REALLY HEARING THE THING: AN INVESTIGATION OF THE CREATIVE POSSIBILITIES OF *TROMPE L'OREILLE* AND THE FABRICATION OF AURAL LANDSCAPES

ABSTRACT

This article considers the fabrication of aural landscapes and in particular the notion of *trompe l'oreille* —fabricated landscapes that are indistinguishable from reality. It involves the comparison of a number of sonic illusion types which clarify the latter concept and discusses technical and logistical issues relevant to its successful implementation before exploring the creative/compositional possibilities that it affords and its relevance within existing acousmatic theory and practice. I am especially interested in its possibilities as a means of subtly *directing* the reality into which it is incorporated and encouraging deeper environmental listening by the casual observer, which has obvious ramifications in terms of acoustic ecology. As such it is perhaps worth considering as a means of allying soundscape and acousmatic approaches to sound and sound design. These issues will be discussed with reference to examples from my own and others' work, and in particular with an emphasis on multichannel presentation environments which accommodate this practice.

INTRODUCTION

This article is an investigation of the creative use of *trompe l'oreille* and related areas of sonic illusion in electroacoustic—most particularly installation—contexts. My interest in this subject has been prompted by my attempts to expand my own compositional practice involving electroacoustic media to presentation situations outside the concert hall, presenting in new listening contexts (including large-scale public spaces) and exploring the relationship between compositional and environmental space. It seems there are a number of issues that arise with the fabrication of aural landscapes which are highly pertinent to acousmatic compositional thought and soundscape studies but which are discussed minimally in existing literature pertaining to either subject, and this has prompted me to explore the matter further.

Trompe l'oreille, a rather nebulous term, could be used to refer to any sonic discourse that, quite literally, 'fools the ear' in some way. For the purposes of this text, however, a more specific definition is sought. Katharine Norman describes *trompe l'oreille* rather elegantly as 'the experience of, not "hearing the real thing," but of "really hearing the thing"' (Norman 2000, 220). We might therefore define the practice as involving the presentation of recognisable (or referential) sounds in a manner sufficiently indistinguishable in spatial and sonic behaviour from reality as to allow the listener to believe s/he is *truly* 'hearing the thing', if only (and in many cases explicitly) for a limited period. In the same way as its visual equivalent, the *trompe l'oeil*, it seeks to present a plausible landscape, often through the apparent extension of an existing one, from which it may be indistinguishable.

In view of this definition, the following discussion involves the comparison of a number of sonic illusion types in order to clarify the term and will establish criteria relevant to its successful implementation. Typological, technical and logistical issues will therefore be discussed (including, for example, ethical implications of its use), in addition to its possible applications, including creative/compositional possibilities that it affords and the way in which it fits into existing acousmatic theory and practice. I am especially interested in its possibilities as a means of subtly *directing* the reality into which it is incorporated and encouraging deeper environmental listening by the casual observer, which has obvious ramifications in terms of acoustic ecology. As such it is perhaps worth considering as a means of allying soundscape and acousmatic approaches to sound and sound design. These issues will be discussed with reference to examples from my own and others' work, and in particular with an emphasis on multichannel presentation environments, partly because this is an area in which I have some experience, and partly because such contexts tend to lend themselves well to (and are perhaps indispensable to the successful achievement of) *trompe l'oreille*, which, I will argue, relies heavily upon space and spatial behaviour to appear

'real'. It is with this in mind that the discussion begins with an examination of spatial illusion in electroacoustic media.

ILLUSORY AURAL LANDSCAPES

Spatial illusion is almost universally practiced in any medium which makes use of the loudspeaker. So much so that instances are no longer perceived as illusory phenomena (if indeed they ever were). But illusions they remain; the centre of the stereo speaker space is empty, and there is nothing behind. By separating sounds horizontally between speakers, and mimicking the ways in which sound-emitting objects are perceived at different distances from the listener, we create the illusion of aural perspective—reverberation, attenuation and the reduction of high frequencies are tactics used to lend depth perception, and simulate the increasing distance of a given source. Movement within these planes enhances the illusion. Francis Dhomont's *Espace Escape* (1989) is a comprehensive study in such techniques, allying convincing simulations of spatial movement with anecdotal fragments which convey a sense of space or of escape.

Sound can be used to alter the character and volume of a space as perceived when listening, albeit impressionistically. Kurt Blaukopf compares the 'clear space' associated with the wooden interiors of Baroque cathedrals, due to their augmentation of reverberation in the upper frequency ranges, with more 'obscure space' characteristic of Gothic cathedrals which favour longer reverberation time in the lower frequencies (Blaukopf, 1971 Space in Electronic Music, cited in Minard 2006, 77). The emulation of these qualities through the application of processing to captured sounds will place them, seemingly, within such spaces.

The space itself can be contrived to mislead the ear in its interpretation of a sound and sound placement. A reflected sound from a building, for example, can mask the true direction of origin of that sound if the origin is masked. And sound can be amplified or attenuated, made to seem closer or further away, by the physical properties of a space. Michael Asher's installation at Pomona College, 1970 (LaBelle 2006, 90-1) presented an hourglass-like configuration of two rooms, joined by a narrow corridor. One of the rooms was open to the outside, allowing environmental sound to enter and permeate the spaces. The funnelling of sound from one room to the other served to amplify the sound reaching the inner space, distorting the perception of space and proximity in the process.

More generally, psychoacoustic strategies can be used to alter the perception of an acoustic reality, for example by using drone-like or wide-bandwidth sounds to mask mid-volume, intrusive sounds and thereby through consistency imply a relative silence, or at least static-ness, which does not exist. (Minard 2003, 77-8). Bill Fontana's *Sound Island* (1994), which involved the relocation of sounds from the Normandy coast to the Arc de Triomphe in Paris, was designed to mask the sounds of the traffic on the roundabout that surrounds it in such a way: "The sound of the sea is natural white sound, and has the psycho-acoustic ability to mask other sounds, not by virtue of being louder, but because of the sheer harmonic complexity of the sea sound." (Fontana 2002b).

FABRICATING AURAL LANDSCAPES

These latter are predominantly illusions which subvert our perceptions of the existing landscape. But what of *fabricating* illusory landscapes? Wishart discusses two processes in the creation of a plausible sonic landscape when composing for an acousmatic listening context. The first is the generation of a sound-*stage*, or backdrop, in which to place events. This stage might include a variety of sounds which set a notional scene within which something might happen. The second is the placing of events on (or within) this stage so that they fit the contrived scene (Wishart 1996, 139-155). In the electroacoustic concert environment, the entire constructed landscape (the stage and the things that occupy it) is superimposed on the existing concert space landscape (i.e. the concert hall), which will have its own resonant characteristics

and formant structures. The composed landscape 'reality' exists within and is framed by the concert hall reality and the listener must necessarily enter a kind of spatio-contextual contract with the composer in order to engage with any presented real-world content that exists in the compositional narrative. This is rather like subscribing to the narrative in film; allowing oneself to become immersed in the presented storyline though with a latent knowledge of its artificiality.

The Fontana work discussed above exemplifies the spatial displacement of sound—the use of 'musical information networks' (Fontana 2002a) to send soundscapes over long distances (this is an idea common to several Fontana works). But the fabrication of sonic 'elsewheres' can be used more functionally to engender a sense of *emplacement* or 'being there' when presenting otherwise inaccessible soundscapes for, for example, educational purposes. Nigel Frayne discusses the construction of 'naturalistic habitat environments' appropriate to the exhibited animals at the Singapore Zoological Gardens: 'visitors respond more emotionally to an exhibit, they learn more about animal-environment interactions and have increased awareness of the natural environment when ambient soundscapes are introduced' (Frayne 2004, 16). Akin to this is *temporal* displacement via the fabrication (or resurrection) of extinct soundscapes, as regularly occurs in museums and historical re-enactments. The reintroduction of machine sounds originally heard in the 'sonic oxymorons' (Tixier & Houdemont 2004) of now-decommissioned factories is a common example of such a practice, often occurring during the current vogue of city regeneration programmes and eliciting interesting collective memory experiences from former workers who return to hear it. Nye Parry's work *Living Steam* (1999) at the Kew Bridge Steam Museum involved the presentation of recorded steam engine sounds in such a way as to recreate a sense of those machines (which, though resident in the space, were often not actually 'in steam') actually being in motion (Parry 2000, 96-98). In this case, the recordings were essentially indistinguishable from the real things. Generally, however, historical/natural habitat facsimiles, while often highly convincing and consistent with how things are/were elsewhere/elsewhen, nevertheless remain at one remove from *trompe l'oreille* since as listeners we are aware of the contextual displacement; it still requires some suspension of disbelief—another listener contract—in order to accommodate the illusion.

In instances of *trompe l'oreille*, the whole point is to avoid any such contracts. We become part of the fictional landscape whether we choose to or not. The illusion of a sonic reality is total, the divide between the real and simulated entirely transparent. Issues of simulation and simulacrum are clearly relevant here (though I do not propose to elucidate the connection in full): we are simply 'substituting the signs of the real for the real' (Baudrillard 1994, 2) such that it is impossible to tell the difference, and even to the extent that the unreal may 'precede' and direct the real. Creating such illusion certainly has practical applications: the (recorded) sound of a barking dog behind a locked door is a powerful deterrent to any would-be burglar. Conversely, the imitation of bird and animal calls used as a *lure* is well documented. Christina Kubisch (cited in Gerke 2003, 48) talks of a 'concert of frogs that she once heard in a landscape as dry as dust. It turned out that the sounds were hunters trying to lure waterfowl with the recorded croaking of frogs.

## TYPOLOGIES: PORTAL VS INHABITABLE *TROMPE L'OREILLE*

There are perhaps two obvious forms that *trompe l'oreille* might take. The first is as an extension of an existing space. In this instance the illusion is essentially 2D—a *portal* that we can't enter, but which offers a fictional 'beyond' to existing space. This is the form most analogous to *trompe l'oeil*, which is equally flat-panel and similarly implies depth through sensorial trickery. In this instance, we require both of the landscape generating factors that

Wishart proposes above—we generate the landscape (possibly based on the existing space, though a portal might lead anywhere—to outside in the case of a window), and fill it.

The second is the insertion of sonic objects into an existing space. In this case the stage is already provided; we need not provide another. We need only populate this existing stage with sounds which, in order to be perceived as 'belonging' to that stage, should in their spatial, spectral and in general behavioural characteristics fit its 'logic'. This latter *inhabitable* or 'stage contents' model supplements a landscape that we can walk into, and become part of—something that is incidentally not possible with *trompe l'oeil* (we shall ignore virtual reality for the purposes of this discussion) which, along with the former 'portal' approach, can only be looked/listened into.

TYPOLOGIES: SPATIAL CONFIGURATIONS

In terms of their spatial configuration, these two forms map quite convincingly onto the Sabine Schafer and Joachim Krebs categories of installation spatialisation (Schafer & Krebs 2003), see Figure 1, which propose a useful taxonomy of spatialisation types in installation works. The *Space-soundObject* radiates sound in one direction only—it is in essence two-dimensional. This is clearly the framed 'beyond' or *portal*, operating as per a traditional 'stereo' viewpoint, looking into a given space. *Inhabitable trompe l'oreille* belongs to both the *circumambulatory Space-soundBody* and *enterable Space-soundBody* spatial models. The former is a sound emitter which broadcasts (i.e. projects *outwards*) in all directions. This is unlikely to be a single entity in *trompe l'oreille*—more, perhaps, a series of point-sources which are placed within the given sound-stage. These are necessarily static, unless there are means of moving the loudspeakers, since trying to move sound *between* speakers will result in inconsistencies in perspective for listeners at different positions in relation to these speakers. The *enterable Space-soundBody* presents an enclosure which the sound is directed *into*. Inevitably with true enclosure we run into the same problems with superimposed acoustics as discussed above, although we could consider this to be an extension, or encirclement of the *Space-soundObject*/*portal*, one that is designed to present a periphery, or a 360º beyond to the enclosure's interior.

The Space-soundObject   The circumambulatory Space-soundBody

The enterable Space-soundBody   Space-within-Space
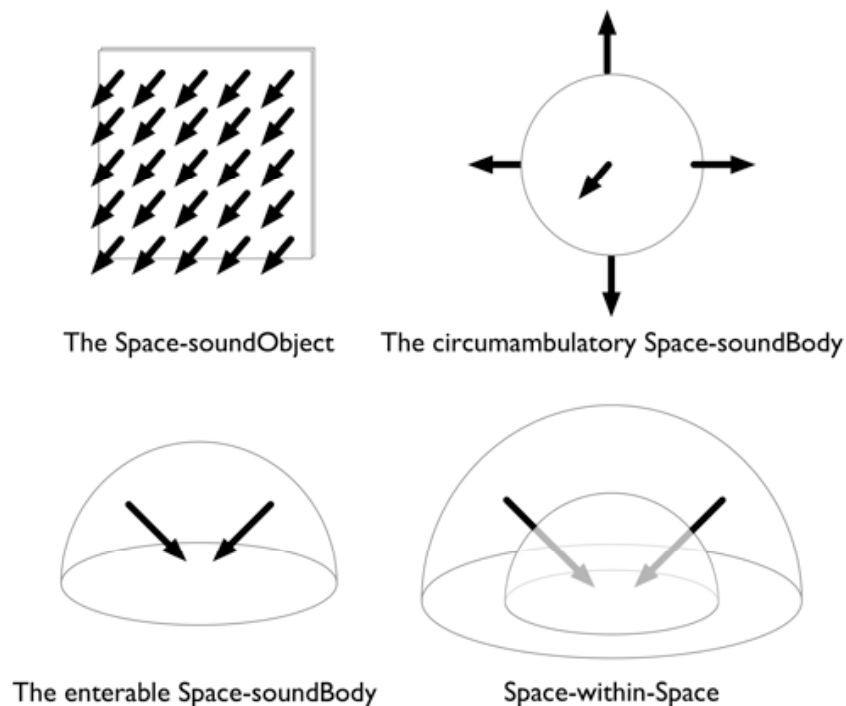
Figure 1: Graphic representations of Sabine Schafer and Joachim Krebs' categories of installation spatialisation

As for *Space-within-Space*, the disorientation of listening to a binaural recording through headphones is an experience familiar to many and is certainly one way in which the ambiguity between the real and the emulated/recorded (i.e. the space-within and the space-without) might be explored creatively. In 2001 I contributed to an installation on Aldeburgh beach which required me to compose a musical commentary about a French seaside resort. The piece was presented on headphones and used several binaural recordings of footsteps on pebbles which, serendipitously, were indistinguishable from those made in reality by walkers on the beach. Though unintended, this added a compelling, albeit unsettling, element to the piece. A similar, less intimate space-within would be facilitated by a permeable enclosure (e.g. geodesic dome framework), enabling, for anyone within the enclosure, ambiguity as to sounds originating from speakers attached to that enclosure, and those coming from beyond it. This in combination with binaural headphone content would of course permit both intimate and intermediate inner levels of space.

MAKING IT CONVINCING: THE IMPORTANCE OF CONTEXT AND BEHAVIOUR
Context has already been mentioned as a critical aspect in the presentation of *trompe l'oreille*; and this is particularly true of the *inhabitable* model. Placing the right kind of bird sound in the right kind of forest, for example, is critical to its presence being credible in that environment. In fact, context is such a strong determining factor in the success of an illusion that it can allow, for example, approximations to pass for the real thing: put synthesised clicking or 'chirping' in a heath land and it might well be interpreted as a cricket sound (Wishart 1996, 150-1); put a deep rumbling under the sidewalk in Times Square and it might be interpreted as the subway (Neuhaus, 1990). On the other hand it seems safe to assume that it was the incongruity of the frog calls in a parched landscape that drew Kubisch's attention to these sounds in the first place.

Misleading contextual information can be leant by the strategic application of visual cues. Synchresis (Chion 1994, 63-4), which allies seen and heard as part of the audiovisual contract, is another illusory device which has become embedded in contemporary media. Dubbing and foley regularly involve the assigning of sounds which have little to do with the concurrently portrayed visual event—the use of a squelching watermelon sound to accompany the crushing-of-the-head visuals, for example. The problems encountered with the early talkies simply proved the necessity of synchronicity between audio and visual phenomena, and the skill involved in the misdirection, in order to facilitate this effect. Similar skills are required of the ventriloquist. The 'thrown' voice can be both disorientating and unnerving; and even when obviously used for entertainment, or performed poorly (i.e. we can see the ventriloquist's lips move) the impulse for the observer to attach personality to an object can be irresistible. In spite of the obvious visual content of such illusions, as with most *trompe l'oreille* there necessarily exists an acousmatic curtain in order for the illusion to be successful, though in these instances the curtain lies in the misdirection: for the film, it is the association of an unrelated image to a sound; for the ventriloquist, it's the non-moving lips and theatrical trickery.

Equally critical is the behaviour (or morphology) of a sound source. Spectral behaviour is usually captured in the recording; but spatial behaviour must also be considered. Trevor Wishart talks of his attempts to record a bluebottle by sticking it to the end of a pen and recording it while it buzzed. The raw recording was, however, unrecognisable as a bluebottle sound when static, and it was therefore necessary to impose movement artificially afterwards that would fit our learned understanding of the way the bluebottle behaves (Wishart 1996, 151). He goes on to talk about group behaviour (1996, 185), proposing the terms *Alarum*—a single event which acts as a catalyst for a series of others (e.g. a single cry of alarm in an animal group triggers 'a whole mass of

individual cries')—and the *Dunlin-effect*: birds in a flock, each with its own trajectory but as a group behaving as a mass object. In compositional terms these are clearly related to *flocking* or *streaming* motion types as suggested by Denis Smalley (1997, 117) and can of course can be emulated in the studio. They become all the more convincing, however, when rendered spatially; i.e. with the various units making up that flock or stream deployed to emulate the spatial behaviour (trajectories and so on) and distribution that they would have in reality.

The difficulties of applying movement to *circumambulatory soundBodies*, and by extension to sounds within the *inhabitable* model of *trompe l'oreille*, has already been mentioned: to have the contents move or flock convincingly without the image changing as the listener moves through the space is quite difficult on static speakers, although a large number of point-source speakers might be adequate to convey a sense of group behaviour, albeit static. Even so, group spatial-behavioural emulation lends itself more to the *portal* model.
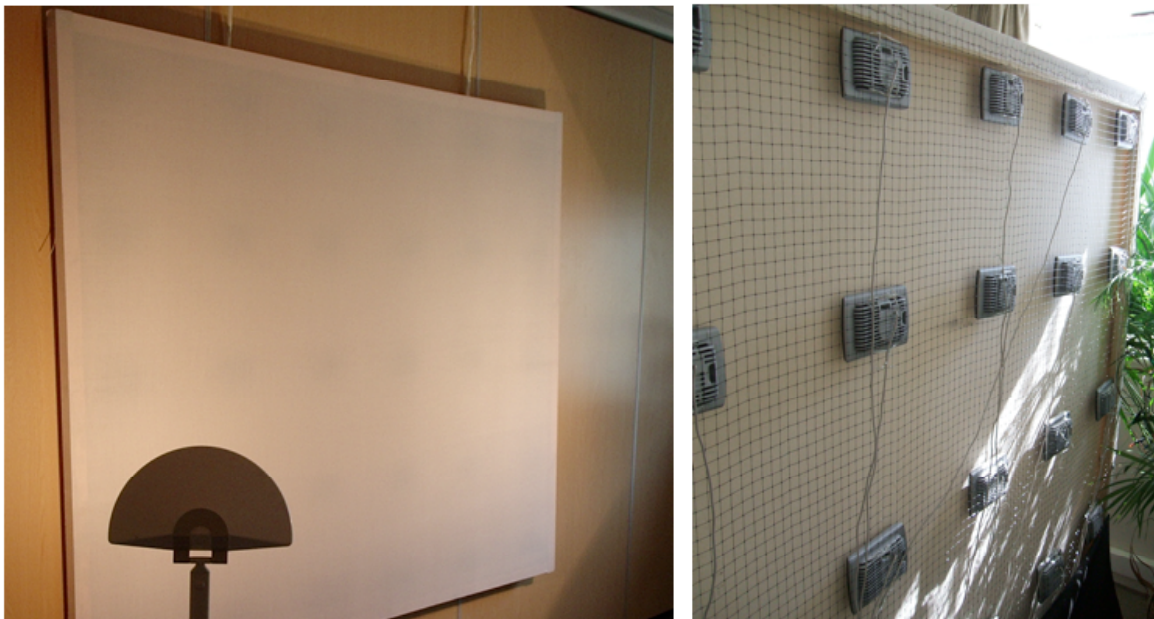
Figure 2: *Studies on Canvas* **(2004)**

My own work *Studies on Canvas* (2004), which comprises 30 flat-panel speakers behind a blank canvas, fits the *Space-soundObject* category in being two-dimensional and portal-like—see Figure 2. The canvas operates as a physical acousmatic curtain which obscures a series of spatially coherent 'images' behind. These images range from 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 (marbles rolling down a table-top, a pool of bubbles), and to micro-scale interiors (the imaginary internal structures of objects). Emulating spatial behaviour was critical to lending a sense of reality to these studies, and although the canvas was never intended to be *trompe l'oreille* as such, for many of the studies the same configuration of speakers deployed against a curtained window *would* very likely fool the ear. In fact, the main advantage of the flat-panel configuration of speakers for this purpose is exactly that: that when presented in a room where the sounds are affected by the existing acoustic properties of the space, they are only affected in the same way as sounds would be if originating through any window.

BREAKING THE ILLUSION
Having established that we *can* simulate, or create the illusion of reality, there is then the issue of what happens when these illusions break down. Ernst Gombrich points out that the allure of

trompe l'oeil lies in large part in the knowledge or *discovery* of the illusion, in particular '… in our continued feeling of incredulity that the visual effect … has been achieved on a flat hard panel by a skilled hand using a brush dipped in paint' (Gombrich 1982, 180-1). In other words, we delight in sleight-of-hand, we relish the craftsmanship, or virtuosity, involved in the work's execution, and we are curious as to how the effect was achieved. The same is true of aural illusion. As argued above, the skill of the (sound) artist lies very much in understanding the *behaviour* of such sounds in reality, how things will sound from a particular point of 'view', as well as a sense of how far the illusion can be pushed before it breaks.

So how far *can* the illusion be pushed? Returning to Ernst Gombrich, once an illusion is established, '[w]e may hold on to [a] wrong interpretation till it suddenly gives way to a different reading' (Gombrich 1960/77, 187). In other words, having been fooled, there is a kind of perceptual inertia that delays our acceptance of a given phenomenon as being illusory. Eventually, however, we might reach a point where the unrealness of (or anomaly in) the presented landscape becomes too obvious to ignore. And once we have reason to believe that our eyes (or ears) are being fooled, we begin to search for flaws in the illusion—the absence of the expected source, or the ventriloquist moving his/her lips, for example—until the whole illusion collapses.

It is at this point that we can begin to propose some implications and applications of *trompe l'oreille* and the fabrication of aural landscapes with respect to the existing creative and theoretical preoccupations of both the acousmatic and soundscape arts.

TOWARDS AN EXTENSION OF ACOUSMATIC COMPOSITIONAL PRACTICE

Ambrose Field identifies four categories of landscape morphology which can be mapped to a notional continuum from real- to unreal-dominated sonic discourse in acousmatic art (Field 2000, 45-7). Field defines *real* as the unadulterated trace of an event or sonic landscape. *Hyper-real* landscapes result from a degree of manipulation of these raw materials, though leave its 'realism' essentially intact, such that compositional mediation is entirely transparent (i.e. it's impossible to tell the difference). Greater intervention yields *virtual* worlds, which involve looser (or more obviously imposed) narratives and surrealistic play; and finally unreal worlds depart entirely from the real, encouraging intrinsic listening and, at least ostensibly, making no reference to real-world sounds or landscapes at all. Field's categories presuppose listening to electronically mediated sound, and likely sound that has been recorded, though of course contexts in which acousmatic listening might occur are by no means so limited (indeed, according to its etymology the idea and implications of listening to a concealed source originated considerably before the advent of recording (Wishart & Emmerson, 1996, p.41)). Thus no distinction is drawn between 'real' as the unmodified recorded document, and 'real' as the real environment; indeed, for the purposes of his argument Field explicitly considers the two as being synonymous (2000, 46). Similarly, in detailing the concept of gestural surrogacy, Denis Smalley (1997, 111-2) draws no distinction between a sound of first order surrogacy that is unseen but recorded, and one that is unseen but truly happening. In terms of immediate perception, these amount to much the same thing, but for an audience that is curious to know what lurks behind the curtain, their phenomenology is very different; indeed, once the relationship with the source is revealed, manifestly the sound no longer performs the role of surrogate at all. With this in mind, when considering *trompe l'oreille* we may perhaps consider extensions to both of these continua: Field's categories to include the real within its original environment, rather than abstracted from it—the real-real (or the real-unseen), as opposed to the real-recorded (or real-electronically-mediated), as in Figure 1—and Smalley's to encompass a 'zero-order' level of surrogacy.
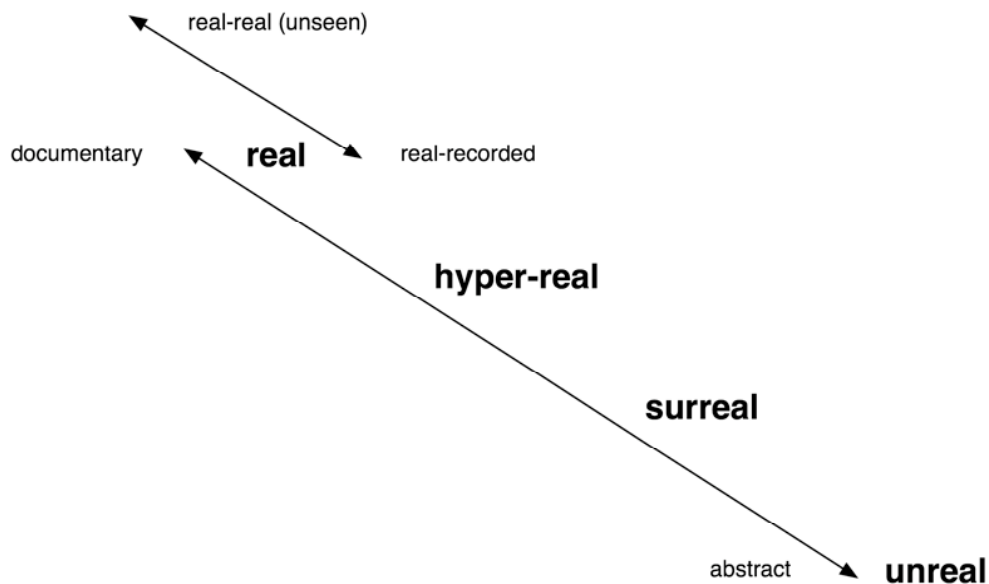
Figure 3: Extending the categories of landscape morphology

In offering this latter distinction it is acknowledged that *trompe l'oreille* clearly belongs to first-order surrogacy; however, in order for analysis of it within its context to be meaningful (or indeed for the real/unreal ambiguity to be meaningful), it needs to be truly comparable with the real-unseen from the point of view of perception. Thus zero-order implies that a sound is not surrogate at all, but that it could be. The addition is still more necessary in instances involving *oscillation* between real and unreal sounds *within* the real environment, such as in examples given below.

It is the ambiguity between such 'zero-order' and first-order surrogacy that provides much of the compositional interest in *trompe l'oreille*. However, inevitably this ambiguity only really becomes relevant once the illusion begins to break down. Once this happens, the entirety of Field's continuum, along with its attendant creative possibilities (i.e. those routinely available to the acousmatic composer), becomes accessible, thus permitting compositional and poetic play with the real environment. This of course involves investigating the same boundary between the recognisable and the unrecognizable, and between indirectly related materials as is explored in anecdotal compositional play for a fixed medium acousmatic concert work; but how much more interesting to do this in an environment in which we *expect* to hear the real thing!

As suggested above, having been presented initially with the real, it may take us some time to recognize departures from it. In discussing transcontextual sound play (e.g. morphing), Trevor Wishart similarly observes that our tendency is to understand a morphing sound as being one thing until it is so obviously something else that we cannot deny the transformation, at which point we may experience a dramatic and powerful shift of perception to accommodate the new interpretation of what we are hearing (1988, 24-5). The transition between these states can vary in duration, but it usually involves a certain amount of cognitive exertion to reinterpret and make sense of conflicting interpretations of a particular (sound) phenomenon. This is akin to musical tension (or can be used as such within acousmatic compositional context), and thereby functions as a means of generating musical momentum. Poetic play via exploration of the referential content of sounds curated from the environment is the surely the more potent when they are heard in 'life' context since source bonding is inevitably strongest in this context. Any skewed meanings (ambiguities and contradictions between sounds and their apparent agents, or their placement spatially) which subsequently result from the manipulation and anecdotal exploration of concrete material are thus intensified.

Thus, for example, if we return to the idea of creating an environment of *Space-within-Space*, a device akin to the aircraft-to-drone transformation in Christian Calon's *La disparition* (1988), 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 spatial behaviour from a real aircraft overhead, particularly if the performance took place near to a light-aircraft strip. Such an approach would obviously require a compositional aesthetic that accepts (or even embraces) the potential for the occurrence of unexpected events during the discourse of the piece; a looser structure would likely, in fact, be essential. Nevertheless the use of, and interplay or ambiguity between such materials in such a context has the potential to be powerful indeed.

COMPOSING THE SOUNDSCAPE: DIRECTING AESTHETIC REALITY
I have suggested above that *trompe l'oreille* can be used to direct reality or 'real behaviour', by which I mean that a determined sequence of events can be contrived to illicit certain predictable responses from an observer. ' It might be possible, for example, to contrive a means of encouraging pedestrians to follow particular routes in order to ease congestion by using subtle (and safe!) *trompe l'oreille* 'lures' or 'deterrents' in the same way as discussed above. It follows inevitably that this structured reality can be aesthetically conceived, and it is surely possible, therefore, to build hyper-real landscapes of the sort that one might in soundscape composition that have explicit narratives and as such might have the capacity to influence people's responses to them in this way, if only subtly, for *aesthetic* ends. All of this has implications for acoustic ecology, though interestingly while Murray Schafer (1994) proposes a culture of listening to the environment as a composition, and advocates the design of elements of the sonic landscape to influence perceptions of the environment and our responses to it, and Barry Truax (2001, 167) proposes a comprehensive series of considerations for drawing attention to existing qualities of the soundscape, neither suggests doing so by means of *fabricating* and/or directing the existing aural landscape via *trompe l'oreille*.

As discussed in previous sections, however, it is arguably the breaking down of illusory reality, and thereafter ambiguity between what is real and what is compositional (or poetically playful), that presents the most interest, since this permits *oscillation* between states of awareness and listening, and between the types of response that can be expected from the listener. Having established a condition of *trompe l'oreille* which demands a particular response—either active (such as, in our barking dog example, moving away from the door) or passive (such as simply identifying the sounds as representing a particular thing—I as composer might break that illusion intentionally. At that point, I can no longer expect my listener to feel compelled to act according to these expected responses. On the other hand, does this breaking completely disengage our perception of the original illusion? We can certainly call it to mind again, or it may resurface unbidden. Katharine Norman observes: 'The pileated woodpecker that hammers away at the fir trees next to our house each morning does a thoroughly convincing impression of an over-enthusiastic worker with a jack-hammer. Despite the fact that I've caught the guy at it, I still hear a jack-hammer.' (Norman, private email).

Ultimately, such oscillation between states of listening and interpretation—or the engendering of ambiguity in general—is arguably important for the acoustic ecologist interested in heightening the listener's awareness of his/her acoustic environment. Christina Kubisch's *A Tree and Ten Sounds* (1994) and Jon Aveyard's *birdsong* (2002), using alarm buzzers/tone frequencies (Kubisch 2003, 22), and synthesised talea respectively,[1] both pursue a condition of ambiguity in a given space by emulating, but falling short of replicating, the sounds (birdsong) commonly experienced in those spaces. And Robin Minard's site-specific *Klangweb* (1994) involved sounds indigenous to a particular area but presented, over time, in increasing profusion so that they eventually caught the attention of passers by, encouraging them to look for the sources of the

sounds. In Minard's words, 'What in the beginning seemed to be familiar acoustic stimuli turned out to be, upon closer hearing, at one and the same time familiar and foreign…, [sharpening] one's sense of hearing in relation to the actual environment of the area' (Minard 1993, 102). All of these examples demonstrate what were effectively means of drawing the listener's ear 'outwards'. The very *not-quite-realness* of the imposed sounds and/or the behaviour of those sounds drew attention to the realness of the real sounds/sound behaviour elsewhere in the landscape. In other words, it encouraged a switch from Truax's designated 'distracted listening' to a state of 'listening-in-search' (2001, 79). I was aiming for a similar experience in my own *Old Joe Sound Sculpture* project (2001) which involved electroacoustic compositional manipulation of the quarter-hourly chimes of the clock tower at the University of Birmingham. Simply by artificially extending the resonances of clock tower chimes so that they became impossibly long, I hoped, with some chimes, to draw attention not only to the existing intrinsic musical qualities of the bells themselves, or indeed to their acoustic and social significance (for while its chimes inform the daily workings of the nearby community, they are largely taken for granted by the local community—their sonic contribution to the environment noticed only when absent or persistent (i.e. during maintenance), but also to the soundscape that remained when the sounds eventually faded. Ultimately the aim was to resensitise passers by to their acoustic environment.

One particular practical issue needs to be addressed when discussing the fabrication of aural environments. Evaluating how such directed realities might operate in reality, and establishing a strategy of successful practice in the generation of these environments, have considerable ethical implications, both in the implementation of the illusion itself, and in the recording of its effects. As Nigel Frayne (2004, 16) observes, research into the effects of introducing particular animal sounds into environments in which those animals live is very limited (he is able to cite only one example of negative impacts); introducing any sound which, if it were real, would pose a threat to either animal or human (the latter without their knowledge of its artificiality) is likely to cause both disorientation and distress. Current legislation on investigative practice in relation to human rights requires that no member of the public should be involved in any research activity without being comprehensively informed of the activity and giving their consent. Having to somehow forewarn individuals of their involvement in a composition of this nature, however, or asking for permission clearly defeats the object of presenting an fabricated environment which requires a condition of unknowing for its success. There are therefore limits to the application of these environments to the public arena.

Such issues notwithstanding, however, it is clear that all of this invites considerable exploration for the purposes of creative interventionist art. Once again, exploiting the ambiguity is critical; in this way, fabricating aural landscapes enables us to insinuate art into everyday life such that we might hope to encourage an appreciation of the aesthetic qualities or even artfulness of a particular environment or landscape to the casual observer (listener) without it ever becoming apparent that elements of this landscape have been artistically contrived. Perhaps we might identify, for the purposes of this text, an acousmatic non-art (Kaprow 1993, 97-99)—the tacit appreciation of a sonic event as an art(-like) phenomenon, though it may never be accorded the state of 'art' explicitly. Thus we hear what we believe to be reality, something exotic is made to happen within the (composed) limits of this non-real, and we might conceivably appreciate this as non-art. As Max Neuhaus has observed, this has implications in terms of empowering the public when presenting public art. Referring to his work *Times Square* in New York (which is presented anonymously, without label or explanation), in which deep bass sounds emerge from subterranean vents into the streets above, Neuhaus discusses the ambiguity surrounding whether the sound is an artificial addition to the soundscape or whether it is simply an unusual mechanical sound emanating from the city's subway. 'Most of the people who don't know what it is take it as a beautiful anomaly in the city

that they found … something which is inadvertent which they take as their own. I think the best way of putting it is that by not claiming it myself I allow them to claim it.' (Neuhaus 1990 (my italics)). In other words, by removing all indications of a composer/artist's intervention in a space, a listener is permitted to take ownership of an aesthetic experience rather than being 'subjected' to it. Removing all indications of 'artistic' intentionality lends yet further uncertainty to the ambiguity of a sound's origin as being 'real' (i.e. from the immediate environment) or 'unreal' (synthetic or imposed artificially by a third party); and once again, people can be led by their 'curiosity into listening' rather than feeling that the sound is imposed on them.

CONCLUSION
'[T]he notion of "real" listening in a work of "fictional" sound art is underexplored' (Norman 2000, 220). There is certainly a relative absence of ideas and outcomes involving the fabrication of aural landscapes that examine the relationship between the real environment and one (or the contents of one) that is artificial or creatively contrived. I have attempted in the above text to introduce some possibilities that might remedy this current absence. It seems reasonable to propose, as I have done throughout, that *trompe l'oreille* presents a means of augmenting the fields of both acousmatic and soundscape compositional and theoretical study, and is perhaps even a way of *allying* their creative and aesthetic concerns. A number of matters have been touched on (or alluded to) that, being beyond the scope of this paper, warrant further discussion, including musical, psychoacoustic and cognitive issues surrounding the potential for oscillation between states of believing in (or subscribing to) and not believing in (or not subscribing to) a presented illusion. In order for these to be better understood, and for some of the ideas in this paper to be concretised, further practical (i.e. compositional and sound design) research is needed which implements the proposed portal and stage contents models according to a variety of different compositional and environmental design approaches. It is hoped that other members of the acousmatic and soundscape communities might be interested to join me in doing so.

FOOTNOTES
[1] 'using synthesised talea and color (a rotating series of pitches set against a smaller rotating series of durations)' (Aveyard, personal communication, 26 March 2004).

BIBLIOGRAPHY
Batchelor, P. (2004). *Extended Musical Commentary*. Unpublished thesis (PhD). Birmingham (UK): University of Birmingham.

Baudrillard, J. (1994). *Simulacra and Simulation*. (S. L. Glaser, Trans). Michigan: Ann Arbor. (Original work published 1981).

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

Field, A. (2000) Simulation and Reality: The New Sonic Objects. In S. Emmerson (Ed.), *Music, Electronic Media and Culture* (pp.36-55). Aldershot, Ashgate.

Fontana, B. (2002a). Musical Information Networks. *Soundscape, The Journal of Acoustic Ecology*. 3(1), 18-19.

Fontana, B. (2002b, December 8). *Sound as Virtual Image*. Retrieved 10 June 2007 from http://www.resoundings.org/Pages/sound_As_Virtual_Image.html

Frayne, N. (2004). Acoustic Design in the Built Environment. *Soundscape, The Journal of Acoustic Ecology*. 5(1), 15-19.

Gombrich, E. H. (1977) *Art and illusion: a study in the psychology of pictorial representation.* London, Phaidon.

Kaprow, A. and J. Kelley. (1993) *Essays on the blurring of art and life.* Berkeley, Calif., University of California Press.

Kubisch, C. (2003) Interview with Christina Kubisch by Christoph Metzger. In A von Graevenitz et al. (Ed.), *Christina Kubisch: KlangRaumLichtZeit* (pp. 80-101). Heidelberg: Kehrer Verlag.

Landy, L. (1991). Sound Transformation in Electroacoustic Music. Retrieved 3 February 2007 from http://www.composersdesktop.com/landyeam.htm

Minard, R. (2003) Sound installation art: building new realities. *Robin Minard: Silent Music* (pp.72-82). Bernd Schultz. Heidelberg: Kehrer Verlag.

Neuhaus, M. (1990, March 25). A Conversation Between Max Neuhaus and Ulrich Loock. Retrieved July 2 2007, from http://www.max-neuhaus.info/bibliography/ConversationwithUlrichLoock.htm

Norman, K. (2000). Stepping outside for a moment: narrative space in two works for sound alone. In S.Emmerson (Ed.), *Music, Electronic Media and Culture* (pp.217-244). Aldershot: Ashgate.

Normandeau, R. (1989). Liner note to *Lieux inouis.* Compact disc. empreintes DIGITALes, IMED9802.

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

Schafer, M. (1994). *The soundscape: our sonic environment and the tuning of the world.* Rochester, Vermont: Destiny.

Schäfer, S. & Krebs, J. (2003). Sound - Time - Space - Movement: The space-soundInstallations of the artist-couple. *Organised Sound*. 8(2), 213-225.

Smalley, D. (1997). Spectromorphology: Explaining sound-shapes. *Organised Sound* 2(2), 107-126.

Tixier, N. & Houdemont, K. (2004). Sound of a factory / factory of sounds. Retrieved 7 July 2007 from http://www.cresson.archi.fr/pubMEDIAarchart.htm.

Truax, B. (2001). *Acoustic Communication*. Second Edition. London: Ablex.

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

Wishart, T. (1988). The Composition Vox-5. *Computer Music Journal* 12(4), 21-27.