Acousmatic approaches to the construction of image and space in Sound Art

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This article considers ideas of image and space as they apply to acousmatic music and to sound art, establishing overlaps and compatibilities which are perhaps overlooked in the current trend to consider these two genres incompatible. Two issues in particular are considered: compositional (especially mimesis and the construction of image, and what shall be termed 'ephemeral narrative') and presentational (in particular multi-channel speaker deployment). While exploring several relevant works within this discussion, by way of a case study the article introduces the author's *GRIDs* project, a series of four multichannel sound sculptures united in their arrangement in geometric arrays of many (in some cases potentially hundreds of) loudspeakers. These permit, by virtue of being so massively (and geometrically) multichannel, the generation of extremely intricate spatial sound environments—fabricated landscapes—that emerge directly from an acousmatic compositional aesthetic. Owing to their alternative means of presentation and presentation contexts, however, they offer very different experiences from those of acousmatic music encountered in the concert hall. So the latter part of this article explores the various ways in which the listener might engage with constructed image space within these sound sculptures,

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along with the relationship of the audio content of each with its visual and situational setup—that is, its environment.

1. INTRODUCTION

It is fashionable to eschew acousmatic compositional methods and aesthetics in the development of sound art. There are a number of good reasons for this: aesthetically they are rooted in different artistic spheres—sound art originating in the plastic arts and acousmatic music in music. The rarefied listening conditions associated with acousmatic practice are generally incompatible with the environments associated with Sound Art, as are many of the aesthetic concerns and compositional approaches. This article explores the relationship between acousmatic music and Sound Art, considering compositional (especially mimesis and the construction of image, and what shall be termed 'ephemeral narrative') and presentational (in particular multichannel speaker deployment) issues. It argues that acousmatic sensibilities *do* have a place in sound art, at least in certain circumstances. While exploring several relevant works within this discussion, by way of a case study the author's *GRIDs* project will be discussed. *GRIDs* comprises a series of multichannel sound sculptures which involve the generation of intricate spatial sound environments. These emerge directly from an acousmatic compositional aesthetic but, owing to alternative means of presentation and presentation contexts, offer very different experiences from those of acousmatic music encountered in the concert hall.

2. ACOUSMATIC MUSIC v SOUND ART

Borrowed from akousmatikoi, the disciples of Pythagoras who experienced his teachings from behind a screen, acousmatic listening could involve listening to any sounds of unseen

provenance—for example, any electronically mediated sound playing from loudspeakers. However, acousmatic *music* has become habitually associated with particular stylistic characteristics originating largely from *musique concrète*. Importantly, as such, it emerges from a *musical* tradition and is therefore designed predominantly for presentation in a concert setting (distribution on CD or DVD often considered to be a documentary exercise), usually over multiple loud-speakers. To borrow Andrew Lewis's usefully identified 'four defining characteristics of acousmatic music' (2014), this means that the music:

1. does indeed provide 'nothing to see—and we know it' (*ibid*);
2. is produced for fixed medium;
3. is time-structured—that is, involves a carefully worked order of events predetermined by the composer which result in a musical logic that would be compromised by their rearrangement;
4. is gesture-based—that is, sounds in acousmatic music, whether recognisable or not, tend to be chosen/manipulated to imply energetic causation and (predominantly human) agency.

In addition, James O'Callaghan observes that 'the genre of acousmatic composition seems to call for a reduced listening position' (2011:55). This refers to an enduring hold-over from Pierre Schaeffer's proposed *écoute reduite*—that sounds being perceptibly 'reduced' to their spectromorphological characteristics when listening is a necessary condition of their being appreciated musically. Several authors identify reasons—predominantly ecological—why reduced listening from an esthesic perspective is challenging, or verging on impossible (e.g. Emmerson 1986: 6; Smalley 1992: 520; Windsor 2000:9; Wishart 1996: 129). Indeed, the acousmatic curtain 'can be seen to intensify our search for intelligible sources, for causal events' (Windsor 2000: 31). Recognition of this, along with an emerging appreciation of the

creative potential of sounds extracted directly from real life, has often inclined more contemporary composers to embrace real-world references in acousmatic music. Jonty Harrison proposes the notion of 'expanded' listening—referring to an acquired (through training) intense mode of listening that accommodates 'reference and recognition'—and composes/listens with this in mind (Palmer 2002). Alongside a consideration of spectro-morphological discourse, we should therefore consider image and mimesis as defining characteristics of acousmatic music, as well as the manner in which these are combined to construct the musical discourse.

2.1 Fixed medium and time-structured

Of the characteristics identified by Lewis, fixed medium and time-structured seem, at least superficially, the ones least compatible with sound art. The ability to listen repeatedly to an exactly fixed set of musical events is desirable for the acousmatic composer since 'it allows [them] to create music in which the tiniest detail of sound is important; transforming ephemeral, transient detail into permanent, significant detail.' It therefore enables the attentive listener to 'engage with sound in a much more detailed way' (Lewis 2014). Similarly, musical events can be choreographed such that 'things happen at "the right time"' (*ibid*). It is the latter characteristic which, according to Lewis, is what makes this 'music, not just art…. [T]ime-structuring is at the centre of the distinction between acousmatic music and the kind of Sound Art one might find in a gallery, and which often has its roots in the visual or plastic arts' (*ibid*). Alan Licht concurs: '[u]nlike music, which has a fixed time duration…, a Sound Art piece, like a visual artwork, has no specified timeline; it can be experienced over a long or short period of time, without missing the beginning, middle or end' (2009: 3). Moreover, while acousmatic music usually has a self-contained timeline which progresses in isolation of real-world time (and context), sound art—which is often presented in dynamic 'real-life'

situations (e.g. site-specific)—is more likely to be experienced within the context of real-world time, where sound events occur according to real-world events. Set against the spontaneity of real life, a rigorously fixed set of events unresponsive to surrounding activity, as delivered by fixed media, would perhaps seem incongruous.

The above distinctions are, of course, generalisations. As Licht identifies, sound art as a descriptor accommodates practice sufficiently broad as to encompass works such as Brian Eno's fixed medium Ambient Music (2009: 6). Meanwhile, music—particularly in the last century—has undergone a dramatic liberation from rigorous time structuring. And though fixed media *acousmatic* music retains this characteristic, many hybrid works combine acousmatic and instrumental compositional techniques in order to accommodate interpretative variety in performance. In Hans Tutschku's *Das Bleierne Klavier* (1999), for example, cluster strikes on the piano trigger acousmatic impact events (alongside live electronics), some of which evolve in turn into longer pre-composed phrases. The composer writes: '[t]hey become a sort of prolongation of these instrumental gestures. The energy of the instrumentalist is causing decision-making in the electroacoustic part (which never will play exactly the same way)….' (Tutschku 1999). A very similar strategy, applied in a sound art work, appears in Sam Toms's *To Flower Out* (2013), an installation conceived for the Abbey Pumping Station, Leicester. Lead paint, dripping from a height into a large receptacle, triggered resonant hammer-like impact events, many of which were given long decays that evolved into the other ambient mechanical sounds played as an ongoing fixed-medium loop in the space (Toms 2013).

In any event, many sound events in the environment occur irrespective of input from the listener, and their sources are not always immediately apparent (i.e. are acousmatic). So it is

not necessarily so easy to distinguish between fixed (time-structured) and responsive discourse in a sound stream, not least because such conditions don't often accommodate the close repeated listening required to reveal a sound as being one or the other.

2.2 Gesture-based; image, mimesis and ephemeral narrative

Acousmatic music is conceived and composed concretely (as per Harrison's differentiation of organic from architectonic structuring strategies (Harrison 1998: 119-20)), and therefore proceeds according to the composer's intuitive understanding of sonic relationships that 'work' within a given musical context. This inherently requires an equally innate understanding of the (gestural) behaviour of objects in the real world (an understanding enhanced by increased sensitivity to such behaviour on the basis of compositional training). The composer is usually aiming to shape sound such that it may be perceived as having been genuinely 'caused' by natural phenomena of some kind, even if its surrogacy (degree of perceived recognisability—Smalley 1986) is so remote as to be unidentifiable as a real-world sound.

However, acousmatic works commonly explore a set of thematic ideas which prompt the use of *truly* real-world references and sound sources, as discussed by Rajmil Fischman, among others, when considering the role of mimesis in acousmatic music (2007, 2008). Landscapes might be derived whole from raw recordings, but often they are built by layering materials via strategies identified by Trevor Wishart—providing a landscape 'stage' ('I, the nature of the perceived acoustic space'), and populating that stage with sonic protagonists whose behaviour over time, particularly their disposition upon this stage, will fill in the complete 'scene' ('II, the disposition of sound-objects within the space; and III, the recognition of individual sound objects') (1986, 45). Wishart proposes that 'by articulating the relationships

between sound images we [can] develop not only sonic structures ... but a whole area of metaphorical discourse'. This is achieved by means of 'a whole matrix of related and transforming images [within which a series of] metaphorical implications become increasingly ramified' (Wishart quoted in Fischman 2007: 6). In other words, composers connect/combine these sound images, constructing (loose) narratives by building and manipulating perceived relationships between them.

The use of the word 'image' implies something experienced as static. Indeed, Denis Smalley suggests that the acousmatic experience of a given landscape builds spatially as we aurally explore its terrain, yielding a complete 'image', which exists outside the bounds of time. Time effectively becomes space (2007, 37-8). For the listener, this image therefore persists as something akin to the memory of a photographic still—an encapsulation of the experience in a single moment. It is the combination of a series of 'stills' that together form the narrative experience of a work.

Gavin Parry and Jacqueline Butler quote David Campany in proposing that 'telling a straightforward story with a sequence of stills is notoriously difficult… [S]tatic photographs show far more than they tell, so the photo essay relies as much on ellipsis and association as coherent argument or story' (2011, 57). Photographs are involved in the process of 'showing' rather than 'telling', they suggest, and '[t]he "ruptures" between a series of photographic stills can open up a non-temporal space for thought and ideas, engaging the viewer with the possibility of *ephemeral narratives*, encouraging a more sensual and intuitive engagement with the photographs themselves.' This in turn encourages a '"looking into" rather than a reading outside of and around' the presented material (*ibid*, my italics). Such ideas have been explored quite extensively in relation to acousmatic music, for example by Katharine Norman

who compares the structuring of acousmatic music with that of montage film and documentary art (1996). Her descriptions of the experience of a number of works clearly demonstrate the very personal esthesic construction of loose narratives over time independent of the intent of the composer.

A listener's interpretation of these ephemeral narratives can be effectively finessed by the composer through various extra-musical means—programmatic aids or 'poietic leakage' (Emmerson & Landy, 2012) in the form of notes and through the title. While Simon Emmerson's Language Grid (1986) is designed to consider a piece in its entirety (rather than as a means of analysing its constituent parts), it is used in Tables 1 and 2 in the service of a cursory analysis of Francis Dhomont's *Espace/Escape* (1989) to identify and categorise some 'images' (not exhaustive) that it provokes for me, informed by the title.[1] These identify a series of significant events, moments, phrasic trajectories, constructed and recorded landscapes, all of which, encapsulated, could be viewed as 'stills' constituting in combination the ephemeral narrative of the piece.

Both space and escape are conveyed in all three areas of syntax, from the aural (the more musical of the materials), through the aural-mimetic (sounds exhibiting behaviours resembling those of real-life phenomena) to the mimetic (recorded real-life phenomena) (*ibid*). Of course these materials appear in a fixed progression determined by the composer, but in my recollection, the piece remains a collection of these 'stills'—quite vividly remembered, though not necessarily linearly configured.

[1] Only the aural/mimetic axis of Emmerson's grid is represented here; the abstracted/abstract discourse axis is of little relevance because the piece has been conceived and constructed organically (abstract) rather than architectonically (abstracted), to use Harrison's designation (1999).

Table 1: The evocation of 'space' in Francis Dhomont's *Espace/Escape* (1989)

aural	• two stable pitched iterated bleeps left and right of space [lateral/physical space] (e.g. 0.03'+) • rising/falling pitched glissandi (various timbres/textures) [vertical space] (e.g. 1'08-2'06)
aural/ mimetic	• high-energy sound reminiscent of rushing-train-and-horn [implying rapid movement] (e.g. 17'40+) • rolling wooden textures [movement through space] (e.g. 0'12-0'40) • rolling/bouncing objects disappearing to left or right with increasing reverb [movement through space (lateral/distance)] (e.g. 0'40-0'50) • scrunching wooden textures [sense of acoustic space] (e.g. 3'05-3'15) • scrunching wooden textures with glissando, increasing amplitude [movement through space; arrival] (e.g. 13'28-14'00)
mimetic	• footsteps moving left-to-right [movement through space] (e.g. 14'09-14'25) • sirens rushing past, with doppler [(rapid) movement through space] • approaching train horn, with doppler [(rapid) movement through space] (e.g. 1'52) • large acoustic of train concourse [large/reverberant acoustic; public space] • crowds of voices [public space] • wooden tapping/creaking [intimate space] (e.g. 5'37-6'40)

Table 2: The evocation of 'escape' in Francis Dhomont's *Espace/Escape* (1989)

aural	• rising and falling glissandi with attenuation denoting spent energy [released energy] (e.g. 8'32-8'57) • bleeps [latent/potential energy (imminent escape)] • throbbing/cyclic pitches [latent/potential energy] (e.g. 9'35) • throbbing/cyclic pitches moving apart spatially [divergence] (e.g. 12'42-12'49)
aural/ mimetic	• cyclic 'roulette wheel'-like characteristics [latent/potential energy] (e.g. 9'12+) • rolling/bouncing to left or right with increasing reverb [departure] (e.g. 0'40-0'50) • transition of loud drones to airy wispiness and fade [released energy]] (e.g. 2'20-2'41)
mimetic	• sirens rush past [departure (but 'foiled' escape: sirens are musically 'frozen')] • flapping pigeon wings [flurried escape attempt] (e.g. 6'38-6'50)) • footsteps moving across the space; increasing distance [departure] (e.g. 14'09-14'25) • creaking door slam [departure] (e.g. 14'41-14'50) • hum of electric train awaiting departure [latent/potential energy] (e.g. 12'13-12'20) • intimate creaks suggestive of rocking chair [escapism (*évasion de la réalité*)] (e.g. 6'37+) • child's chuckle [escapism] (e.g. 15'50-15'55)

2.3 Nothing to See?

While acousmatic sound presented in a concert situation offers 'nothing to see', this is rarely true in the case of sound art. In proposing that 'all sound material is context dependent simply because our perception of it is context dependent', Lewis is mainly referring to temporal contextualisation, which is of principal relevance when dealing with acousmatic music in the concert hall—a physically neutral space (at least in principal, and notwithstanding acoustic colouration). When dealing with Sound Art, we are dealing with sound in a context which is *not* neutral. There *is* something to see. Even an ostensibly neutral gallery will likely hold other exhibits which inform a visitor's experience of space and of a particular work.

Elaborating on issues of source identification, Lewis suggests that 'having disconnected the sound from its original source, context or meaning, we are free to re-connect it with other sources, contexts and meanings; and these may be real, implied or imaginary.' Given an additional extra-musical stimulus—be that associated media (moving image in the case of Lewis's *LEXICON* (2012), about which his article is written) or real life—the 'context' is not only musical, but also environmental; thus referential content in the sounds may well adopt additional resonances on the basis of their relationships with this environment. Nye Parry's *Living Steam* (1999) and Diana Salazar's *Spindlesong* (2008), presented in a former Victorian steam-powered pumping station and textile mill respectively, used sounds from these settings as source material (Parry 2000: 96-98; Salazar 2009: 40). In these instances, some sounds included in the sonic narrative are likely to become associated with their context even if they have no source-based connection at all with the building.

Acousmatic music is presented in a concert setting to (predominantly) a practiced community of listeners who subscribe to an established tradition of fixed seating for an extended

duration, circumscribed listening conditions (darkened environment; no visual stimulus) and (often) an entry fee. Sound art, by contrast, is typically presented in arenas more agreeable to 'casual' public interest—a gallery (accommodating walk-in-walk-out engagement) or public space. This makes it accessible to the uninitiated who, as Leigh Landy observes (2005: 31), will likely not have developed listening skills pertinent to the appreciation of intricate compositional subtleties such as those identified by Lewis, nor any predisposition towards a reduced listening focus on spectromorphological characteristics. But while the reception of real-world sounds in real-world space will be predominantly referential, this does not preclude an encouragement to listen to the internal properties of sound. Certainly O'Callaghan argues that 'we should not be persuaded to think that somehow being made aware of a sound's source prevents intense concentration toward its spectromorphological properties' (2011: 55), suggesting that detailed 'musical' listening might be encouraged if appropriate strategies are implemented to accommodate it. This is the challenge faced when applying acousmatic compositional processes to sound art: to encourage closer listening to the spectral characteristics of sounds. It may even be that physical context—having something to see—provides the 'something to hold onto factor' (Landy 1994) that enables this.

3. SPACE AND SPATIALISATION

Space and spatialisation are integral to the composition and presentation of acousmatic music, for which well-established presentation systems for the concert hall have been developed—loudspeaker orchestras and diffusion systems, for example—along with different approaches to the handling of a work's composed image space. The Acousmonium in Paris, for instance, employs 'tuned' speakers arranged in groups like sections of an orchestra to project sound according to spectral characteristics (Zanési & Gayou 2007: 278). As such it may reconfigure spatial characteristics of an original composition depending upon the layout of

these speakers. The BEAST (Birmingham ElectroAcoustic Sound Theatre) configuration, by contrast, aims to preserve a work's spatial sound field as composed, distributing speakers in stereo pairs from the front to the back of an auditorium (see Figure 1). This diffusion system, extensively discussed in Harrison (1998), grew partially to counter the practical limitations of presenting stereo works in a concert environment—namely that only a few listeners might be in a position to hear the composed space within the work as conceived by the composer since the sweet spot occupies only a limited region. Additional speakers expand the practical listening area, permitting listeners in different parts of a concert hall an experience more akin to the composer's intentions. It also enables a diffuser to 'realise' (i.e. make explicit) within concert space the implicit spatial cues carried by the fixed medium version, contributing a performative element to a concert while (ideally) enhancing the music through creative spatial deployment strategies.

Both of the above cases involve approaches that are rooted in historical conventions of musical presentation—the Acousmonium inherits an 'orchestra'-like staging of forces, and both set ups persist with fixed listener position and orientation. Stereo diffusion by necessity differentiates between x and y space: in order to make explicit the implied horizontal spatial cues (distance and left/right/surround) imposed in composition, it duplicates the stereo image, presenting multiple versions of the left-to-right ('x') plane within the front-to-back ('y') plane. The implicit spatial cues would break down if listener orientation were not fixed for stereo works in this context. However, the legacy of prescribed 'front' and 'back' remains for many multichannel works as well, which are consequently composed with such a setup in mind.

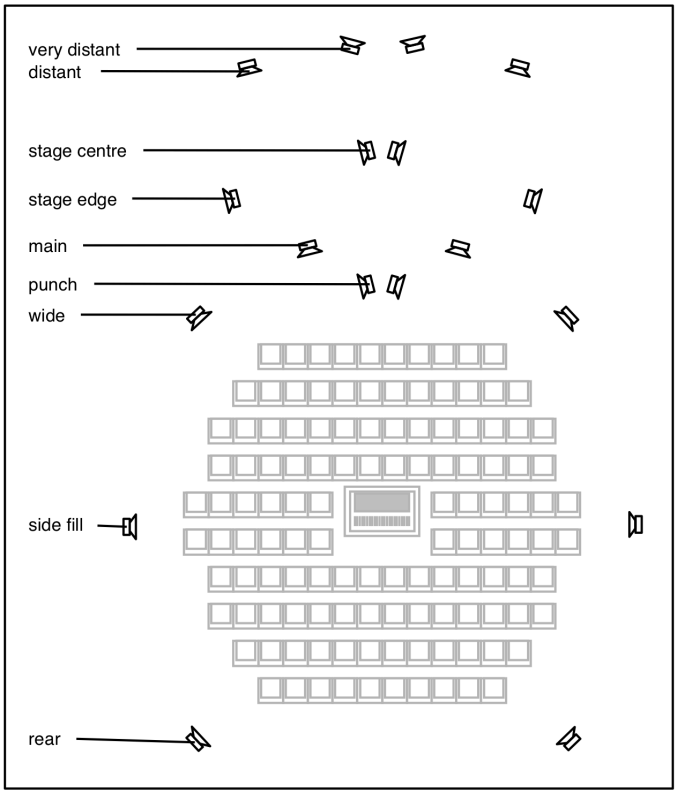

Figure 1: Duplication of stereo pairs in BEAST diffusion system (adapted from Harrison 1998: 19)

Without the strong agenda to produce coherent sound images as in acousmatic music, strategies for the distribution of sound over multichannel configurations are more varied in sound art, which embraces the mobility, changing orientation and uniqueness of experience of visitors as they navigate a work in a way that is avoided for acousmatic work presented in the concert hall. Many sound art works treat speakers as independent sources (rather than conceiving them as a single sound-producing unit), enabling exploration of spatial possibilities afforded by the deployment of sound *between* loudspeakers, or using them as point sources. Early multichannel installations tended to adopt this strategy due to the relative ease of sending sound from speaker to speaker using hardware switching mechanisms. Edgard Varèse's *Poème Electronique* (1958), presented at Xenakis's Phillips Pavilion during the World Expo, for example, involved the distribution of speakers in arrangements that traced patterns around the interior of the Pavilion. Bernhard Leitner's

proposed *Soundcube* (1969), which covered all six 'walls' of a cube room with 64 loudspeakers, proposed experiments in the deployment of sound according to lines, planes and circles around the available loudspeakers (Leitner 2008: 128-35). Several more recent installations explicitly make use of the speaker-as-point-source model. Janet Cardiff's *Whispering Room* (1991), for example, is a 16-channel work in which multiple female voices recount stories on independent speakers, permitting for visitors a cocktail party effect-like 'tuning in' to voices within the crowd (Tubridy 2007: 8).

Other works bridge the extremes of point-source and coherent-sound-field speaker deployment models. Janet Cardiff's *Forty Part Motet* (2001), a reworking of Tallis's *Spem in Alium*, is similar to *Whispering Room* in its allocation of one speaker to each voice; nevertheless it generates a cohesive musical unit by means of its function as virtual choir. David Prior's *Another Poisonous Sunset* (1998-1999; n.d.) presents a similar speakers-replacing-individual-performers model, though using stereo sets of speakers for several of the performers; and Mary Wright and Perry Cook describe groups of channels being clustered, for their *Project Arbol* project (2003), to offer distinct 'zones' in which different musical 'vignettes' of contrasting musical materials were presented (Wright and Cook 2003). Equally there are works that produce entirely amorphous yet unified textures via the asynchronous spatialised presentation of a variety of sound streams, such as Phil Kline's *Unsilent Night* (1992) in which a crowd of participants—each member of which wields a ghetto blaster that plays one of four prepared CD tracks of resonant materials—move collectively but freely around city streets according to a predefined route.

Sound Art works adopting the coherent sonic (perhaps cinematic) image approach include Luke Jerram & Dan Jones's *Tunnel Vision* (2006), in which a line of speakers along the entire

length of Brunel's 500m-long disused railway tunnel in Staple Hill, Bristol were coordinated in order to evoke the sounds of a train moving through the tunnel at speed (Jerram (n.d.)). Such coordinated use of speakers is much closer to the conception of image as explored in acousmatic music composition.

4. CASE STUDY: *GRIDs*

It seems appropriate at this point to demonstrate the application of some of the acousmatic compositional/presentational approaches, contexts and concerns discussed above to works conceived as sound art. The following section introduces three such works by the author within a series entitled *GRIDs*. These are multichannel sound installations, sculptural insofar as they are physical, navigable objects comprising geometric arrays of many (in some cases potentially hundreds of) loudspeakers. These permit, by virtue of being so massively (and geometrically) multichannel, the generation of extremely intricate and immersive spatial sound environments, which encourage ambulatory investigation and scrutiny. My approach to the composition of material for all of these environments emerged directly from an acousmatic compositional aesthetic and spatialisation practice, employed with a view to exploring how listeners might engage with constructed image space (e.g. experiencing it *through*, *beyond*, or *within* the physical object). Through these means, the listener might become more aware of both the fabricated space presented by the installation and the real space that they share/inhabit with it.

4.1 The Flat Panel—Listening *Through*

Many of the ideas explored in the *GRIDs* project emerge from the first of the projects to be realised: *Studies on Canvas* (2004)—see Figures 2a/2b. This piece presents a flat panel array

of 30 loudspeakers in a 6 x 5 arrangement behind a blank canvas (c.1.8 x 1.5m). The work is designed to be experienced as if it were a conventional painting, presenting sonic landscapes two-dimensionally through 'windows' onto those scenes. It therefore encourages a demeanour of looking/listening *through* these windows and as such the analogy of image is perhaps even more pertinent here than with acousmatic music presented in the concert hall. However, the notion of the acousmatic veil remains, with the fabric of the canvas obscuring the pictorial contents.

Figure 2a: *Studies on Canvas* (front)

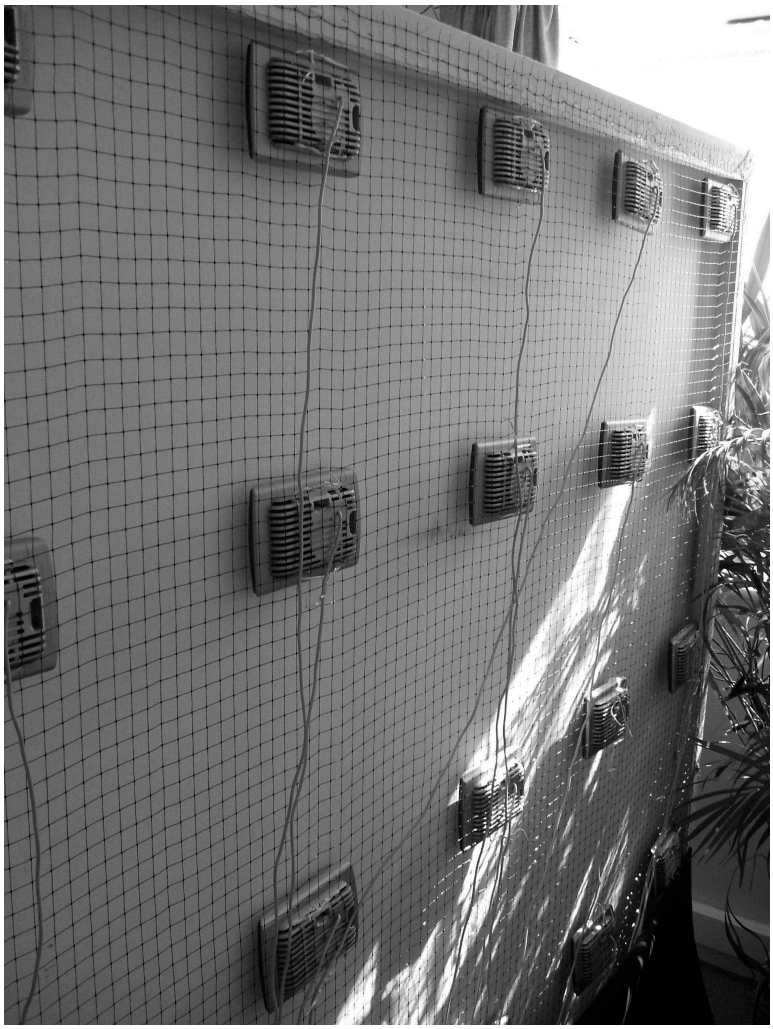

Figure 2b: *Studies on Canvas* (rear)

Canvas inherits the coherent-sound-field spatialisation approach discussed in relation to acousmatic music above, but with the speakers deployed in two dimensions and mounted on a wall such that they emit sound in one direction only. Such a model conforms to the *Space-soundObject* category of installation spatialisation archetypes as defined by Sabine Schäfer and Joachim Krebs (2003) and 'results in an optimal reception zone in which the visitor can approach and move away from the object' (*ibid*: 216).

Other sound works fitting the *Space-soundObject* category include *Transition soundings* (2005), by Birchfield, Phillips, Kidané and Lorig—a public art installation with speakers non-geometrically arranged in organic patterns across its flat surface (Birchfield et al, 2006). As

with *Canvas*, this installation presents materials that imply imagery (as is discussed later), though using largely synthetic sources. Joseph Hoffman's *Write Me Some Lines* (2009) and *Cinders Blew in Our Faces* (2010) mount speakers in rectangular arrangements on walls in order to allude to a framed 'picture', though here the speakers are very visible, being sculpturally relevant to the work (Hoffman 2011). This work conforms to the speakers-as-point-source model; the speakers are not treated as a single sonic unit (though arguably they become one by virtue of their proximity).

Leitner's *SynErgon* (2005) is perhaps closer to the conception of *Canvas*, involving 24 loudspeakers, 12 set in the ceiling in a grid pattern with another 12 facing them from the floor. Leitner describes the potential coordination of these 24 speakers, permitting the 'free flight of a bird in the coordinates of this space between several loudspeakers'.

4.1.1 Image composition in *Studies on Canvas*

Denis Smalley discusses a sonic landscape as experienced two-dimensionally, or *prospectively* (i.e. frontally, from the point of view of the observer), through a window onto that scene in Orbieu, France. He deconstructs this landscape, identifying particular sound-types (birds, frogs, tree sounds, vectoral vehicular sounds etc) as occupying specific spatial 'zones' within the vista, and suggests, as discussed above, that the entire experience, while temporal, can nevertheless be encapsulated in memory as a single and static spatial image (Smalley: 2007). As discussed earlier, the *creation* of landscapes in acousmatic composition can be achieved by Wishart's proposed 'reverse engineering' of such a scene—thus by the generation of sound-stages, or sonic backdrops, which can be populated by events, or clusters of events (zones). Object placement or population of the landscape in stereo consists of placing sounds in lateral space between the loudspeakers and applying appropriate distancing cues

(reverberation, attenuation) to imply distal space. In addition, panoramic space can be 'reconstituted' even in mono playback by means of relationships between the presented materials and by the 'shifting textural resolution of the image detected over time, the whole set up implying a certain panoramic distribution' (Smalley 2007: 38). Smalley, quoting Michel Chion, goes on to observe that vertical space will be surmised by the experiencer based on his/her previous experience of spatial behaviour in the real world: 'the sounds which we hear are connected by us to our intellectual knowledge of context, to vision and the voluminous representation of sonic causes, and to our general sensory experience' (p. 39). Moreover, 'aerial cues', for example, 'can be interpreted from morphological features set in spectral space (spectromorphology), the behaviour of texture, and the spectral resolution of the sound that informs me about relative distance' (p. 37). Consequently, the whole spatial image can be presented on (or collapsed into) two speakers and remain convincing.

While such landscape-generation devices were relevant and considered in the conception of images for *Canvas*, the precision and stability afforded by the multiple evenly distributed channels enables the image space to be greatly more detailed. The series of studies created for the canvas relied heavily on this capacity for detail which enabled the fabrication of images ranging from highly expansive, macro-scale landscapes (a rainstorm with cars passing, a countryside environment), to meso-scale details and 'still lifes' (the more focused exploration of object behaviours in certain contexts, e.g. marbles rolling down a table-top, a pool of bubbles), and to micro-scale interiors (the imaginary internal structures of objects). Marbles tracing paths from one side of the canvas to the other could be tracked easily and precisely, while rapid sequences of events (bubbles or scraping wood sounds) created a blanket of activity across the entire space in which each event could be localised.[2] The arrangement also

[2] Audio for *Studies on Canvas* can be found in stereo reduction at http://www.peterbatchelor.com/canvas.html.

accommodated precise vertical localisation which, while not always obvious when experiencing the canvas from a distance, could certainly be detected upon closer inspection (though even so, in instances involving rapid movement across the canvas where vertical movement would be hard to discern, e.g. in the depiction of marbles rolling on a bagatelle board, or off a table, lateral movement was included in the panning of the materials).

Much of the detail in the meso- and micro- focused studies involved the emulation of the spatial behaviour of objects. Emulation of natural behaviours across a flat panel can be very effective. A strong thematic thread in Birchfield et al's *Transition Soundings* is water (the piece was located in Tempe, Arizona, an environment in which water is scarce). Its reference to water lies not in its presentation of recorded water sounds (its sound content in fact consists of square waves, pulse trains and noise elements) but in the way in which interaction with the piece triggers sound activity which mimics the way that ripples emanate from a disturbance in water (Birchfield et al 2006: 44). Behavioural emulation of natural phenomena was similarly important in *Canvas.* Concatenative synthesis, for example, was used to trigger hundreds of carefully-edited samples of similar-sounding micro events in quick succession, yielding clouds of activity over the surface of the canvas and thereby functioning similarly to natural phenomena in which there are many separate events with discrete morphologies, distributed over space, that contribute to a collective whole (multiple drips becoming rain, multiple bubbles creating a bubbling pool etc).[3]

Regardless of scale (macro-, meso- or micro-), the studies for *Canvas* all presented single events or scenarios in isolation. Acousmatic compositional methods were employed to finesse

[3] Specific software—'Clatter'—was developed for this purpose using Max/MSP, which can be found at http://www.peterbatchelor.com/maxClatter.html.

materials and to ensure musical and/or spectromorphological interest within each, but accumulated activity amounted to stasis. The 'studies' of the title thus consciously implied fragments, which invited investigation and scrutiny as stand-alone 'static' images (c.f. photographic stills as proposed earlier), independent of any wider narrative context. Such ephemeral narrative concerns would reappear in a later work within *GRIDs* as discussed below.

4.1.2 Image and its absence

The use of the physical acousmatic screen represented by the blank canvas/screen was significant in providing something (albeit nothing) to see, or at least to focus the attention on. Smalley makes the point that 'although the acousmatic image may be invisible, one can also, depending on the nature of the spectromorphologies and their contextual relations, locate and track their positions in a quasi-visual manner' (Smalley 2007: 48). Nevertheless, the experience of 'viewing' *Canvas* is not entirely akin to that of 'viewing' acousmatic music in a darkened room: adopting a disposition of *looking* inherently changes the experience. John Coulter discusses the existence of a transitory mode between acousmatic and audiovisual modes of listening. He describes subjects reporting their listening mode transitioning to a 'state "close" to that of the acousmatic mode' in response to an audiovisual work fading to black (and to white, though interestingly this latter involves a slower transition) (Coulter 2007: 7). While it seems that it is the initial presentation of the image which *then* fades to black that induces this transitory state in Coulter's experiments, it seems reasonable to suppose that the setting up of circumstances and a viewing mode in which one might *expect* to see a visual image—that is, a canvas (albeit blank)—perhaps engenders a different listening mode (i.e. one that is more akin to 'viewing') to that of listening in a concert hall environment.

4.1.3 Image, frame and context

Smalley's zones of activity from his vantage point on the Orbieu soundscape are all experienced within (through) the frame of the window. The frame might be said to 'contain' the sonic image. When played over loudspeakers, such containment is, as Smalley observes, an inevitable result of conveying sound over stereo space: 'In a stereo recording, a significant and necessary transformation is that the musical "image" must be shrunk to fit the real space between the pair of loudspeakers' (Smalley 2007: 43). Even so, the idea of being able to 'contain' sound, or at least to *present* it as contained, obviously contradicts the common experience (and goal, usually, for composers exploring acousmatic spatialisation) of sound being all-encompassing: 'auditory space has no point for favoured focus. It's a sphere without fixed boundaries, space made by the thing itself, not space containing a thing. It is not a pictorial space boxed in, but dynamic, always in flux, creating its own dimensions moment by moment.' (Carpenter and McLuhan in Labelle 2010: xxi). Even over stereo playback, the aim is towards subversion of the frame via spatial widening solutions, or its 'transcendence' (Smalley 2007: 53) by means of sound materials that suggest environments greater than those accommodated by the available space. *Canvas*, by contrast, actively embraces its frame. In a manner rather similar to James Turrell's skyspace series, in which simple apertures in the ceilings of otherwise bare spaces open to the sky above, it is conceived to operate as a portal, giving a view on a framed 'beyond'. Thus the viewer looks *into* a given space, or *onto* an external (fictional) 'reality'.

This has very specific implications in terms of routing the experience of the installation in the physical space in which it is situated. When presented over a normal loudspeaker array in the concert presentation of acousmatic music, a composed (acousmatic) image is *superimposed* upon the existing acoustic of the concert hall; thus, for example, 'acousmatic acoustic spaces

smaller than that of the listening space will appear contained within it – rooms within a room' (Smalley 2007: 53). By contrast, any sounds emitted into the room in which the wall-mounted canvas is placed are subject to the acoustics of the (viewing) space just as if they were real sounds coming through a window from outside. The frame of the canvas can therefore house a fictional interior with its own constructed acoustic in which a series of constructed sound images play out. This separates it from the room acoustic, the implication being that these sounds are only affected by the room acoustic as they emerge into it from (seemingly) outside—a subtle distinction but an important one that is afforded by the wall-mounted flat-panel array when presenting sound images.

As such, arguably the image will always, to a degree, be site specific—i.e. routed to the site in which it is presented. Being sonic, even if its contents are completely unrelated thematically to that site (i.e. the imagined portal presents an incongruous or impossible space in relation to the one from which the viewer is viewing), they might remain 'outside' that space, but will still be affected by the surrounding acoustic of the room, thus tying them intimately to the context.

If the canvas were to be expanded in order to occupy an entire wall (as a mural, for example) the walls that adjoin that wall would become the frame. By extension, there would of course be the possibility of presenting the canvas such that it occupies all four walls of a room (rather like Leitner's *Soundcube* (1969) mentioned above, but this removes the frame entirely: the flat panel *becomes* the space within which it is presented, and is subject to exactly the same space-superimposed upon space issues of the multichannel concert environment. *Canvas* relies on its frame for its portal-like *Space-soundObject* nature which separates the object from its acoustic.

The relationship of the viewer with the visual image on *Canvas* also extends to that of active choice of viewpoint and of navigation of the image over time. Contrary to the case of concert-presented acousmatic music in which movement of the observer might compromise 'perspectival relations so carefully conceived in idealised conditions' (Smalley 2007: 50) there is no intended ideal listening position for *Canvas*: viewers are encouraged to engage with it as they would a piece of visual art. Thus they might change their viewpoints in order to scrutinise the spatial and textural intricacies of the work *in addition* to pulling back to see the 'bigger picture'. It is the abovementioned 'static' nature of the presented sound studies that affords this mode of engagement, since the overall quality of each will remain the same long enough to view from a variety of perspectives. Such exploration often yields very different experiences of the behaviour of objects across the canvas: listening from the left side, for example, the left-right trajectories of marbles across the surface change from lateral movement to close-distant. So while time does indeed become space in the experience of the often static images on the canvas (see Smalley above), just as in the experience of viewing a visual art work, space becomes time in the navigation of the (eyes/)ears over the canvas's surface.

Returning to the issue of proximate vs distal space discussed earlier: in this relationship of the canvas with its acoustic environment, while such space could be manufactured by the composer in relation to the surface of the canvas (i.e. *within* the manufactured image), it could also be generated by movement of the viewer around the space in which the work is presented, since distance and acoustic cues would also be added to the sounds emanating from its surface. Thus the intimate sounds presented over the surface of the canvas would nevertheless, in being coloured by the room's acoustic, become experienced as distant for a

listener at a distance from the canvas. The ability to move around the canvas as single point-of-origin of these sounds thus permits the experience of the image to become dependent on distance and orientation of the listener.

4.2 The curved panel—listening *beyond*

DOME(s) (2012—see Figures 3a and 3b) comprises one or more 2V geodesic dome or sphere constructions with speakers placed in the vertices between the triangular panels of each. The dome model presents an enterable 3D space, but can be seen as a continuous (albeit curved) 'flat panel' when considered from the point of view of the listener who sits or lies within, experiencing sound circumferencially and distally—always outwards/surrounding. The dome is simply a hemispherical/spherical speaker system, so could accommodate the presentation of anything electroacoustic that is conceived for such a space. While other domed and spherical speaker systems exist, however, these are commonly large and attached to specific concert venues (e.g. Zirkonium, Karslruhe and SARC, Belfast); *DOME* is small, and therefore intimate, cheap and, importantly, portable, permitting its placement in a variety of different settings, both indoor (e.g. galleries, foyers) and outdoor (e.g. street, forest).

Figure 3a: DOME installation at Jakopic Gallery, Ljubljana

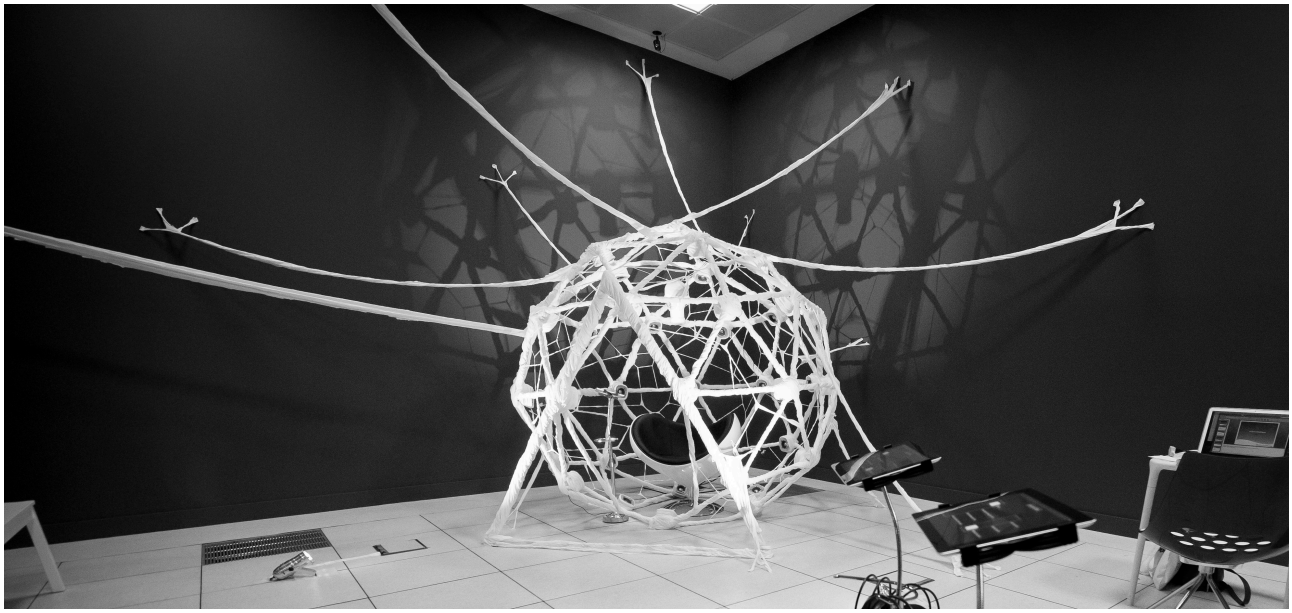

Figure 3b: DOME installation at Phoenix Arts Centre, Leicester (DOME cladding by Ian Bilson[4])

[4] www.ibdesigner.com

The capacity for placement in an environmental setting, in conjunction with similar fabricated sound worlds over multiple speakers as those discussed in relation to *Canvas*, has encouraged consideration of how these compositional strategies involving material appropriated from life might be experienced when reinserted back into life (the real world). And in turn, what impact this might have on compositional intent and process. In all cases, the domes are designed to be unenclosed and thus acoustically transparent, enabling the inhabitant to experience the soundscape beyond the playing loudspeakers (ideally a park or other outdoor public space) as an extension of that presented by the dome itself; indeed, sounds from loudspeakers may be indistinguishable from those coming from beyond. Thus, while the dome provides a sense of enclosure and safety, it is paradoxically designed to encourage a much wider awareness of space (and place), affording the listener an experience akin to Mallarmé's notion of 'transparent prolongation' (McCarren 1995, 756-7): a listening-*through* of the constructed land(sound)scape into the already-there.

I have discussed the possibility of such ambiguity elsewhere, proposing that, for example, 'a device akin to the aircraft-to-drone transformation in Christian Calon's *La disparition* (1988) (c.8'00-9'00), presented in a permeable dome situated in an outdoor environment, would be made still more musically and poetically compelling if the aeroplane was indistinguishable in its [spectral and] spatial behaviour from a real aircraft passing overhead, particularly if the performance took place near to a light-aircraft strip' (Batchelor 2007: 9). Quite a dramatic perspectival shift would surely occur through the transition from (relatively passive) perception of the wider environment (plane and birdsong) to that of (a more active) awareness of the electroacoustic origin of the sounds from proximate speakers (the drone). Compositionally, therefore, the narrative may become one of flow between states of the

perceived nature of the dome—its physical characteristics and material structure—and its context.[5]

As such, in contrast to the use of isolated 'stills' as studies in *Canvas*, ephemeral landscape narratives—explored by means of acousmatic compositional strategies as discussed above—are intrinsic to the conception of DOME. Such a sound art work accommodates the embedding of these narratives deeply within 'real life', potentially leading the ear into closer listening to the environment and thereby encouraging reflection on (via a re-experiencing of) everyday environmental sound phenomena. Intensifying the search for source causality, they become perhaps a listening aid—inviting/encouraging a re-experiencing (or simply raising an awareness) of the existing sonic environment (Prior 2010). As such, I see such a strategy as uniting acousmatic compositional concerns with those of soundscape and acoustic ecology, and perhaps providing a means of reconnecting the acousmatic art with a 'life' context.

4.3 The cluster—listening *within*

CLUSTER (2011 (prototype)—see Figure 5) reimagines the grid configuration of speakers in three dimensions, presenting a cuboid-shaped suspended walk-through array of independent, approaching-omnidirectional speaker units.[6] It remains related technically—and invites similar acousmatic compositional/spatialisation strategies in the development and delivery of sonic imagery—to the aforementioned flat-/curved-panel models, but offers a very different experience in its accommodation of walk-in-walk-out investigation. Experienced from *within*, it returns to a condition of superimposed acoustic spaces as described in relation to the

[5] Audio for *DOME* can be found in stereo and 8ch reductions at http://www.peterbatchelor.com/dome.html.
[6] *CLUSTER* was significantly influenced by the work of Cornelia Parker, whose structured arrangements of suspended objects (e.g. *Cold Dark Matter: An Exploded View* (1991) and *Heart of Darkness* (2004)) are striking.

concert hall above, and a coherent sonic image over the entire space is harder to render (since the image is not frontal, phantom images will not be stable between speakers, and sound will inevitably gravitate towards the speaker units as listeners move around the space). Nevertheless, the sculptural nature of the cluster renders it a *circumambulatory Space-soundBody* (Schäfer & Krebs 2003: 216-17)) and therefore invites 'viewing' from outside, yielding a single coherent spatial image, but one that has physical depth.[7] In this way, the three-dimensional relationships between juxtaposed or nested static (still-life) image zones within the overall cluster image can be investigated from a variety of viewpoints, expanding the exploratory potential for the listener.

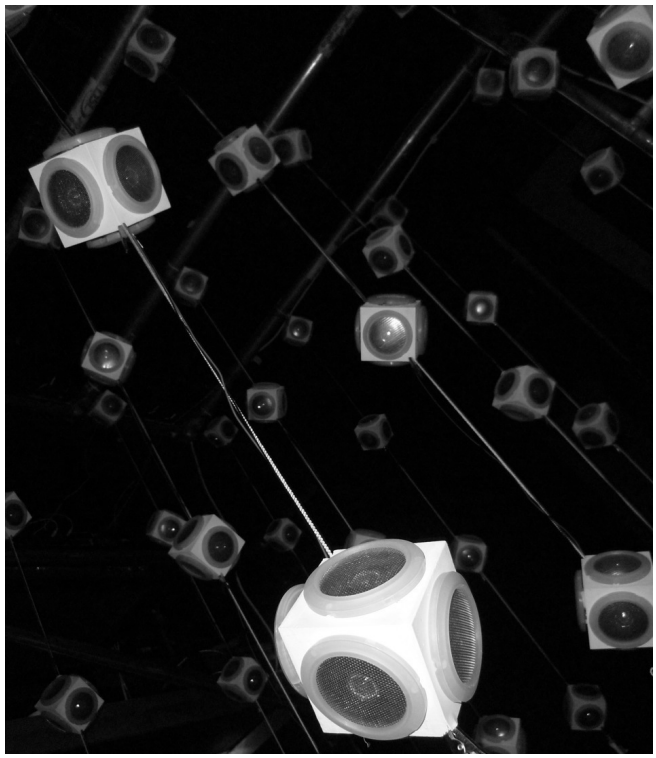

Figure 4: *CLUSTER* installation prototype

[7] Future implementations of *DOME* are planned which will implement a series of concentric domes, permitting the experience of such physical depth circumferentially from the inside looking out.

5. CONCLUSION

In spite of extensive coverage in relevant literature of the techniques and aesthetics of acousmatic music, relatively little addresses the creative potential of the associated compositional strategies and spatialisation of such a practice in applications beyond traditional modes of presentation. It has been the aim of this article, therefore, to identify some potential overlaps and compatibilities between acousmatic music and sound art which might prove fruitful (indeed, I *have* found fruitful) when applied to broader, sound art related practice. These might in turn offer a worthwhile and accessible aesthetic experience to those *not* well versed in acousmatic music, encouraging greater public engagement in the sonic arts more generally.

REFERENCES

Batchelor, P. 2007. Really hearing the thing: an investigation of the creative possibilities of trompe l'oreille and the fabrication of aural landscapes. *Proceedings of the 2007 Electroacoustic Music Studies Conference*. Available at: http://www.ems-network.org/spip.php?article289 (Accessed 07/09/14).

Birchfield, D., K. Phillips, A. Kidane & D. Lorig. 2006. Interactive Public Sound Art: a case study, *Proceedings of the 2006 International Conference on New interfaces for Musical Expression (NIME06)*. Paris, France. 43-48.

Chion, M. 1994. *Audio-Vision*. New York: Columbia University Press.

Coulter, J. 2007. The Language of Electroacoustic Music with Moving Images. *Proceedings of EMS 2007: The Language of Electroacoustic Music*. Available from http://www.ems-network.org/IMG/pdf_CoulterEMS07.pdf. Accessed 05/09/14.

Emmerson S. 1986. The Relation of Language to Materials. In: Emmerson S. Language of Electroacoustic Music. Basingstoke: Macmillan, pp. 17-39.

Emmerson S. 1999. Aural landscape: musical space. Organised Sound 3(2): 135–40

Emmerson S & L Landy. 2012. The analysis of electroacoustic music, the differing needs of its genres and categories. Proceedings of the Electroacoustic Music Studies Network Conference Meaning and Meaningfulness in Electroacoustic Music, Stockholm, June 2012 www.ems-network.org

Fischman R. 2007. Mimetic Space: a conceptual framework for the discussion, analysis and creation of mimetic discourse and structure. Proceedings of the EMS07 Conference, De Montfort University.Leicester*: Electroacoustic Music Studies Network*. http://www.ems-network.org/spip.php?article266

Fischman R. 2008. Mimetic Space – Unravelled. *Organised Sound* 13(2): 111-22.

Harrison, J. 1998. Sound, space, sculpture: some thoughts on the 'what','how'and 'why'of sound diffusion. *Organised Sound*, *3(2)*, 117-127.

Hoffman, J. 2011. Personal communication (24/09/11).

Jerram L. No date. Tunnel Vision. Available at:

http://www.lukejerram.com/projects/tunnel_vision. Accessed on 15/09/14.

Labelle, B. 2010. *Acoustic Territories: Sound Culture and Everyday Life*. London: Continuum.

Landy L. 1994. The 'Something To Hold on to Factor' in Timbral Composition. *Contemporary Music Review*: 10(2).

Leitner, B. 2008. *.P.U.L.S.E..* Ostfildern: Hatje Cantz Verlag.

Licht, A. 2009. Sound Art: Origins, development and ambiguities, *Organised Sound*: 14(1). Cambridge University Press, 3-10.

McCarren, F. 1995. The 'Symptomatic Act' Circa 1900: Hysteria, Hypnosis, Electricity, Dance. *Journal of Critical Inquiry* 21(4): 748-74

Norman, K. 1996. Real-world music as composed listening. Contemporary Music Review, 15(1-2), 1-27.

O'Callaghan, (2011) Soundscape Elements in the Music of Denis Smalley, *Organised Sound* 16 (1), pp. 54-62.

Parry, A. (2000). *Limits of Abstraction in Electroacoustic Music*. Unpublished thesis (PhD). London: City University.

Parry G & J Butler. 2011. Towards Ephemeral Narrative. Image & Narrative, Vol 12, No 4

Prior, D. No date. Another Poisonous Sunset (1998-99). Available from http://www.liminal.org.uk/portfolio/another-poisonous-sunset/. Accessed 26/11/12.

Prior, D. 2010. The Cochlea Unwound: A Case Study for a Listening Aid Using a Sonic Crystal Array. *Performance Research.* 15(3): 95–102.

Salazar, D. 2009. *Portfolio of Original Compositions*. Unpublished thesis (PhD). Manchester: University of Manchester.

Schäfer, S. & J. Krebs. 2003. Sound – Time – Space – Movement: the Space-soundInstallations of the artist-couple <sabine schäfer // joachim krebs>. *Organised Sound*: 8(2). Cambridge University Press. 213-25.

Smalley, D. 1986. Spectro-morphology and structuring processes. In Emmerson S. *The language of electroacoustic music*, 61-93.

Smalley, D. 1992 The Listening Imagination: Listening in the Electroacoustic Era. In Paynter, J. et al. *Companion to Contemporary Musical Thought Vol 1* London, Routledge, pp. 514-554.

Smalley, D. 2007. Space-form and the acousmatic image. *Organised Sound*, 12(1), 35-58.

Toms S. 2013. To Flower Out... YouTube. [ONLINE] Available at: https://www.youtube.com/watch?v=a0Hudtm1xBE. Accessed 15/09/14.

Tubridy, D. 2007. Sounding Spaces Aurality in Samuel Beckett, Janet Cardiff and Bruce Nauman. Performance Research: 12(1). Routledge, 5-11.

Tutschku H. 1999. Das Bleierne Klavier programme notes. Available at: http://www.tutschku.com/content/works.en.php. Accessed 14/09/14.

Wishart, T. & S. Emmerson. 1996. *On sonic art*. Amsterdam: Harwood Academic Publishers.

Wishart T. 1986. Sound Symbols and Landscapes in S. Emmerson, ed., The Language of Electroacoustic Music. London: Macmillan

Wright, M. & P. Cook. 2003. *Project Arbol:Deer-B-Gone*: journal of a guerrilla sound installation. *Organised Sound*: 8(2). Cambridge University Press. 133-7.

Zanési C & É Gayou. 2007. A house of composers. Organised Sound 12(3), 277-278.