsewhere (Schaeffer 1966, Smalley 1992, Emmerson 1994a). They may be seen as a technological extension of that very primal dislocation noted above – that between ritual theatre and sounding result⁴ – which started in the Western tradition from at least classical Greek times. Sound and action are separated in space and time and the causal chain broken; furthermore, nonmechanical causes come into play for the first time (electronic synthesis). It is evident that these dislocations are interacting and overlapping.

Hence cross-arts work is ideally ‘post-acousmatic’ in the sense of ‘taking account of and moving beyond’ and not necessarily (as is sometimes supposed) ‘anti-’.⁵

3. PIERRE SCHAEFFER: TENSIONS WITHIN ‘REDUCED LISTENING’

One of Pierre Schaeffer’s ideals was to strip down the sound to its intrinsic components and to appreciate its musical potential independent of its origin or cause. Michel Chion summarises this ‘reduced listening’ as an

[...] attitude of listening which consists of listening to the sound for *itself*, as *sound object* abstracting its origin, real or imaginary, and the meaning of which it can be carrier. (Chion 1983: 33)

This puritan view was a fundamental stage in sound art – ‘sound for sound’s sake’ – and in the fifty years since its inception it has made an invaluable contribution. But since the 1960s there has been a greater acknowledgement of a tension founded on the very basis of our ear/brain operation. It proves very difficult to hear sound only in terms of an appreciation of its shape and spectral properties as Schaeffer seemed to advocate. Just as a Pollock painting might address deep archetypes of form and feeling within our subconscious (even appearing to ‘represent’ them

³ By the French writer Jerome Peignot in a radio broadcast in 1955.

⁴ And not forgetting the subsequent dislocation of psychology, medicine and sport from this complex activity (as visitors to Olympus or Epidavros quickly become aware).

⁵ I am indebted to Waters (1996) (*Electroacoustic Music: Composition Beyond the Acousmatic*) for this point and many critical insights into the audio-visual relationship.

at times), so we listen to any sound conditioned by our primeval past and evolution.

4. THE SEARCH FOR ORIGINS: THE DARWINIAN EAR⁶

The world of sound is mechanical.⁷ Two materials impact – one may be fluid (air or water). This may be once (a single percussive attack) or repetitively (the slip/grip cycle of friction, aerophone instrument reed vibration or edge tone, lip vibration). Energy is thus imparted to the vibrating object. The auditory system goes into action. No longer is it adequate merely to *describe* the acoustic result in physical terms. Description and interpretation are no longer considered separate activities. Millennia of survival tactics have resulted in autonomic perception functions.

The questions are, of course, not necessarily asked in ‘language’ at all, although Aristotle conveniently labelled these questions (i) the *material*, (ii) the *formal* and (iii) the *efficient* causes, to which I have added the key question of location:

- (1) *What materials?* Spectral quality and envelope shape: was it metal, stone, water, objects in wind?
- (2) *What shape and size?* Frequency range, pitch/noise relation: was it large or small, flexible or fixed, regular or irregular?
- (3) *How set going? Who or What?* Quality of attack (struck, blown, snapped, rubbed, fluid motion): was it human or animal, gravity, wind or water flow?
- (4) *Where?* Direction, reverberation, high-frequency damping with distance: where is the origin of the sound with respect to my space?

We might risk mentioning Aristotle’s *final* cause which may be the result of a crucial judgement of all the above:

- (5) *Why?* Hunger, earthquake, seeking water, prey or predator near.

At first, for some composers, the pendulum swung wildly: Luc Ferrari in France and the World Soundscape Project in Canada published ‘nature photographs’ in sound (most notably Ferrari’s *Presque Rien no. 1* (1970) and the World Soundscape Project’s *The Vancouver Soundscape* (1973)). These were direct reproductions of soundscapes with minimal human intervention.⁸

The resulting tension between the two possible approaches to the materials of electroacoustic music

⁶ This section is an elaboration of part of Emmerson (1995).

⁷ And will remain so (even through the illusory ‘curtain’ of the loudspeaker) until we can wire the brain’s auditory receptors directly, bypassing the air as medium and the ear as transducer.

⁸ At least that is what was believed – we are perhaps not so naive now and acknowledge the inevitable distortion of the audio snapshot due to microphone positioning, choice of recording location, editing choices, etc.

(*mimetic* and *aural*) was quite extreme, though some composers tried to chart a middle way (Emmerson 1986). Yet it was only from the mid-1980s that a real dialectical synthesis of the two began to emerge, creating genres of music which balanced on a knife edge between conjuring up a real space in front of our ears and yet doing so with exquisite sound shapes and colours.

The 1990s have seen an increasing refinement of this approach to the soundscape, helped by the development of more flexible tools which encourage the ability of sound artists to control the 'aural landscape' created within the listener's mind.

5. ECOACOUSTICS: THE END OF HELMHOLTZ'S PARADIGM

Acoustics can no longer be separated from the sciences of perception (bioacoustics and psychoacoustics); but further, perception can only be understood as part of a greater network which includes environment and evolution (zooecoustics and ecoacoustics).

Murray Schafer (based at the time at Simon Fraser University in Vancouver where he founded the 'World Soundscape Project') was the first to look systematically at this field—at least the environmental aspects. His classic work, *The Tuning of the World*, published in 1977, sets an agenda for awareness and action which has scarcely (outside Canada, at least) had the impact it deserves. His designation of 'hi-fi' and 'lo-fi' soundscapes of our real environment remains a classic:

The hi-fi soundscape is one in which discrete sounds can be heard more clearly because of the low ambient noise level. [...] In the hi-fi soundscape, sounds overlap less frequently; there is perspective—foreground and background [...]. In a lo-fi soundscape individual acoustic signals are obscured in an overdense population of sounds. The pellucid sound—a footstep in the snow, a church bell across the valley [...]—is masked by broadband noise. Perspective is lost. On a downtown street corner of the modern city there is no distance; there is only presence. There is crosstalk on all channels [...]. (Schafer 1977: 43)

6. ECHOLOCATION

We tend to think of whales or bats when we talk of echolocation. But of course humans practise it all the time. One of the best examples of the auditory system working beyond our conscious control is simply the decoding of the 'feeling' of the room we are in. We would know roughly the size of any room, where the nearest walls were, even a good idea of its furnishing—its absorption—in the dark.⁹ It is not a

⁹ This point is sometimes considered exaggerated; but this may be because there is a natural tendency to be silent in a dark unknown space (to listen out for predators). If we clap our hands or talk we soon 'decode' the basic parameters of the space.

mystery that we perceive the presence of another human in a darkened room; it is possible they are an acoustic 'hole' to our ear, absorbing energy.

But nonetheless sound on its own may be capable of ambiguous interpretation and hence the body is put in a greater state of alertness not quite knowing what the 'real answer' is. As night falls we listen more acutely but become increasingly blind. Hence concert halls work mostly in the evenings and the artificial lights are dimmed around us. Furthermore, many listeners to acousmatic music close their eyes to aid this concentration on the one perception mode.

7. SOUND IMPLIES REAL SPACE

In Emmerson (1998) I argued that there were new possibilities of combining and working with *real* and *implied* spaces. Any sound whatsoever can suggest its source and cause, however unlikely in 'reality'. The auditory perception system can decode sound as being the result of an object with physical *dimensions*. Spectral contour and change may allow a decoding of shape, size and material, while 'loudness' may indicate proximity (not size). We can hear a clear distinction between a trumpet played loudly in the distance and one played very quietly near to us (both registering the same sound pressure level at our ear) due to our expectation of the different timbres of each sound. When the microphone was introduced to live vocal performance in the 1930s, the audience knew that crooning was 'quiet' and intimate even if (through the loudspeaker) it was loud.

This search by the perception mechanism has to a certain extent been suspended in listening to instrumental and vocal music, or at least relegated to a secondary role.¹⁰ We know (or believe we know) the sources of the sounds we hear in a recorded performance. But in music which exploits the acousmatic condition such supposed one-to-one correspondences are challenged and this 'search mode' may be brought back into play.

Such implied objects may in addition be in motion. In traditional instrumental and vocal music—while literally impossible—this was never quite lost: we can relate the 'call and response' of oral cultures to the concerto, the antiphonal (spatial) thematic working in Bach's music to gamelan. But of course we can now create the illusion of the impossible 'flight' of these objects in our new constructed space. This draws attention to a third component: the illusion of movement is only possible in a clearly defined *environmental* acoustic. One in which (once again) our evolution has established the mechanisms for our

¹⁰ See Smalley (1992) for an English language summary of Schaeffer's four 'listening modes' and their application to sound and music. But see also Windsor (1994, 1995) for an 'ecological' approach to the relation between these modes.

realtime decoding of what type of surroundings the sound objects inhabit (see above).

But in placing a strong 'ecological acoustic' argument on the table I wish to suggest an important 'loophole' for future study. We must be careful not to make such a position too inflexible or simplistic. Exactly what aspect of our perception of the sound 'flute' is part of a pre-existent template ('edge-tone/wind column resonance' – though not stored in such a simple verbal form), and what is *learnt* from our seeing and hearing flutes in early life? Will a generation brought up on synthesizer and sampler presets have the same decoding possibilities? The 'nature–nurture' debate will belatedly make its appearance here, too. But perhaps, in a parallel with language itself, high-level sound-archetypes may be hard-wired while real manifestations remain a matter of learning and are thus culturally mediated.

In summary: the qualities 'objects–motion–environment' all contribute to the total space created – and their perception is determined both by our expectations of 'real' behaviour learnt over the considerable period of our evolution and by our personal experience.

8. PLAYING WITH SPACES

In Emmerson (1998) I suggested the simple application of the idea of the *frame* (a defined area of interest) applied progressively from the largest to the smallest scale: from a *landscape* (bounded by the acoustic horizon), part of which we designate an *arena*, within which we find a *stage*, upon which we frame an *event* (see the figure).

For the sound artist using contemporary technology the process may continue, bringing the microscopic levels of sound into closer focus within the event. At the other extreme, electronics allows 'super-frames' such as the radiophonic soundscapes of Cage's *Imaginary Landscape No. 4* or Stockhausen's

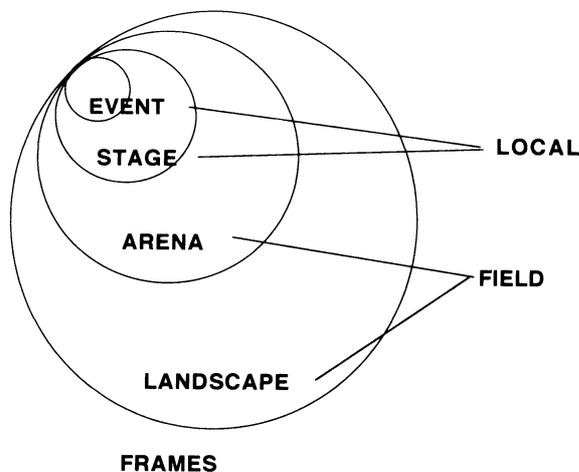


Figure. Soundfield frames.

Hymnen (metaphors, in practice, as the sounds do not *as such* exist 'out there' in the ether).

These frame definitions now become mobile, flexible and even overlapping (contradicting real-world expectations). This goes beyond just using fixed perspective in composition. Perspective can become itself a malleable object, changing with time, distorting our perception. The experiments of Ives, Brant, Cage and others using acoustic resources had already eroded the old frame boundaries; and electroacoustic means have completed the process. Such frames may now become objects of musical discourse.

Let us look at the various possibilities open to the composer using the frame terminology above:

- *Landscape/arena*. The Vancouver Soundscape Project and some of the subsequent work of its members centres on this frame transformation. The sound landscape is projected into the listening space becoming the new environment within which the listener perceives. Sometimes additional material is superimposed, effectively defining a near-stage area.¹¹
- *Landscape/stage*. 'Stage' suggests an area of clear perception from which we receive detailed information-rich signals and to which we devote maximum attention.¹² In this new virtual environment, however, we are free to create our own stage, we can move our heads, relocate our attention to specific parts of the soundscape at will – though the composer may attempt to direct us!
- *Arena/stage*. Some of the installations of Cage are good examples of this frame transformation. In performances of *Roaratorio*, for example, there is clearly no distinction between stage and arena. In electroacoustic terms this area has been most exploited through installation art and is often combined with the previous possibility.¹³

Electroacoustic means also give composers the opportunity for superimposition of different (perhaps conflicting) frames. Different stages, arenas or landscapes may be superimposed and more importantly transformed.¹⁴

The possibilities are vast and can create senses ranging from the documentary (real soundscapes), to the surreal (conflicting but apparently real) to the entirely imaginary. Trevor Wishart has pointed out that we can combine real (that is, recognisable as

¹¹ Hildegard Westerkamp's *Kits Beach Soundwalk* (1989) is an example of this and many other frame transformations.

¹² We hear detail best, and perceive direction most accurately, in a forward 120° arc.

¹³ For example, in *Roaratorio* the recordings of places alluded to in *Finnegan's Wake*.

¹⁴ McNabb's *Dreamsong* (1978), Wishart's *Vox 5* (1986), Normandeau's *Memoires vives* (1989) are good examples.

being possible in the real world) or imaginary, objects or spaces in any combination (Wishart 1996: 146–7).¹⁵ The same holds for the frame transformations outlined here.

9. NARRATIVE

Space itself can ‘tell a story’. A sense of space, of being and existing, now forms part of all the acousmatic arts of radio, recording and sound-art. Popular music is mixed to create deliberately incompatible ‘spaces’ around instrumentalists, percussion and vocals. And most radically, ‘spaces’ are plundered and remixed in the dance/techno world.

Hence space and perspective are now truly real materials with which we can compose (as 1950s idealists had always hoped). But space can also capture time: both time in general and ‘a time’ (a historical event). From (for example) the ‘events’ of Paris in 1968, to crowds in general, to crowd-like behaviour, there is a form of ‘temporal surrogacy’.¹⁶

But composers should be careful! Such spaces can carry great symbolic or iconic references which may fade or radically change with passing time. Young people in 1998 may have no resonance with the events of Paris in 1968;¹⁷ Stockhausen’s *Hymnen*, based on national anthems of the world, was composed in 1967 – creating a meta-space, a world space, around the image of a radio-space – but a substantial proportion of the anthems he used have now disappeared and been replaced; or have substantially different historical resonances – that of the USSR, for example!

10. LANDSCAPE AND THE ‘LIVE’

It would be wrong to suppose that the entire foregoing discussion applied only to acousmatic music or installation art. I have argued elsewhere (Emmerson 1994a) that ideas of *surrogacy* and *indicative field* (Smalley 1986, 1992) may and should be extended to include live instrumental gesture and wish to extend that argument here to include framing and landscape functions in live electronic music. This articulates the surreal idea that the ‘real’ instruments of the Western tradition can somehow ‘return’ to the landscape from which (in mythic history) they came. I wish to argue that live transformation (even of an apparently ‘abstract’ kind) creates landscape functions which our

¹⁵ Wishart (1986, 1996) stresses the transformation of frame *content* where here I stress transformation of frame *disposition* – changes in perspective would be an understatement!

¹⁶ To paraphrase Denis Smalley’s concept of surrogacy with respect to the source/cause of sound (Smalley 1986).

¹⁷ Specific historical resonance is an aspect of the mimetic in electroacoustic music not fully explored in the literature. For example, most of Luigi Nono’s electroacoustic works are intentionally laden with such specific references.

Darwinian ear attempts to relate to real-world experience. The auditory system searches to establish its frames of reference to spaces real and imaginary.¹⁸ While not advocating a slavish spatial onomatopoeia (recreation of a recognisable ‘real’ space to support the narrative), the relentless use of ‘remote surrogate’ spaces and landscapes may have the same alienating effect that Denis Smalley (1986) originally argued would result from overuse of remote surrogate apparent sound causes.

But what kind of landscape might we be in? Using live electronics we may conjure up an increasingly wide set of alternatives. From the direct imitation – the acoustics of a forest or mountain landscape – through vague impressions to more remote evocations of colour and texture. In addition we can create imaginary landscapes – the ‘mindscapes’ of expressionism. These ideas may overlap – sometimes reinforcing, sometimes contradicting each other – within the same transformation. Sound artists have just the same possibilities of surrealism, dreams and fantasies as any Dali or de Chirico.

11. CONCLUSION

Having been separated for at least two thousand years, the arts of sight and sound cannot arbitrarily be flung together again. I am suggesting that sound has the power to create its own visual response in humans – one which is sometimes not accounted for by visual artists – a sense of place, of aural landscape.

For a real relationship to develop there is a need for each artist in a collaboration to understand the inherent ‘crossover’ nature of each art independently: the visual as suggested by the aural *alone* and vice versa. This will involve experimenting and working together with mutual respect, accentuating the craft of the work over the romantic egotism of its ‘art’.

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Postscript: the first version of this paper which was presented as a lecture included the following music examples (extracts):

Banda Linda talking drums (Central African Republic)
 Vancouver Soundscape (tape)
 Trevor Wishart: *Vox 5* (tape)
 Robert Normandeau: *Memoires vives* (tape)
 Denis Smalley: *Tides II: Sea Flight* (tape)
 Simon Emmerson: *Sentences* and *Points of Departure* (live electronic with voice and harpsichord, respectively)

¹⁸ This applies to both *local* and *field* functions (which are discussed in Emmerson 1994b); the former refers to events on the stage, the latter to material in the arena or landscape (see the figure).

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