MICROPHONES IN A LANDSCAPE: SOUND, PLACE AND THE ECOLOGICAL MODEL OF PERCEPTION

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Abstract

This doctoral research aims to advance critical understanding of the ways in which the developing and expanding field of sound-based art engages with the particularities of place and environment. Through a theoretical contextualisation of both my own sound-based work and installations and the work of other practitioners, I investigate the ways in which site-specific sonic art is capable of interrogating established notions of place and of developing new knowledge about it. One of the objectives of both contextualisation and investigation is to contribute critically and originally to a politics of location, place and environment. Although these areas are in a constant state of flux, they are now made more vulnerable by the increasing pressures of globalisation and the acceleration of technological and economic development.

Today sonic art tends to be discussed on the basis of two paradigms, each of which was formulated in relation to specific aesthetic and philosophical traditions: the visual arts and, more particularly, art-critical perspectives on conceptualism; and the phenomenology of audition. I argue that these approaches leave much ground uncovered. Central to my investigation is thus an exploration of the perceptual mechanisms by which an audience engages with sound-based work. For this I draw on the ecological theory of perception to propose a new methodology.

Within ecological models of perception an individual can be regarded as a 'perceptual system': a mobile organism that seeks information from a coherent environment. In my thesis I relate this concept to notions of the spatial address of sound installations in order to explore (a) how the human perceptual apparatus relates to the technology of sound diffusion and (b) how this impacts on individuals' engagement with sound-based work and on their ability to experience such work as complex sonic 'environments'. The focus on installations also opens up questions of 'site-specificity', a term that enables me to examine the ways in which recent sonic art practice has engaged with the particularities and politics of place. This review leads me to the questions this thesis seeks to address: can sound-based work promote critical engagement with the historical specificity, the knowledge and the politics of place? Can the ecological theory of perception aid the understanding of how the listener engages with sound installations? In proposing answers to these questions, my thesis intends to formulate and advance a coherent analytical framework that may lead us to a more systematic grasp of the ways in which individuals, through the relatively new category and practice of sonic art, engage aesthetically with space and environment.

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Please see Appendix 1 for details of this material.

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Introduction

I first became aware of the possibilities of sound as a creative and spatial medium that could reach beyond the parameters of standard music concerts or stereo Hi-Fi in 1983. After playing in post-punk bands for a number of years I entered into an intense period of experimental playing and listening, exploring the outer edge of jazz, improv, world music and contemporary composition. The Contemporary Music Network tours that visited Bristol's Arnolfini Arts Centre were one of the main sources for feeding this appetite for new sonic experiences and experimental approaches to music. One concert in particular – *Tim Souster and Electronic Music Now* (12 March, 1983) – made a big impact on me. [12] This was the first acousmatic / electroacoustic performance I had attended. It featured Souster presenting tape pieces, mostly produced in university music studios and computer labs, diffused through an eight-channel speaker array of the best audio quality. I arrived early, grabbed a seat in the centre of the auditorium and waited for the show to commence. The novelty and intensity of the experience struck me immediately. Sound fragments of mutated voices, electronic bleats and swirls, and contorted instruments whizzed around the space with a tangible quality. The sounds migrated through the frequency ranges producing rumbling tactile lows to crisp, zinging highs. In the audience heads rotated and necks craned as sounds unnervingly erupted and swelled up from all corners of the room. Inspired by the experience I seconded myself in my bed-sit with an old domestic Philips 2-track 1⁄4 inch reel to reel, razor blades and splicing tape. Several days later I had managed to induce a few seconds of whines and growls to stutter out of the Philips' built-in mono speaker. The results were less than impressive. My basic technology was incompatible with my newfound ambition. I returned to the more direct sound generation possibilities of my musical instruments and awaited developments.

22 February 2008: I am sitting in a lecture theatre in Cambridge attending a symposium entitled *Sound and the City: Interdisciplinary Perspectives*.[3] After many years pursuing an academic and practice-based career focused on documentary and

the moving image, with music performance pushed to the side as a leisure activity, in the 1990s I returned to working with sound, this time around experimenting mostly with the manipulation of field recordings and archive materials. The availability of digital recorders and of editing and effects software now made this type of work possible even without access to sophisticated university and conservatoire sound studios. The control and manipulation of sound that eluded me in 1983 was now at hand.

In the late 1990s sound art shifted from a fringe activity to being the centre of attention, as marked by major exhibitions like *Sonic Boom: The Art of Sound* at the Hayward Gallery (27 April – 18 June, 2000). Alongside this emergence of sonic art, and perhaps as a consequence, sound itself has become a growing area of interest in academia beyond the traditional disciplines, such as musicology or acoustics, where it had previously resided as a central concern. A large body of academic studies on various aspects of sonic culture began to be published and numerous conferences organised with 'sound' in the title. While following these sound-based activities and lines of enquiry, I was not quite sure where to situate my own practice. From around 2004 this involved the durational exploration of natural environments and the particularities of specific sites, multi-channel diffusion, and the creation of sound pieces that interacted with visual or architectural objects. A variety of terminologies and theories circulated that caught my interest, including acoustic ecology, work on immersive media, Michel Chion's theories of sound in cinema, notions of synesthesia and others. However, they did not seem to form a coherent whole while dealing with certain aspects of my work they did not speak to others.

One of the speakers at the *Sound and the City: Interdisciplinary Perspectives* symposium in Cambridge was Eric Clarke, Professor of Music at Oxford University, who presented a paper entitled 'Various realities: sound, music and ecological theory'. At the end of Clarke's presentation, rather than the few scribbled comments and references that I usually accrue by the end of a conference talk, I found myself with a solid page of notes outlining the basic tenets of the ecological theory of perception. Given my interests in the natural environment and bioacoustics it was perhaps the 'ecological' in the title that initially caught my attention. Whatever my initial curiosity, there was much more here to discover. This first encounter with the ecological theory of perception was the impetus for the work developed in this dissertation.

In the following passages are three brief assessments of Alvin Lucier's *I am sitting in a room* (1969),[4] a piece often considered a canonical work of sonic art. *I am sitting in a room* consists in the composer, who has a noticeable stammer, reading a description of his presence and actions in a room – a performance which is recorded on tape and then replayed back into the same room. This is repeated until the recording and re-recording process, and the operation of the room's acoustics transform the words into abstracted rhythmical sound. The first assessment brings what might be called a conceptualist or semiotic perspective onto the artwork, the main task of which is taken to be expressing meanings and interrogating both itself as an art object, and its relationship to broader social and cultural concerns, to historical art practices and to the art gallery as institution. The experience of the work in relation to the materiality of sound itself is of secondary importance. The second assessment consists of what might be called the phenomenological approach and is predicated on audition. Here the analysis of the artwork is based on the sonic material that is apprehended by the listener, ignoring outside references as much as possible so as to allow the sound to do 'its work', understood as experience and as knowledge, both emotional and physical. The third assessment is written by myself, from a perspective I will call the ecological approach, and it is the development of this method that forms the central concern and product of this thesis.

1. 'Conceptualist / Semiotic Approach':

> While *I am sitting in a room* undoubtedly explores auditory phenomenon, the text itself announces that it is "not so much … a demonstration of a physical fact". Its richest existence takes place away from the ear, either before it or after it, in another kind of space. The most fascinating questions the piece might compel us to ask are not about questions of the final audible material of the recording. The most critical implications of the piece – as it inserts itself variously into the circuits of music, literature, the gallery arts, plain speech, psychology, speech pathology, ontology, and epistemology – are accessible to the spectator without recourse to the material fact of the recording. It might even be that close attention to the sonic results of *I am sitting in a room* occludes the more pressing conceptual concerns raised by the piece. Thus I might suggest that, in order to best engage it, one need not – perhaps even *should* not – listen to *I am sitting in a room.* (Kim-Cohen 2009, p.193, original emphasis).

2. ‘Phenomenological Approach’:

> The place of the performance becomes the place of listening, the timespace of production coinciding with the timespace of perception and yet a multiplicity of places are thus produced that erode the notion of an authentic room while offering me the experience of my own temporality. Sound shatters spatial certainty and builds time of fluid rooms. Lucier’s voice builds a room that knows no outside and yet it has no boundary. I am in it or it does not exist. It belongs not in language and architecture but in the body of the listener, who takes up the extension of Lucier’s body to extend his own. Lucier’s voice does not extend into a space that is already there, realising the inner necessity of his body, but builds the space of his voice in the time of my perception. The space is not authentic or rooted, it does not offer function or order. It is unordered timespace of the voice as sound, which does not follow language to build a room but erases the notion of roomness in the concrete experience of words as sounds erasing their own meaning in the timespace of their building (Voegelin 2010 pp.127-128).

3. ‘Ecological Approach’:

I *am sitting in a room* (1969) is a conceptually rigourous and self-refexive work that, in many ways, acts to establish what are the essential foundations of sonic art: a source that carries its own sonic particularities and meaning, its capture and projection through audio recording and diffusion technology, and a dynamic interaction with an exhibition space which also holds its own distinct acoustic properties. This dynamic *sonic effect* is predicated on the ability of the listener’s perceptual system to apprehend and actively engage with the fluid sound environment the particular arrangement of the work creates.

The initial source of this work is that most semantically dense of sonic material which is vocalised language. Owing to this use of the spoken word *I am sitting in a room* raises an acute awarenes of perceptual processes by drawing attention to what might be considered the *invariant* nature of perceptual information. Through the recording and re-recording process and the changes wrought by the room’s acoustics, the artist’s utterances decay and morph progressively into abstracted, rythmic sounds. As the *invariant* percetual information is increasingly disrupted, its semantic content slips away and is reconstituted as pure reverberation. The sound elements shift from a largely unexpressive male voice to seething sonic

waves. The result is the formation of a dark and alienating *atmosphere* of deracinated resonances. The sonic space of performance is destabilised to provide an evolving environment for the listener's perceptual faculties to apprehend and explore. As Lucier's occasional stammer suggests, the piece offers a perceptual experience of the material nature of all sound, including language.

The frameworks used in the first two examples enable the critics to cover a fair deal of ground, but they also leave a lot unresolved and unaddressed. Alongside the self-reflexive 'loop' of semiotics and conceptualism and the resort to audition and bodily experience in the phenomenological approach, there is space for other forms of analysis: a mode of analysis that requires a greater critical distance and objectivity than a phenomenological approach, as well as a full consideration of the materiality of sound, a dimension which is consigned to the background by a semiotic / conceptual approach. The third description I will call the ecological model. In this example it still remains to be fully developed but it introduces terminology that I will define more precisely at a later stage in the dissertation. Yet, even at this preliminary stage and even if summarily deployed, the framework advanced in the third example allows important issues and themes to emerge that the other two examples ignore or do not approach with sufficient rigour: the ability of sound, the most spatially fluid of media, to both contour and be contoured by the dimensions of space; the facility of the perceptual apparatus to probe and explore both recorded and 'directly' experienced sonic spaces; the choices, techniques, arrangements and potentialities of sound technology as the generator of sonic material and of experiences; how the latter might be organized to both excite and challenge the perceptions of the listeners; and finally, what knowledge might be conveyed or developed by the precise form and arrangement of a specific sound-based work of art. This dissertation aims to develop and bring a greater degree of intellectual rigour to the framework used in the third example. I propose, in other words, the foundations of a new methodology that, as I hope to demonstrate in the pages that follow, is capable of filling the gaps and begin to resolve productively issues that, while central to any sound installation, are yet to be addressed adequately by existing approaches to sonic art.

The broad objective of this doctoral research is to advance the critical understanding of the ways in which the developing and expanding field of sound-based art engages with the particularities of place and environment. Through a theoretical contextualisation of both my own sound-based work and installations and the work of other practitioners, I investigate the ways in which site-specific work is capable of interrogating existing understandings of, and developing new knowledge about place in the process contributing to a critical politics of location, place and environment. Sonic Art is mostly discussed on the basis of paradigms of a visual arts influenced conceptualism, of a musicology of avant-garde practice or of a phenomenology of the senses. I would argue that these approaches leave much ground uncovered in seeking a conceptualisation of the relationship between sound, place / environment and the listener / audience. Key to this investigation is therefore an exploration of the perceptual mechanisms by which an audience engages with sound-based work that draws on the ecological theory of perception. Within ecological models of perception an individual can be regarded as a 'perceptual system': a mobile organism that actively 'picks-up' information from a coherent environment. In my dissertation I relate this concept both to notions of the spatial address of sound art and to the ability of an audience or addressee to experience such work as an 'environment'. I also explore, through a detailed contextualisation of my own practice and a close analysis of other practitioners' work, various aspects of site-specific sound-based art practice. This is in relation to both practitioner methodologies and conceptualisation, but also to how sound works might be perceived and understood.

The Emergence of Sound Art

As a category, sound art is in itself not a clearly defined area of practice, interweaving as it does a number of discourses from the fields of fine art and post-Cagean trajectories in music composition and performance. Whether for practical or intellectual purposes the definitions of sound art do not need to be too categorical in this dissertation. The fact that a number of practices within, or developed from, fine art practice such as sound sculpture, live art, art bands, video and electronic media have all been covered at some time by the definition 'sound art' indicates the breadth of activities and objects encompassed by the term. As Alan Licht (2010) suggests, the

performative aspects of much of this 'sound art' might preclude its inclusion in the category, yet this does not obscure the desire of visual artists to explore sound as a medium and means of communication in a variety of ways. This includes the sonic in the form of the spoken word, or how sound operates in its institutional contexts, (i.e., radio, the music world / industry, the stage, cinema, television), or again how sound manifests itself and interacts within the built or natural environment.

Notwithstanding the use of sound by contemporary visual artists, sonic art can be seen as rooted in John Cage's experiments in liberating sonic material from the constraints of composer and compositional method, traditional instrumentation and conventional performance practice (Nyman 1999). Earlier histories and precedents can be traced, [5] but Cage is central for reconfiguring the position of the audience in relation to the material and its forms of presentation. As the composer's and performer's 'determination' of the experience became diminished, so the audience's position shifted from a mostly mute and appreciative witness of compositional genius and performer virtuosity to a more flexible, arguably democratic and personal, experience of 'sound as sound'. Cage also opened up the questions of music as a social practice and, crucially, the attention to sounds of the environment. Cage's influence went beyond music composition and was an important conceptual and personal influence on a wide range of practitioners in both the spheres of contemporary music and of visual art. [6]

Another central figure in the development of contemporary sound art is the work of Pierre Schaeffer. Schaeffer writings and development of *musique concrète* is an important tradition in the development of an audio practice based on the recording and manipulating of environmental sounds and a listening experience predicated on technological reproduction. Schaeffer's isolation of the *object sonore*, a sound 'unit' separated from a recognisable source, became the basis for a new form of composition predicated on technological processes of production and the development of 'acousmatic' music practice: the diffusion of sound in the concert hall via tape, mixer and multiple speaker arrays.

If sound art emerges from a complex interweaving of musical genres and art practices[7], I want to focus this study on sound art work that attempts to engage with specific environments or sites. In this context 'site' refers to work that is recorded and / or placed in close relationship to its place of generation. That is to say, work that is recorded and presented in a particular site and the experience of which is related to, or

dependent, upon that site, rather than work that is primarily produced for presentation in a white cube gallery or concert space.

Sound, Environment and Place

The Cagean redirection of music towards a wider sonic environment also merges to a history of phonography and field recording and the conception of Acoustic Ecology, as developed by R Murray Schafer (1977). This opening of a sound based cultural practice to the world outside of the gallery or concert hall brought in turn the need to consider sound as part of a whole series of social, cultural and economic activities that formed the sonic environment under investigation. Acoustic ecology, as both a mode of analysis and the basis for a creative practice, was another activity that brought sound art within the orbit of a wider site-specific art practice. Site-specific practice, as we shall see, is a form of creative endeavour that is often artist-led but also sees art and site being brought together as a result of art commissioning policies, regional economic imperatives or 'community' initiatives.

This dissertation's focus on site-specific art practice requires a clearer sense of how 'place' might be constituted and understood. It requires, in other words, that 'place' be viewed in relation to the current state of economic development and processes of globalisation. Marc Augé (1995) considers that the current accelerating phase of modernisation has led to a spread across the globe of deracinated, homogenised spaces. These anonymous spaces, the airports, shopping malls, motorway service stations, Augé designates as the 'non-place'. The difference between place and 'non-place' can be briefly defined as follows, 'if a place can be defined as relational, historical and concerned with identity, then a space which cannot be defined as relational, or historical, or concerned with identity will be a 'non-place' (Augé 1995, p.92). Therefore the 'non-place' is constituted as a space lacking the multiple layers of meaning formed through lived experience over a considerable duration that would more commonly constitute a notion of place.

Acoustic Ecology implicitly recognises the effect of development on the environment in terms of the sonic. While this recognition might be very loosely described in terms of 'noise pollution' from industrial / technological processes masking the distinctive sounds of place, the 'non-place' offers an erasure of place

itself. However, it can also be seen that the 'non-place' has developed its own sonic regimes, from loudspeaker injunctions and directions to the adoption of the 'stimulus progression' techniques of the Muzak company, with its bland rendering of popular music forms intended to 'stir the senses, stimulate the sales' (http://www.muzak.com, 2013). While historically Muzak have blazed the trail for this kind of instrumentalised ambience management, newer approaches to the 'sonic branding' of products and companies or to the construction of identification through the adoption of fashionable popular music also act to organise and ease the flows of people and cash transactions within these non-spaces of transit and consumption. Beyond such commercial strategies, attempts have been made to reconfigure the sonic environments of the 'non-place', notably Brian Eno's release *Ambient 1: Music For Airports* (1978). Here Eno sought to create a more considered response to the sonification of these spaces, developing a form of music that allowed for varied levels of attention or inattention as the situation of the listener demanded, but was essentially, unlike Muzak, intended to be of interest in itself.

While the idea of 'non-place' as described by Augé can be seen as the *non plus ultra* of the 'created' spaces of capital, here I have used it as a point of reference with which the site-specific work I focus on in this dissertation, can measure itself against. The arid instrumentalism of the sonic in the 'non-place' is consciously called into question by many of the site-specific works I consider, either through a concentration on more sonically varied material and territory and / or by consciously baring witness to these historical shift and processes of erasure the 'non-place' represents.

Materialism, Realism and Technology

Sound art is rarely presented or experienced as merely sound. More often than not it is presented and 'consumed' in relation to sculptural forms or visual media, and may reference a range of topographical, technological and architectural elements, alongside cultural / personal histories linked to its site of generation and / or exhibition.[8] It is a central aspect of my argument to consider how sound based works can be considered in relation to a broader ecology of experience. In reconsidering 'sound as sound' and rebalancing the aural in respect to ocularcentric cultural practice

and criticism, it is important this is not just replaced by an 'auricularcentric' position. Sound, if central to the specificity of these works, should not be divorced from these other elements; but sound has a particular function as to how such elements might be articulated and understood. Further, as far as site-specific work is concerned, the means of sound diffusion is a fundamental function of the process by which such work is experienced. This opens up questions in relation to both current technological developments in diffusion systems and the affective nature of these systems in relation to the listener.

When considering sound art as a practice there is also the issue of how sound is considered in the broader culture, and more specifically, in relation to prevailing academic tendencies. Christoph Cox (2011) poses the question: why does sound art remain so under theorised? His answer is that the prevailing theoretical models in cultural and visual theory (that is to say approaches based on semiotics, psychoanalysis, post-structuralsim and deconstruction) are inadequate to the task, because they have been developed to deal with the textual and the visual forms of culture. As he puts it:

> Cultural criticism and theory is taken to be an interpretive enterprise that consists in tracking signs or representations (images, texts, symptoms, etc) through the associative networks that give them meaning, networks that are always in flux, thus insuring that meaning is never stable. Rejecting realism, which would claim direct access to reality, contemporary cultural theory and criticism tends to maintain that experience is always mediated by the symbolic field. (Cox 2011, p.146)

Although for Cox (2011, p.147), these theoretical approaches have been are undeniably productive, by intellectually eschewing any form of essentialism they have allowed for an 'epistemological and ontological insularity' to develop. The insistence on the dominance and privileging of human symbolic systems and association brings in to play an anthropocentric tendency which aligns it with many of the metaphysical and theological positions which holds that humans and their attributes are above nature. If these are positions that critical theory specifically seeks to challenge, they may (and often do) have the effect of allowing in by the 'backdoor' various forms of essentialism. As Cox writes,

> theories of textuality or discursivity implicitly support a separation between culture (the domain of signification, representation, and meaning) and nature (the domain of inert, dumb matter). Nature is either cast aside as in-significant or deemed a cultural projection, a social construction. (Cox 2011, p.147)

As sound is so often treated by artists themselves as a material substance without a necessary discursive or signifying dimension, the writing in this area responds to this apparent 'essentialism' by positing a textual / linguistic analysis which brings them back into the realm of the discursive.[9] If sound remains 'material', an object of experience preceding language, then 'it finds no voice in thought and discourse. Since there is nothing we can do with it, it seems wise to put it aside and concern ourselves with that of which we can speak' (Kim-Cohen 2009, p112 in Cox 2011, p. 147). For Cox, this problem can be addressed not by developing a sound specific theory but by shifting to a materialist account of sound to enable a more theoretically robust framework for the analysis of both sound arts and art in general. As contemporary composers and sound artists talk about their work as material, and thus in relation to texture, temporality and the mutability of this material via the many forms and processes of its transmission, then such work shows that the 'sonic arts are not more *abstract* than the visual but rather more *concrete*' (original emphasis Cox 2011, p. 149).

For Cox, this materialist / realist approach is based on various perspectives drawn from the work of Fredrich Nietzsche and Gilles Deleuze. While I do not take this route myself, there is a definite turn to a realist epistemology in my methodology, based as it is on James J. Gibson's (1966, 1979, 1982, 1983) ecological model of perception. Although this model does not make a claim to a full blown materialism – Gibson's realism extending only to those elements open to perception – it nevertheless posits the environment as a *coherent informational matrix*, the coherence of which does neither rely on a mental construction nor on the perceiver's symbolic interpretation. Gibson also clearly shifts the emphasis away from a privileging of the human. As the ecological model makes clear, its purpose is to describe processes that operate for animals more generally, focussing on evolutionary processes and survival imperatives relating to an organism's successful functioning in the environment.[10]

If Gibson's work forms the foundation on which to build a new methodology, it is important to say there are many areas that are not covered by his work and that need to be developed in this dissertation. Areas such as how the ecological model of perception might be translated into consideration of broader social and media ecologies, how perception operates in relation to cognitive and imaginative processes, and the way an ecological model of perception can be thought of in relation to an aesthetics of sonic arts. To flesh out these aspects I will draw on other theoretical positions, though ones that are also broadly compatible with a realist / materialist perspective. Primary among these are William James' radical empiricism and Gernot Böhme's 'Aesthetics of Atmospheres', which I will argue, offer a basis from which to extend the ecological model into a methodology by which sound art might be better understood – a means to articulate a more informed approach to its various modes of address, for both receiver and producer, than available at present.

In any discussion of sound art literature it is important to re-consider which aspects, precisely, of sound art are put forward for examination. One area that is often ignored is technology. While technology is often central to what provides the material taken into consideration by existing literature, equally often it only features as a catalogue footnote or as the basis of 'techy' post-exhibition discussions amongst fellow producers. This is often where one tends to find a separation between discussions of 'audio', the technology of recording and reproduction, understood as a category distinct from 'sound', the 'content', as it were, that technology presents. Yet, technology and its usage – the manipulation of sound material, its temporal and spatial arrangement and its diffusion in space – is a central part of the exercise. As such it must form an important dimension of a more materialist / realist approach to sound art.

The emergence of sound art in the post-war period is temporally convergent with the development of, firstly, electronic audio technology and, more recently, digital production processes and technology. This is particularly true of the last decade, especially in light of the growing accessibility, in developed economies, to highly sophisticated tools for music and sound production and distribution. Such availability has not only engendered many new forms and practices of music, it has also aided the emergence of sound art as a distinct category. One key aspect of digitalisation is how sound as a material can now be seen and manipulated in a much

more ‘tangible’ manner. The visualisation of sound on the computer monitor, it could be argued, is a key component of an increased understanding and consideration of sound as *material*. Through the selection of a drop down menu or an enabling tick in a software’s preferences, a sound can be rendered visually as a waveform or sonogram: its structure analysed, its parameters adjusted and its material qualities transformed into new sonic effects. With the concept of microsound[11] and processes such as granular synthesis, the digital domain has brought sound under new regimes of temporality and opened its material ‘integrity’ to re-configuration at the most fundamental level. From this perspective, recorded sound becomes less an ethereal element linked to a cause in the environment, or the practiced gesture of the musician, than a material rendered up for manipulation and apprehension. The ease of sonic manipulations of all kinds that came with digital technology opens up not just new ways of working and new forms of dissemination, but also a new more enhanced relationship with sound as *matter*.

Alongside a more developed consideration of sound as material, there are other issues in relation to the experiential encounter with mediated sound that need to be examined. The sound recordist and artist Chris Watson, in an interview with David Toop, made the following comment:

> On location, to perceive what I may later regard to be memorable sounds, there are two significant characteristics: 1 Clarity & 2 Depth. Clarity being not coloured by other irrelevant sounds or interruptions. Depth being the ability to follow the sound, or its reverberation, into the distance. To be able to listen to the full envelope of the sound. Of course the paradox is that some sounds can convey clarity and depth even when played back or broadcast over the compressed mediums you refer to (television, radio, computers etc). I’m fascinated by this but can’t explain it! (Watson in Toop 2004, p.51)

Although Watson is talking primarily about field recordings of natural environments, I would argue that the phenomenon he describes and his observations about it beg a whole series of wider questions on the general sonic environment, the technological processes of sound recording and diffusion and the core issue of perception. In much writing on sound art these issues are ignored, given scant attention, or dealt with in

isolation. I argue that a methodology is required that can embrace all these aspects. A methodology grounded in the ecological theory of perception can provide a basis for exploring and explaining the phenomenon described by Watson: the ability of the perceptual apparatus to probe and explore sonic space even through the degradation of signal that occurs through various forms of transmission. That is to say, in spite of this mediation, and thus translation into another space, something of the original *informational structure* of sound operating within and contoured by a particular place can still be conveyed and understood elsewhere. Jonathan Sterne's (2006) work on the mp3 file format suggests that the success of the mp3's compression codec is due to its use of 'perceptual coding': the discarding of frequencies that are not regarded as necessary for audition by the average listener. This is coupled to the question of what is 'acceptable' quality for the music consumer, given the largely casual forms of listening (via iPods, smart phones, laptops and so on) that are a feature of the mp3's success as an 'artifact' for the distribution and consumption of music.[12]

While Sterne's commentary helps suggest some answers to the 'clarity' aspect of Watson's observations, it does not deal with the issue of 'depth'. To explore this question further, a central concept I develop in this dissertation is that of the three strata of sonic environments. Sound-based media and the process of audio playback engender a perceptual and cognitive oscillation between the space of audition and the aural space presented in the sound work itself. Here I contend that a third environment or sphere should also be brought into consideration, namely that of sound post-production. I argue that in any sound installation (and even in wider categories of audio work) we perceive three simultaneously occurring strata of acoustic environments: the sound of the space in which the sound piece is presented (the work contoured by the acoustics of space), the sound of the environment recorded, and the sound of the space of the 'post-production environment'. In sound-based work, the listener's attention can thus be understood to fluctuate between these various elements: the apprehension of a perceptually coherent sense of space, but also the technological process by which this coherence is achieved. Because my approach is focused on the perceptual and bodily experience of sound-based works, the forms and operation of audio production and diffusion technology is examined as a key factor in relation to sound art-practice. I return to the nature of these spaces and their relation in Chapter 3.

Christoph Cox (2011) sets up a challenging philosophical and epistemological base for a new approach to analysing sonic arts. He does not however, provide any concrete examples of how this approach might be applied to existing sound work. I argue that the next important step at this point in time, with the increasing visibility and popularity of sound art, is to take a materialist / realist theoretical position and apply it to examples of sound art. A significant aspect of this study is to approach the issues under examination from the perspective of both a producer of sound art and of an audience member, as well as to test the productivity of my approach when applied to a variety of sound art forms and practices. For this purpose, in the second part of this dissertation I will deploy the methodology developed in the first part to examine both my own sound art practice and that of others.

As my own practice forms part of this dissertation, both as an element in its own right and as object of analysis, it may be useful to give here a brief introduction to my work. My sound-based work employs strategies relying on both 'naturalistic' field-recordings and on abstract compositions, the latter consisting primarily of the re-workings or processing of the former. These recordings range from material gathered by standard equipment to material obtained by using technologies designed to extend the spectrum of human hearing (i.e. hydrophones, contact microphones, ultra sonic bat detectors etc). I use these techniques in conjunction with performative interventions in the landscape that are conceived to produce sonic material directly. Often I present this sound-based work in combination with visual media objects that are also site-specific. This multidisciplinary approach uses visual media as 'scores', that is to say, as triggers for the structuring of sound work. I also explore the creative uses of multi-channel and surround-sound systems as means to construct immersive sound environments. I want to draw attention here to two strands within my work. First, I am interested in the relationship between sound and interiority and in linking architectural and topographical features with bodily spaces and perception. I take this relationship to be central to an understanding of such sites. Second, there are the notions of 'sounding out' and 're-voicing', by which I mean sounding out and re-voicing of physical spaces and places as strategies to introduce a mode of analysis and a critical and poetic intervention. Some of these general approaches will be fleshed out in the analysis of the specific works considered as part of this dissertation.

Chapter Outline

Chapter 1 of this dissertation outlines some of the major investigations into the how audio environments and environmental sound art practice might be theorised and analysed and how sound and environments have been discussed from a range of disciplines, such as anthropology, music composition, cultural history, sociology and urbanism. It looks at how these approaches have developed into a series of new forms of understanding and analysis. This is important in terms of creating new disciplines in their own right, such as acoustic ecology, but also as the source of key analytical terms and concepts such as the soundscape (Murray Schafer, 1994), the *object sonore* (Schaeffer, 1966), acoustemology (Feld, 2005), and, more generally, how the audio environment might be understood as a complex web of 'sonic effects' (Augoyard and Torgue, 2006). While creating a lexicon of terms and concepts for analysis and practice, central to these debates are the wider questions of the inter-relationship between the audio environment and human activities and development.

These approaches offer useful openings on to the relationship between the aural, communities and the environment they inhabit, but they are not sufficient for a thesis that seeks to explore how that relationship is shaped by specific histories and dynamics. In section 1.2, I therefore engage with conceptualisations of place and environment that take into account the historical processes that shape societies, as well as providing the resources to engage more comprehensively with landscape and environment, both of which are fundamental elements of my sound practice. I draw here on literature that deals with the physical and cultural aspects of environment understood as the result of economic and technological developments, and which focuses on what is generally referred to as the processes of modernisation. As mentioned above, Marc Augé (1995) has advanced the distinction between 'place' and 'non- place', the latter being a seemingly homogenous and trans-cultural space. The analysis of the compression of space and time that 'non-place' involves has been a central concern of Marxian economic theory, for such compression is a core dynamic of capitalist (and pre-capitalist) economies. In this respect, Augé's work can thus be seen to be concerned with what are in effect the manifestations of the latest phase in a long-term process of space compression and homogenisation - a process that is caused by and is central to the increasing acceleration of the flows and

geographical penetration of capital (Harvey, 1989). From this perspective, the particularities of place become 'constraints', obstacle the surmounting of which is essential to capital's growth, while 'non-places' emerge as a result of capital's rationalisation of space and, within it, of communication systems. It is partly on these 'constraints' that site-specific art bases its aesthetics, the accelerated flows of capital and labour having led, in many instances, to a degradation of both rural and urban communities.

The gradual erosion of the 'particularities' of place calls for clearer definitions of 'place' in relation to 'space' and thus to 'landscape', understood as a geographical space or site of action, design, representation and interpretation. This understanding of landscape requires methods for analysing the long-term relationship between populations and the topographical and architectural features of the landscape and its mutability in the face of human action, both material and subjective (Tilley, 1994). Landscape is fluid in its shifting physical forms, in its social ordering and in its imaginative inscription and reading by successive social formations. This process also enables landscape to function as a physical site of flows of power; it has the potential to be co-opted by specific interests to the detriment of others who share, or might share, the same space.

By engaging with these concepts and debates I seek to assess the productivity of my sound-based practice, its capacity or aesthetic potential to promote the critical engagement with the politics of place. Here I hope to demonstrate that the approach I advance has great theoretical potential because it consists of a combined framework designed to analyse the functioning of those very processes that site-specific art can be understood to question, even oppose, namely, the annihilation of place and communities by capital. So, in order to bridge broader conceptions of place, space and landscape with the particularities of creative sound practice, in section 1.2 I look at the historical trajectories and shifting conceptual and methodological approaches to site-specific art (Kwon 2004). The site-specific needs to be addressed in terms of artist intentionality and method, but also within a nexus of relationships between commissioning bodies and institutions, political and economic imperatives of urban and regional planners and, most crucially, the communities where the art is either placed or generated. Here, site-specificity is not simply a form of artist practice that just happens to move art outside the gallery. Rather, precisely by doing so, site-

specificity connects, intentionally or not, with issues of place, politics, economic flows and the nature and formation of 'communities', real or imagined.

Chapter 2 moves on to questions of sound and perception. First I examine how perception is treated in contemporary writing on sonic art. My objective in this review is to assess the scope and limitations of this literature in its treatment of questions of perception. These include works that have sought to map the scope and development of sound practice in the post-war era (LaBelle, 2006, Licht, 2007) and which engage, to a greater or lesser extent, with the issue of perception, though primarily in the context of an artist's conceptualisation of their work. Other studies advance more developed approaches to the issue of perception in relation to the materiality of sound, either by consciously downplaying this aspect in favour of a conceptual / semiotic approach as more commonly deployed in visual arts analysis (Kim-Cohen, 2009), or by adopting a phenomenological approach based on audition (Voegelin, 2010), one of the effects of which is to fall back, again, to an analytical position that treats the sound work as a 'text'.

My interest in adopting the ecological model is to give some purchase to an investigation of sound art practice that moves beyond musicological or phenomenological approaches or forms of critical analyses borrowed from the visual arts. Chapter 2.2 brings into consideration perspectives on sound and perception that form the basis of my methodology for analysing sound art and which bring the examination of audio perception back to a more materialist / realist perspective than both musicology and art criticism have traditionally afforded. Initially I consider the notion of an 'Aesthetics of Atmospheres' (Böhme, 2000), – a notion that emerged out of a more general idea of 'Ecological Nature Aesthetics' and thus, out of the exploration of the relationship between the quality of the environment and human perception / sensibilities. The term *atmospheres* situates the listening body as rooted in, and responding to, the sculpting of acoustic space while acknowledging the producer and the technology that projects sound into this space.

While Böhme offers perspectives that are useful and important for the development of my methodology, the model of perception I utilise in my dissertation is drawn primarily from the ecological theory of perception. An important impetus for my

research is the work of musicologist and psychologist Eric Clarke (2005). Clarke applies James Gibson's (1966 and 1979) ecological model to a theorisation of the perception of music, both classical and contemporary rock. Clarke's work is addressed primarily to a musicological audience, and it is this basis in musicology, and its recourse to analysis of music partly through the score, which opens his work to a critique in the context of a broader sonic culture. This notwithstanding, I consider his work in the field of music as a coherent foundation to the investigation of other categories of sonic art. More specifically, the element of Gibson's work that I use here is his conception of perception as achieved through the brain and senses working together as a 'perceptual system' in a mobile body. This is particularly relevant to site-specific work and installations that invite the audience to be mobile, in contrast to more static modes of reception. The emphasis is not simply on the work itself; it is rather on the different ways by which the listener interacts with music / sound art as part of a general auditory environment. In other words, the issue is to move away from the more common linguistic or semiotic approaches to music to develop instead a method that is more explicitly focused on questions of perception. The emphasis, from this perspective, is on the act of deriving meaning from music through the information that is engrained in the sounds themselves. Although Clarke's study focuses exclusively on music, the general principles drawn from his application of ecological models can be maintained and transferred to other types of sound-based work and I develop these ideas in relation to the specifics of sound art as a different category of practice.

In Chapter 2.3, I extend further elements of the ecological theory of perception and its potential application to the analysis of sonic art. To provide a broader intellectual context for ecological psychology, I compare some of Gibson's concepts to other theoretical models that also examine the relationship between the organism and the environment, specifically the development of cybernetics and information theory. In Chapter 2.4, as part of establishing the intellectual foundations of the ecological theory of perception, I also outline the philosophical basis of Gibson's work, primarily in relation to William James's philosophy of radical empiricism (James, 1912, Heft, 2001). This consideration of radical empiricism brings to the fore James' formulation of *percepts* and *concepts* – notions that enable me to further refine how the ecological theory of perception can be brought to bear more readily on cultural

objects because they make room for a better grasp of perception as the basis for imaginative and cognitive processes.

In the final section of Chapter 2 (2.5) I look at other scholars' applications of Gibson's work to cultural production, primarily to film: how can the universal appeal of film be explained less in terms of shared cultural / semiotic regimes and more as predicated on the perception of the 'ambient light array' as described in the ecological theory of perception (Anderson and Anderson 1996)? From this perspective, it can because the screen offers a recognisable visual space for the perceptual system to 'explore'. Although these studies centre on film, there are useful perspectives that can be gained from this work when extended to sound-based art, especially when considering the different demands made on perception by work that moves into more abstract modes of representation.

Chapter 3 crystallises the concepts and methodologies that I consider productive for investigating sound art practices and, more generally, for conceptualising ways of engaging with the sonic environment. I summarise these methodological 'tools' drawn from the perspectives and debates presented in this and the previous chapters. My aim is to develop a better way than available in existing literature to understand sound art projects – a method that is based on a synthesis of what I consider to be mutually supporting concepts. These concepts are grounded in ecological perception theory, but they also bring into play ideas and positions from other fields of knowledge. This helps me to translate and ground the ecological theory more firmly into a consideration of environmental sound and sound-based cultural practice. It also allows me to arrive at a theoretical and methodological framework that, as I hope to demonstrate, is capable of advancing our understanding of sonic art as a material cultural practice that can open up and interrogate the physical characteristics and cultural specifics of place.

A central concept I develop here is that of the three strata of sonic environments: the space of recording, of post-production and of the exhibition space (see above). I argue that sound-based media and the process of audio playback engender a perceptual and cognitive oscillation between the space of audition and the aural space presented in the sound work itself. The issue of 'selection' is also discussed in this chapter, considered in a specific application to sound expressed through the notion of 'synecdoche': the ability of an individual to select and valorise

specific sound element from a more complex audio environment (Augoyard and Torgue 2006). This notion of 'synecdoche' also aids an examination of sound-based practice from the perspective of the producer as well as the listener, as selection processes are in operation on both 'sides' of sound-based artwork.

In Chapter 4, I utilise my methodology to examine work produced by other sound-based artists as well as to analyse the sound installations that I have produced in conjunction with this PhD dissertation. A general overview of a range of site-specific sound art practices is followed by more detailed case studies of the work of the sound artists Chris Watson, Janet Cardiff, Susan Philipsz and Florian Hecker. I have chosen these artists because, to varying degrees, and in different ways, their work made a particular impact on sound art practice. Because of such diversity, their work is useful to illustrate several central aspects of my methodology, either in relation to the operation of the perceptual system and / or with regard to the exploration of 'place' through a range of aesthetic, conceptual and technological strategies.

The examination of these four case studies is followed by a scrutiny of the practice-based work I have produced in the context of this PhD dissertation. Such work consists of *Re-sounding Falkland* (2008-2010), a collaborative durational art project focussed on sound and on the interaction of sound with visual media in an exploration of designed spaces on the Falkland Estate in Fife, Scotland; and of a solo work, *Octo: Sotto Voce* (2009), an 8-channel piece designed for and installed in the octagonal Chapter House of York Minster (I give full descriptions of these projects at the start of section 4.3). Chapter 4 concludes with a summary of the points identified in the examination of the case studies in connection to the issues raised by my methodological approach.

Chapter 1.0 – **Sound and Environment**

As both my practice-based research and this dissertation deal with multiple aspects of environmental sound, it is pertinent to initially outline and examine three major theories of sound in relation to the environment, understood in the broadest sense of the term. These are R. Murray Schafer's (1994) seminal concepts of the soundscape and acoustic ecology, Jean- François Augoyard and Henry Torgue's (2006) notion of the 'sonic effect' as a conceptual framework for analysing the sonic environment, and the work of Steven Feld (2005), which highlights the centrality of the sonic in relation to anthropological approaches to cultural spaces.

Section 1.1 considers theories that investigate how understandings of the environment in relation to sound may be linked to wider conceptualisations of space, as well as to the specificities of place and landscape. This sections draws initially on the work of Marc Augé (1995) and his conception of 'non place': homogenised, trans-national spaces. Augé's identification of these emerging spaces is contextualised further by the work of David Harvey (1989), who suggests that the collapse of individuated sense of place is an historical consequence of the increasing speed and penetration of the flows of capital. Christopher Tilley (1994) filters a large number of perspectives on space and place to refocus on the concept of landscape as site of an interaction between human agency and design, physical topography and the operation of political power.

To make a link between broader issues of place, space and art practice, in section 1.2 I draw on the work of Miwon Kwon (2004) who sets out a useful genealogy of site-specific art practice, outlining both the development and characteristics of this form of practice, and potential problems in the interaction of place, art / artist and the community which may inhabit the site of the work.

The composer, writer and educationist R. Murray Schafer's (1994) pioneering writings on acoustic ecology, originally published in the 1960s, have established many of the founding tenets on which recent deliberation of the sonic environment and environmentally based sound art practice have been based. Schafer's leading role in the formation of the World Soundscape Project, in Vancouver in 1973,

created a cluster of researchers that actively developed his ideas on acoustic ecology and pursued the task of audio recording distinctive or dwindling acoustic environments.[13]

A central strand of Schafer's conception is the notion of the 'soundscape' - the sonic expression of a landscape - and how this might be both mapped through focussed listening and audio recordings. The soundscape includes all the audio manifestations from both the natural and the built environment, alongside the sounds of human cultural, technological and industrial processes. Indeed, Murray Schafer's ideas are informed by a general concern for the social and environmental consequences of industrial and urban development. As he states:

> The soundscape of the world is changing. Modern man is beginning to inhabit a world with an acoustic environment radically different from any he has hitherto known. These new sounds, which differ in quality and intensity from those of the past, have alerted many researchers to the dangers of an indiscriminate and imperialistic spread of more and larger sounds into every corner of man's life. (Murray Schafer 1977, p.3)

The fundamental idea of acoustic ecology is that the soundscape should be treated as a form of 'composition' that is socially constructed. Therefore, it can be shaped through educating individuals to be actively aware and analytical of environmental sound, while detrimental effects of urban and industrial development can be ameliorated by direct intervention and sensitive design. However seminal a concept, it is worth noting here that the concept of the soundscape is itself not without critique, as I will discuss later in Chapter 2.2.

While Murray Schafer's work is groundbreaking in many regards, I would argue that there is a certain conservatism, or at least an anti-developmental instinct, at its heart that sits uncomfortably with the fact of developed urban societies. He sets up a dichotomy between, in his terminology, 'hi-fi' sounds (i.e. the more distinct sounds of nature, traditional cultural practices and pre-industrial working processes) and the 'lo-fi' sounds of the contemporary environment. The 'lo-fi' here refers to the ubiquitous and often blanket 'keynotes' of traffic, aircraft and electronic technology and media – in other words, sounds which can fall easily into the generic category of 'noise'. Noise pollution is undeniably a concern; there is however also the question of

how the sonic by-products of developed societies are not just in need of amelioration, but are also possibly interesting, even pleasurable, and a source of cultural production and meaning. Coupled to the idea of lo-fi sounds is Schafer's term of 'schizophonia': the splitting of a sound from its source through audio reproduction or transmission by electroacoustic technologies. For Murray Shafer, all sounds were once indivisibly connected to the mechanism or organisms that produced them and the spaces they were produced within. Yet, with the development of technologies for audio recording and transmission, sounds can transcend their original parameters and be amplified, made subject to various effects, split from their original source and reproduced wherever the technologies of audio diffusion can be found. For Murray Schafer, this mass of deracinated sounds, diffused via loudspeakers, radios, hi-fi systems and so on, all add to the lo-fi ambient sonic environment. Many of the advances in audio technologies to create new and complex sound environments through recording as well as post-production techniques and more complex speaker diffusion are regarded with a measure of disdain. When describing the, then recent, emergence of quadraphonic sound systems, Murray Schafer (1977, p.91) observed less than enthusiastically that '(t)his provides for the complete portability of acoustic space. Any sonic environment can now become any other sonic environment'. If these attitudes reflect a kind of Thoreauvian retreat from the baleful effects of industrialism and consumerism (a relatively common position in the late 1960s and early 1970s when he started his writing), they are also linked to wider political concerns. For Schafer, the portability of sounds was not politically neutral; he considered that 'the territorial expansion of post-industrial sounds complemented the imperialistic ambitions of the Western nations' (Murray Schafer 1994, p.91). The over-riding direction of Murray Shafer's work is a sincere attempt to preserve a fading soundscape in the face of a rampant industrialisation and globalisation. In spite of his, at times, overly didactic and value-laden categorisation of sound, Schafer's highly influential work formulated the basic lexicon of terms, concepts and methodologies for both environmental audio analysis and creative practice.

More recently, Jean- François Augoyard and Henry Torgue (2006) have forwarded an analysis of the audio environment as a complex web of 'sonic effects'. In their detailed investigation of these various 'effects', they have extended the terminology and conceptual frameworks available to discuss environmental sound. Augoyard

and Torgue's work is also valuable because it acknowledges that consideration of sound is contextually specific and open to individual understanding and experience. As they suggest, 'the concept of the sonic effect seemed to describe the interaction between the physical sound environment, the sound milieu of a socio-cultural community, and the "internal soundscape" of every individual' (Augoyard and Torgue 2006, p.9). They also openly acknowledge that sonic effects can be usefully theorised from a range of academic and creative perspectives, specifically the social sciences, urbanism and architecture and the physiology and psychology of perception. This approach may be a reflection of Augoyard and Torgue's multi-disciplinary backgrounds in the social sciences, (as respectively, philosopher and sociologist), music (as musicologist and composer) and as urban planners. While for Murray Schafer the degradation of the soundscape caused by industrial and urban development represents a problem to be countered, Augoyard and Torgue 's active engagement with the formation of the built environment allows them deal more readily with the sonics of urban space. However, Augoyard and Torgue acknowledge a debt to Murray Schafer (who even wrote the introduction to their book) and regard their work as a bridge between the more totalising approach to the soundscape of Murray Schafer and the more de-contextualising approach to sound developed by Pierre Schaeffer (1966) with his notion of the *object sonore.* For Augoyard and Torgue, Schaeffer's isolation of the *object sonore* from its source and context, either instrumental, environmental or the result of technical manipulation, offers a multi-dimensional position for how sound might be both understood and applied. Accordingly, they treat the *object sonore* as an object of empirical analysis in the form of an acoustic signal, as a focal point for the theorisation of the nature of sound, and as a basic unit for music / sound composition.

Schaeffer's writings and development of *musique concrète* is also an important tradition in the development of an audio practice based on the recording and manipulating of environmental sounds and a listening experience predicated on technological reproduction. While acknowledging their debt to R. Murray Schafer and Pierre Schaeffer, Augoyard and Torgue regard their own lexicon of sonic effects as providing an intermediary level of analysis between the 'soundscape' and the 'object sonore'. Here, as Augoyard and Torgue Augoyard (2006, p.7) put it, sonic effects act at the level of a 'code defining possible configurations between the

three terms to consider in our observation: acoustical sources, inhabited space, and the linked pair of sound perception and sound action.' The 'effect' can be seen as dynamic and contextual; it 'not only indicates a necessary cause; it is also the mark of an event' (Augoyard and Torgue 2006, p.10).

Along with Murray Schafer's work, Augoyard and Torgue's writings can be seen as an aid to specific social actions and practice, sonic effects being a guide to action in relation to planning the built environment and generally raising awareness of the complexity and centrality of sound as part of lived experience. In a similar manner to Murray Schafer's 'ear cleaning' exercises, an understanding of sonic effects is part of a 'rehabilitation of general auditory sensitivity' (Augoyard and Torgue 2006, p.13). I will be drawing further on the work of Augoyard and Torgue in later chapters.

The anthropologist Steven Feld (2005) provides another useful contribution to the conceptualisation of sound and environment through his notion of 'acoustemology'. For Feld, the sonic is a culturally specific knowledge system and acoustemology a conception of investigating the 'primacy of sound as a modality of knowing and being in the world' (Feld 2005, p.226). While also acknowledging acoustic ecology, Feld sees acoustemology as a break from Murray Schafer, in the sense that he maintains there should be no artificial separation from the sonic environment from the 'pervasiveness' of human activity. As he makes clear:

> Soundscapes are invested with significance by those whose bodies and lives resonate with them in social time and space… Hearing and producing sound are thus embodied competencies that situate actors and their agency in particular historical moments. (Feld 2005, p.226)

Arguably, Feld's notion of acoustemology is a partial corrective to the 'Schaferian' conception of acoustic ecology, at least to the extent that Feld places humans and human activity at the centre of his understanding of the sonic environment – and this in contrast to Schafer's sense that human activity and development threatens the destruction of an 'ideal' pre-industrial soundscape. Having said that, it is also true that Feld's conception of acoustemology derived initially from what might be regarded as 'classical' anthropological work on the Kaluli people in the rainforests

of Papua New Guinea. Although, if also under threat from outside cultures and economic activity, the Kaluli's soundscape is still far from having reached the situation as pertaining to developed western environments. The heightened aurality of rainforest inhabitants that Feld identifies and which is brought about partly from the restricted visual scope common in the Kaluli's densely forested environment makes more forcefully apparent the centrality of sound in both the interior and exterior life of the people. Feld's study also indicates how the specificity of a soundscape is modulated through language and permeates cultural and religious constructs and expressions. Feld describes the role of sound, among the Kaluli, in the naming of a place and how songs are used to delineate pathways through the rainforest – a practice that Feld (2005, p. 227) calls 'poetic cartography'. For the purpose at hand the notion of 'poetic cartography', is useful because it reminds us of the more widespread significance of sound and sonic expression as means of fixing and navigating place. I would argue that, although developed in very specific cultural contexts, the ideas of acoustemology and 'poetic cartography' are particularly relevant in relation to ideas and the practice of the site-specific as well as to how sound operates as 'knowledge' of place, whether in one's engagement with contemporary reality or as historical / cultural memory.

What is common to Murray Schafer, Augoyard and Torgue and Feld is the question of how sound operates and can be understood in a dynamic triangulation between the natural environment, human societies (their cultures, technologies, architectures) and individual human sensibility. If their positions are not always entirely compatible, they nonetheless provide a wealth of terminology, definitions and analytical perspectives on sound and environment to which I will be making reference and use throughout this dissertation.

1.1 – **Landscape and Place**

The writings discussed in the previous section open many useful possibilities in terms of the relationship between the aural, communities and the environments they inhabit. However, broader conceptions of place and environment, especially as applied to more developed societies, are also needed. As a broad backdrop for a more specific consideration of landscape and environment, it is useful here to outline some conceptions of the physical and cultural aspects of environment in relation to the current stage of economic and technological development in Western and emerging economies.

There is a very large body of literature on the subject of place that I have not explored here and that it would be useful to engage with in any broader discussion of the subject. For example, the work of Gaston Bachelard (1958), Edward Casey (1997), Doreen Massey (2005) and Yi-Fu Tuan (2003), amongst many others who have explored the interconnected areas of space, place and landscape. For the purposes of this dissertation I have chosen to examine a specific selection of writings on the concept of place, namely Marc Augé (1995), David Harvey (1989) and Christopher Tilley (1994), because provide both a macro view of the idea of place in this current stage and, in the case of Tilley, a useful review of the idea of place and landscape mainly from the perspective of anthropology and social geography.

Working from an anthropological perspective, Marc Augé (1995) proposes an analysis of recent developments in an increasingly globalised economy and argues for an anthropology of 'the near', that formulates a distinction between 'place' and 'non-place' in developed societies. For Augé within the space of 'supermodernity' a growing number of seemingly homogenous and trans-cultural spaces are emerging which can be designated as 'non-places'.

Before looking further at the definition of 'non-place', it would be useful to establish what Augé takes to be the features of supermodernity – of which the emergence of 'non-place' is a symptom. For Augé, supermodernity has three main components or 'excesses'; he sets these out as both a present and a developing situation and one that invites anthropological investigation. First, there is an appreciable 'acceleration of history', an over abundance of events that proves hard to either predict or assimilate. This density of events threatens to drain them of meaning

– a threat that is met by an equal need to alleviate it by attempting to provide perpetual meaning to the flow of events: 'time overloaded with events that encumber the present along with the recent past. This can only…make us even more avid for meaning' (Augé 1995, p.29). The second excess concerns an over abundance of space. Augé argues that the increasing accessibility to remote places via high speed travel and electronic media has the effect of compressing space, changing the scale of things, to extent that the world can be experienced, or at least recognised, on screens in the living room or can be reached in a matter of hours. The third excess is the response of the individual to these other excesses – a response that sees a growing 'individualisation of references' and the affects this process has on an individual's sense of self in relation to place and social relations. Augé states that 'never before have individual histories been so explicitly affected by collective history, but never before, either, have the reference points for collective identification been so unstable' (Augé 1995, p.37).

It is also useful to establish what Augé suggests are the distinctions between the modernist and supermodernist sense of space. Here, modernity is loosely defined, after Baudelaire, as the 'willed co-existence of two different worlds' (Auge´1995, p. 92) or, elsewhere, after Jean Starobinski, as a form of reconciliation: '[t]he presence of the past in a present that supersedes it but still lays claim to it'(Auge´1995, p.92) . In these formulations of modernity the past is part of a temporal continuity that is still in play, even as a sense of rupture is being articulated. Therefore, modernity allows a sense of place and identity to remain, even if challenged and disrupted in a conscious notion of dynamic forward momentum.

Augé initially outlines a definition of 'non-place' in fairly basic terms as 'a space which cannot be defined as relational, or historical, or concerned with identity' (Auge´1995, p. 92). Unlike modernity, supermodernity does not integrate earlier places, but these are categorised and consigned as 'places of memory', their meaning contained and allocated to a specific position. For Augé, 'non-place' designates 'two complementary but distinct realities: spaces formed in relation to certain ends (transport, transit, commerce, leisure), and the relations that individuals have with these spaces' (Augé 1995, p.94). The designation of certain places (i.e. the air-port lounge, the motor-way, the shopping mall) as 'non-places' is not just about functionality; it also involves a whole range of relations, with both the self and with

others, which go beyond the relations with these spaces for the ostensible activities they facilitate. As Augé (1995, p.94) indicates, [a]s anthropological places create the organically social, so non-places create solitary contractuality'. The linkage between individuals and the space of 'non-place' is often mediated via words and texts – commands, directions, prohibitions that are 'instructions for use', communicated through a variety of informational signage. Part of this textual mediation is also related to the drawing of attention to apparently 'actual' or 'historic' places that the experience of supermodernity isolate us from and / or speed us through. Augé gives the example of 'You are now entering the Beaujolais region,' where the signboard's text acts as a commentary for a social space that is, tantalisingly, somewhere close at hand. Historic buildings, geographical expressions or ancient political formations now merely provide a 'tag-line' for marketing local economic activity to those just passing through.

Augé's idea of 'non-place' outlines a number of expressions of supermodernity that are both familiar and proliferating as globalisation gathers pace and the domination of market economies creates a more universal homogenised construction and experience of public space. This analysis of the development of 'non-places' and the compression of space / time can be considered a core dynamic of capitalist, and even pre-capitalist economic development. David Harvey (1989) indicates that an understanding of this dynamic has been present for some time. He quotes from Leo Marx, who writes that as early as the 1840s many Americans were aware that the path of technological progress would lead to the relentless 'annihilation of space and time' (L. Marx in D. Harvey 1989, p.179). He goes on to refer to Karl Marx, who in the *Grundrisse,* had refined this idea to the 'annihilation of space *by* time' (original emphasis D. Harvey 1989, p.179). Harvey elaborates:

> For though the medieval merchant discovered the price of time through the exploration of space, it was, Marx insisted, labour *time* that defined money, while the *price of time* or *profit* was the fundamental dimension to the capitalist's logic of decision. From this Marx could derive what he saw as a necessary impulsion under capitalism to annihilate the constraints and frictions of space, together with the particularities of place. Revolutions in transport and communications are, therefore, a

> necessary rather than a contingent aspect of capitalist history. (D. Harvey 1989, p.179 original emphasis)

From this perspective, we can view Augé's analysis as a mapping of the latest phase in this long-term compression and homogenisation of space brought about by the increasing acceleration of the flows and geographical penetration of capital. If the particularities of place are a 'constraint' to these flows, then emergence of the 'non-place' can be regarded as a further rationalisation of space and communications within it. Harvey notes that the consequence of the 'annihilation of space by time' is a way of life that involves greater speed where the need to surmount the obstacle of space becomes essential. This increased speed and accelerated flows of capital and labour also brings about a degradation of both rural and urban communities. Such degradation was experienced keenly and directly challenged by the many social movements, dissident and communitarian groups that emerged in the 19th century and continue to do so – movements and groups that seek to 'liberate and appropriate their own space for their own purposes' (D. Harvey 1989, p.183). Harvey argues that these groups need to be understood in terms of the object of their opposition: '[the] search for "authentic community" and a "sense of place" became all the more fierce as the community of money and the annihilation of absolute place under the domination of money became more powerfully felt' (D. Harvey 1989, p.183).

As both Augé and Harvey indicate, the internal dynamic of capitalist development acts as an agent of homogenisation, collapsing space and erasing the particularities of place and the experience of difference, in relation to both geographical space and, ultimately, specific cultures. Space, in these accounts, is an overarching and, somewhat, abstract category, a medium for movement and flows, both physical and symbolic. But if the 'particularities' of place are being gradually erased, there is a need here for a better, more incisive definition of 'place' in relation to 'space'. Given the focus of this dissertation, the notion of 'landscape' may just offer such a definition, in the sense that landscape denotes geographical space as site of action, design, representation and interpretation. Christopher Tilley (1994) gives a comprehensive survey of these terms as they have been discussed across a range of disciplines, in particular human geography, cultural anthropology, archaeology and phenomenological approaches to philosophy. He draws on these disciplines to analyse

recent small-scale non-western and pre-historic societies, using both ethnographic literature, and, what is perhaps more relevant here, empirical exercises which attempt to develop a methodology for interpreting long-term relationships between populations and features of the landscape. While his survey is wide-ranging, I want to draw on some of his observations and definitions here to tease out differences between notions of space, place and landscape.

Tilley starts by acknowledging the potentials for abstract notions of space in many geographical and archaeological accounts of human activity. However, these more abstract perspectives treat space is as a 'container' for human affairs and that 'activity and event and space were conceptually and physically separate from each other and only contingently related. Such a view of space decentred it from agency and meaning' (Tilley 1994, p.09). Tilley counters these views by drawing on conceptualisations of space that he claims are emerging from the 'phenomenological school' of geographical research.[14] The key issue here is the manner in which,

> places *constitute* space as centres of human meaning, their singularity being manifested and expressed in the day-to-day experiences and consciousness of people within particular lifeworlds… and that meaning, defined in terms of structures of intentionality, is central to any understanding of place (original emphasis Tilley 1994, pp.14-15).

Tilley understands space to be a more abstract concept than place because 'without places there can be no spaces, and the former have primary ontological significance as centres of bodily activity, human significance and emotional attachment' (Tilley 1994, p.15). In a survey of this literature he goes on to outline how the specificity and identity of place are constructed through assembling typologies of particular kinds of space. These can be briefly summarised as follows:

1. Somatic Space. This is a space of 'habitual and unselfconscious action. It is the space of sensory experience… this space takes as its starting point an upright body looking out at the world' (Tilley 1994, p.16).
2. Perceptual Space. This is the 'egocentric space perceived and encountered by individuals in their daily practices' (Tilley 1994, p.16). This is the constructed personal space of an individual's life; it is also the space of perception of objects, position and cultural practices. It creates personal meaning in the

action of their 'bodily routines' and the remembrance of places of significance.

3. Existential Space. This space is the 'lived space as it is constructed in the concrete experience of individuals socialized within a group' (Tilley 1994, p.16). It concerns the creating of meanings around sites of symbolic / sacred weight, objects, features and typographies that provide 'reference points and planes of emotional orientation for human attachment and involvement' (Tilley 1994, p.17). Existential space is also tied up with the creation of paths and boundaries, either natural or cultural, and therefore a delineation of territory and social distinction and 'otherness'.
4. Architectural Space. Architecture is the 'deliberate attempt to create and bound space, create an inside and an outside, a way round, a channel for movement' (Tilley 1994, p.17). This making of space tangible has a major role for Tilley in relation to the production and reproduction of existential space and the configuring of perceptual space.
5. Cognitive Space. This is the space of reflection and theorisation about the other forms of space.

Tilley is very clear that these different 'spaces' are closely interrelated. Even so, his categories are useful ways of considering and delineating relations to space as a complex of sensorial and perceptual explorations that develop into a series of social, cultural and conceptual relations with a specific physical topography as a site of action, imagination and emotional attachment.

Tilley concludes his conceptualisation of landscape in a clearly anthropocentric fashion:

> A landscape is a series of named locales, a set of relational places linked by paths, movements and narratives. It is a 'natural' topography perspectivally linked to the existential Being of the body in societal space. It is a cultural code for living, an anonymous 'text' to be read and interpreted, a writing pad for inscription, a scape of and for human praxis, a mode of dwelling and a mode of experiencing. It is invested with powers, capable of being organised and choreographed in relation to sectional interests, and is always sedimented with human significances... Landscape is a signifying system through which the social is reproduced and transformed, explored

> and structured – process organised. Landscape, above all, represents a means of conceptual ordering that stresses relations. (Tilley 1994, p.34)

Tilley's conception of landscape emphasises the latter's mutability in the face of human action, both materially and subjectively. Landscape is fluid in its shifting physical forms, social ordering and in its imaginative inscription and reading by successive social formations. As Tilley indicates, this process also impacts on landscape as site of flows of power, with the potential to be co-opted by certain interests to the possible detriment of others who might share the same space. Yet, in spite of this, Tilley's understanding of 'landscape' offers a more open framework for thoughts and action than existing notions of 'place'. As he states '[a] concept of place privileges difference and singularity; a concept of landscape is more holistic, acting so as to encompass rather than exclude' (Tilley 1994, p.34). This is not to say that Tilley takes landscape to be a homogenous entity. On the contrary, landscape, he argues, is contradictory, particularly in terms of representation, where it can function as 'a visual ideology masking the social forces and relations of production, relations of exploitation and alienation (Tilley 1994, p.34). In this regard we can relate the idea of landscape back to the analyses proposed by Augé and Harvey, and thus to the manifestation of ever expanding economic development.

Tilley's interest is in the landscape as the topographical arena of human activity and his case studies are focussed on pre-historical / small-scale societies, which we must have had a very different imaginative / sacred relationship to landscape than is the case in early capitalist Western societies. To link some of these ideas back to Augé's conception of 'non-place', Tilley quotes from Edward Relph,

> the paradox of modern landscapes is that they are dehumanising because they are excessively humanised. There is almost nothing in them that has not been conceived and planned so that it will serve those human needs which can be assessed in terms of efficiency or improved material conditions. But there is almost nothing in them that can happen spontaneously, autonomously or accidentally, or which expresses human emotions and feelings. (Relph 1981, p.104, in Tilley 1994, p. 22)

Relph's comparison of the modern capitalist landscape with that of a past, more open and spontaneous age might be over-played as it presents a too idealistic view of pre-

capitalist societies. As Tilley notes, even pre-capitalist landscapes were sites of power, although power of a ritualised or mythologised nature and more intimately linked with bodily practices. Yet, we can see how Relph's apparent exasperation with a modern landscape which seems to allow no space that has not been 'humanised', or under rational disciplines of some kind is echoed in much modern writing about the British landscape. Marina Warner (2008) has identified a common thread in a number of, primarily, British writers who produce work she characterises as 'memory maps'. In these wide ranging works the emphasis is not so much on a search for the wilderness or a simplistic utopian past, because the humanisation of the landscape is a given. The writers concentrate rather on what can be scraped back and revealed of the 'emotional' or 'autonomous' within these 'sites of power'. From the psychogeographical wanderings of Iain Sinclair (1997, 2002) and W.G Sebald (1998) to the 'New Nature Writing' of Richard Mayby (1978, 2005), Roger Deakin (2007) and Robert Macfarlane (2007), it is that which is left on the margins of these excessively rationalised landscapes that is the focus of investigation, exploration and imaginative tracings. This is not to deny the humanisation of the landscape, but to find the historical fault-lines in its 'efficient management for material gain'. It is these fault-lines that offer spaces for an opportunistic natural life or a more expressive human life to flourish. They also offer potential for other cultural forms with a site-specific dimension, such as sound art, to interrogate and challenge the expanding homogeneity and 'over-humanisation' of the contemporary landscape.

1.2 – **Site-specific Art**

The issue of the site-specific in relation to sound based work is a central concern of this dissertation and of my own practice-based work. Concepts of the site-specific in art can help elucidate the complexity of the politics and theorisation of the formation of 'place' and how these might be articulated in cultural practice, but the breadth and variable nature of the work that might be brought under the umbrella term 'site-specific' needs to be outlined. Other terms are in circulation that relate to work with similar concerns include site-responsive, site-orientated, site-referenced, site-related, site-conscious and so forth. However, I will use the more generally adopted term, site-specific, to indicate a range of work that claims some purposeful or aesthetic link to a particular location. In this section, I will outline the evolution of the processes and theorisation of this form of creative practice and examine both its salient features and critiques.

Art historian and curator Miwon Kwon (2004) gives a comprehensive assessment of both the development of site-specific art and many of the issues raised by the work itself. It is useful to look at her study in some detail. As Kwon states, the term can be used indiscriminately by artists, critics or arts funders and can be applied to indicate a practice with a form of built-in 'criticality' or 'progressiveness'. In fact, the indiscriminate and loose use of the term has lead to other descriptors being employed, such as 'context-specific', 'debate-specific', 'audience-specific', 'community-specific' and 'project-based'. These more recent terms might signify either a new emphasis or a conscious break from the features of earlier manifestations of site-specific work. The site-specific in art practice has been categorised in broad terms as a 'spatio-political problematic' which addresses 'ideas about art, architecture, and urban design, on the one hand, with theories of the city, social space, and public space on the other' (Rosalyn Deutsche in Kwon 2004, pp.2-3). This formulation is specifically urban in focus I consider, however, that it can equally be applied to rural and semi-rural environments, where site-specific art is increasingly likely to be encountered. In these non-urban settings issues of land use and design, and the nature of social and public space are just as keenly felt, if with a different emphasises and particular set of concerns, as in an urban environment.

Kwon gives a genealogy of site-specific work since the 1960s. Although she is writing about the art world in the United States and uses examples of site-specific practice there, the growing internationalism of the fine art world and contemporary art debates and practices allows us to accept her analysis as pertinent to other national contexts. For Kwon site-specific practice can be seen as

> emerging out of the lessons of minimalism, site-specific art was initially based in a phenomenological or experiential understanding of the site, defined primarily in an agglomeration of the actual physical attributes of a particular location (the size, scale, texture, and dimension of walls, ceilings, rooms; existing lighting conditions, topographical features, traffic patterns, seasonal characteristics of climate, etc), with architecture serving as a foil for the art work in many instances. Then, through the materialist investigations of institutional critique, the site was reconfigured as a relay or network of interrelated spaces and economies (studio, gallery, museum, art market, art criticism), which together frame and sustain art's ideological system. Works….challenging the hermeticism of the system, complicating the site of art as not only a physical arena but one constituted through social, economic and political processes. (Kwon 2004, p. 3)

More recently the site has again been redefined, often extended beyond the institution into more public realms and is now also

> [d]ispersed across a much broader cultural, social and discursive fields, and organised intertextualy through the nomadic movement of the artist – operating more like an itinerary than a map – the site can now be literal, like a street corner, or virtual, like a theoretical concept. (Kwon 2004, p.3)

Kwon's study also describes how site-specific art can get co-opted by art organisations, often working alongside public or private development agencies, to use site-specific art as a function of urban design and regeneration schemes and conscious attempts at 'place-making. Artists can and are drafted into design teams to provide a more open creative approach to redevelopment projects. Historically, this has been particularly apparent in the use of 3-dimensional art works. In this instrumentalised form, site-specific art might be criticised as being merely decorative or functional. At worse, art works are introduced with little concern for either the integrity of the space

or the concerns of the community that are, or are about to be, resident. This type of art has earned the pejorative sobriquet of 'plop art' or 'plonk art'. The most notorious work in this category is perhaps Richard Serra's *Tilted Arc* (1981-1989), which, having been placed in the Federal Plaza in New York City, was later removed following protests and a public hearing instituted by users of the plaza and surrounding buildings. I would argue that in the UK, Anthony Gormley's *Angel of the North* (1998), sited by the A1 and A167 Roads near Gateshead, is possibly the most well known recent example of 3-dimensional public art work whose huge scale and form was met by equal measures of enthusiasm and loathing from locals. If the impetus for Gormley's commission was not specifically about 'place-making', it was certainly part of an attempt at place / regional 're-branding' and, in spite of the controversy surrounding its creation, has successfully became an icon of the area and symbol of the regeneration drive in Tyneside during the 1990's and early 2000.

In relation to Kwon's genealogy, sound art would seem to most aptly relate to the 'phenomenological or experiential' aspects of the site specific. However, site-specific sound art has also been aligned with exercises in urban redevelopment and 'branding'. The creation of large scale sound 'spectacles', such as Bill Fontana's *Harmonic Bridge* (2006), which used London's Millennium Footbridge as a sound generator, acted to bring people to the Tate Modern square, a building and institution which has led the wider re-development of the Southbank complex as a cultural space. The 'Dark Arches' project in Leeds is also a recent example where sound art has been used to try and re-imagine or humanise a space deemed problematic for local authorities keen on urban renewal. Here, the success of temporary audio-visual and sound installations [15] led to a large budget permanent sound and light installation. For this project, sound artist Hans Peter Kuhn worked within a design team made up of architects, acousticians and designers to create a more inviting atmosphere in this somewhat intimidating thoroughfare.

I would argue that the worst excesses of 'Plop art', whatever the medium, derive from disregarding the sensibilities and practices of the existing community, although getting a community's consensus on either the specific content or the value of public art in general might prove very difficult. More recent turns in public art that seeks a more direct involvement and participation with specific communities or community groups (often those deemed 'marginalised') are also not without issues. Advocates of

this greater level of community engagement claim that it breaks away from the pitfalls of early public art projects. Yet, in spite of this new emphasis, public art can act, at times, in spite of its avowed intentions, to 'exacerbate uneven power relations, remarginalise (even colonise) already disenfranchised groups, depoliticise and remythify the artistic process, and finally further the separation of art and life (despite claims to the contrary)' (Kwon 2004, p.6).

The idea of 'community' as an easily identifiable or homogenous entity is problematic enough in relation to most forms of social and political research, let alone in relation to creative projects where the artist's and art commissioner's understanding of the specifics of a particular social grouping are likely to be even more contingent. Through an analysis of the 'Culture in Action' programme in Chicago, Kwon isolates a typology of 'community' as it may be harnessed to public art projects. The four communities she identifies are: 'Community of mythic unity' – a supposed community based on generalised unity, such as gender, race, age, sexuality etc; 'sited-communities' – communities with some existing clearly defined identities based on location, modes of cooperation or common purpose, i.e. group of workers, inhabitants of a particular locality or members of the project or organisation; 'temporary invented communities' – communities which are brought into being through the art work itself and do not last beyond it; and ongoing invented communities – similar to the former but the project has some duration beyond the initial scope of the project or attendance of the artists. Although Kwon arrives at these 'communities' through a particular arts programme in Chicago, her categories are nevertheless very useful for the consideration of site-specific work.

An issue that is often raised in the context of debates about art and community is whether the artist(s) hail from the community for which the art is being made or whether they are brought in from outside. This is a relevant issue with regard to the artist's prior knowledge, sensibility and personal networks that might be brought to bear in the production of the artwork. But as Kwon suggests, being local is in itself no guarantee of success or failure. Whether the artist is 'parachuted' into a situation or is already resident needs to be thought of in broader terms. Acknowledging the problems of artist - community interaction is not to shy away from the idea that all such site-specific work is inherently compromised. As she indicates:

> This is not a matter of choosing sides – between models of nomadism and sedentariness, between space and place, between digital interface and handshake. Rather, we need to be able to think the range of the seeming contradictions and our contradictory desires for them together; in other words, seeming oppositions as *sustaining* relations. (Kwon 2004, p.166 original emphasis)

Art historian Hal Foster (1999) offers an alternative perspective on this issue. He explores the critique of artist / community interaction in relation to artists who adopt a semi-ethnographic role in their work with communities. This is a situation that Foster sees as growing in relation to a mutual fascination between anthropology and art, a fascination that can produce interesting interdisciplinary work but that may also potentially be beset by problems. Foster details at length some of the theoretical and methodological drives that propel this interest. On a more immediate level, the artist might be drawn to anthropological approaches through an aspiration to field work (i.e. the site-specific or community orientated project) in which 'theory and practice seem to be reconciled' (Foster 1999, p.181).[16] As he indicates '*the quasi-anthropological role set up for the artist can promote a presuming as much as a questioning of ethnographic authority, an evasion as often as an extension of institutional critique'* (Foster 1999, p.196 original emphasis). So, as with the use of 'site-specific' as a term that might carelessly imply an inherent progressiveness that may not be warranted by the work itself, the desire of artists to inhabit an ethnographic role opens up as many potential ethical and methodological problems as beset ethnography proper, without, however, the continuous and thorough self-scrutiny customary to anthropology.

While Kwon's study provides a chronological analysis of the development of these ideas of the site-specific, I would argue that all these tendencies are still in play within a broader site-specific practice, and the specific use of sound. If in site-specific art the tendency has been to shift from permanence to transience, sound art can also be seen to reflect this shift (I discuss this further in Chapter 4). This dissertation aims at an analysis of site in relation to theories of perception. I do not, however, wish to ignore the broader considerations of site and the site-specific because they help open up practice to social, economic issues and to cultural politics, as well as the more particular politics of artist's engagement with a locality and its inhabitants. If the site-specific can produce work of great value it should not be viewed un-problematically;

it should be placed in relation to a broader set of critiques of both art institutions and art practices. A creative engagement with sites and communities should not be deemed as inherently ‘progressive’ or more ‘relevant’ than projects based in the more contained art institutions. It is the specifics of the artwork and its siting that have to be assessed afresh, each work as it presents itself.

Chapter 2.0 – **Sound Art and Perception**

The approach to the issue of perception adopted in this dissertation is to utilise the ecological model, which, as I hope to demonstrate, offers a productive way to reconsider sound art. My starting point in considering questions of perception will be to examine how the issue is treated in contemporary writings on sonic arts. This literature has mostly been produced in the last decade in response to sound art's recent emergence as a distinctive creative practice. I look initially at historical surveys of sound art that lack a clear perspective on the issue of perception (LaBelle 2006, Licht 2007). I will then consider two theorists who adopt much more clearly formulated, if contrasting, positions in relation to sonic art and perception. These opposing perspectives are represented by the conceptualist approach of Seth Kim-Cohen (2009), who downplays the perceptual encounter with sonic art works, and the writings of Salomé Voegelin (2010), who posits a phenomenological approach predicated on close listening.

Section 2.2 engages with two of the main theoretical resources for this dissertation. Firstly, Eric Clarke (2005) who outlines the ecological theory of perception originally developed by James J. Gibson and attempts to apply it to the understanding of music. Secondly, I will outline Gernot Böhme's (2000) concept of an 'Aesthetic of Atmospheres', which provides a flexible model for the consideration of the operation of sound in relation to its source, its environment, and the perceiving body. I will use the discussion of Clarke's work to introduce some of the main concepts of the ecological theory of perception. I will also look briefly at Tim Ingold's (2007) critique of the idea of the 'soundscape' and Michel Chion's (1994) notion of the 'transsensorial'.

In sections 2.3, 2.4 .2.5, I will further examine the precepts of the ecological theory of perception and its potential application to the analysis of sonic art. To provide a broader intellectual context for ecological psychology, I will start with a more detailed look at some of Gibson's concepts in relation to other theoretical models which also examine the relationship between organism and environment. In particular, I will contextualise Gibson's approach in relation to the development of cybernetics and information theory. To elaborate the intellectual foundations of ecological theory further, I will also outline (2.4) the philosophical basis of Gibson's work in relation to William James' philosophy of radical empiricism, in particular his description of the

relationship between *percepts* and *concepts*. Finally, in section 2.5, I will scrutinise some of the other attempts to apply the ecological theory of perception to media forms, specifically cinema. Here, I look primarily at the work of Joseph and Barbara Andersen (1996) and at some of Gibson's own writings on cinema. I also suggest, in this section, how the ecological model is open to critique when considered in the context of broader media ecologies.

2.1 – **Sound Art and Perception: Histories and Perspectives**

The writer and sound artist Brandon LaBelle (2006) has produced one of the most comprehensive surveys of the experimental practices in music and contemporary art that might be included under the banner of sound art. Although this is a detailed and astute survey, perception – in the sense of sound objects being perceived via sensual and cognitive faculties – is, yes, mentioned, but not placed within a consistent model of perceptual processes. To be fair, LaBelle is providing an historical survey of sound art practice, and in many instances presents the conceptualisation of work as provided by the artists under review. His objective is not to propose his own unified model of how sound art might operate or be understood in relation to perception. Nonetheless, LaBelle does stress that many of the artists under consideration are concerned with the nature of perception in their work and with the potential for sound-based art to challenge, re-focus or disrupt perception via a range of conceptual, technological and performance methodologies. There is a sense, in LaBelle, that questions of perception are both central and complex, both in terms of an encounter with sonic material and of how that encounter functions as a dialogue between corporeal experience and the cultural knowledge of the viewer / listener. This is most evident when he is discussing the sound-oriented work of artists associated with Fluxus. When discussing the early conceptual approaches to sound of Fluxus artists Henry Flynt and George Brecht, LaBelle states that 'like the Fluxus event score, concept art is theorized as a perceptual process in which the image (concept) is experienced as an immediate presence – an art that presents to the viewer / listener an experience to be completed through the very act of perception' ((LaBelle 2006, p.68)). This form of conceptualisation underlines the sense of inter-relatedness and oscillation, between the sensory / bodily perception of the event and the cognitive / intellectual processing that perception engenders. That is to say, a sense of immediacy simultaneously coupled with a sense of intellectual distance. LaBelle sees the Fluxus project as a process of renewing perception by events and happenings that attempted to collapse the distance between art and life:

> The extreme, whether overtly dangerous or resolutely subtle, deeply minute or full of hilarity, seems to unsettle perception not for the sole purpose of reinvigorating its potential to understand reality through aesthetic experience only, but to, in turn, question how reality itself has been constructed. Stripping away the representational glare of signifying codes, predicated on a divide between object and subject, it is in my view that Fluxus initiates not only immediate knowing but activates such knowing in the field of culture by insisting on the difficulties knowing entails. (LaBelle 2006, p.65-66)

LaBelle goes on to examine the work of La Monte Young, an artist who in his early career was also associated with Fluxus. La Monte Young's minimalist approach to music comprised the durational playing of long tones and exploration of microtonal intervals. In a manner similar to Brecht and Flynt Young's musical compositions in the late 50s early 60s, are also offered up for completion by the listener and probe 'the perceptual and detailed world of sound to bring to the fore a music as pure concept, as a sonic image to be completed within the listener's ear' (LaBelle 2006, p.69). Although highly conceptual, Young's work is focussed on the materiality of sound and its perception, which, after John Cage, became a central element in experimental musical practice at this time. However, as LaBelle stresses, Young's work is without the same social dimension, 'the extravagant confusion' (Cage in LaBelle 2006, p.69) that distinguishes Cage's practice. He is rather, much more focussed on sound and listening:

> His music, in a sense, strives for the actualisation of the very perceptual moment of hearing as a phenomenon in its own right: sustained tones, loud volumes, extended durations, harmonic frequencies all encompass an overarching sonic commitment that seeks to make sound an experiential event beyond the human limits of time and space, exploiting the ear as a physiological device and the mind in its moment of perception of sound stimuli. (LaBelle 2006, p.71)

The performance and reception of La Monte's work is predicated on focused and intense listening on the music at point of perception, almost as a form of self-auscultation. The work puts into play a series of sonic relations between the performance, the performance space and the very act and mechanics of aural perception.

LaBelle sees this concentration on perception in Fluxus and 'Happenings' in the early 1960s as indicative of the influence of, or at least echoing Merleau-Ponty's *Phenomenology of Perception,* which, although originally published in 1945, had only become available in translation in North America in 1960. Merleau-Ponty's work theorised the idea of perception predicated on corporeal presence and the determining nature of the body seen as

> a system of systems devoted to the inspection of a world and capable of leaping over distances, piercing the perceptual future, and outlining hollows and relief's, distances and deviations – a meaning – in the inconceivable flatness of being. (Merleau-Ponty in LaBelle 2006, p77)

LaBelle stresses how, in the post-Cage universe music, and performance practice had at its disposal a whole new range of sonic material and how this sets for later artists, such as La Monte Young, the task of sifting through this material in forensic detail. In this regard, phenomenology is likely to have been a critical influence,

> for in moving away from the strictures of analytical thought to a concern for concrete and corporeal reality, it raises the question: how does concrete reality present itself to me *as* concrete? What are the conditions by which reality becomes know? (LaBelle 2006, p.80 original emphasis)

LaBelle demonstrates here the influence of phenomenology on some early practitioners of sound art, an influence that is still apparent, as we shall see later in this chapter.

The title of Alan Licht's (2007) book *Sound Art: Beyond Music, Between Categories*, indicates that for him sound art is both a distinctive practice and one which oscillates between the spheres of experimental music and contemporary visual arts. Sound art also includes many practices that attempt to merge these spheres, break or ignore the barriers between them, or operate along its fragmented boundaries, creating new forms of practice by the reconsidering what those boundaries may comprise. The moment of sound art's emergence is also the period which saw the appearance of performance art, happenings, expanded cinema, video art, installation art, land art, site

specific art and so on. This was a period of flux that extended the practices and media brought within the confines of the visual arts, and which was also characterised by the emergence of vibrant 'avant-garde' fringes to other disciplines such as dance, music, cinema and theatre which often shared similar concerns, influences, motivations and spaces.

Licht's study usefully brings into the reach of the sonic arts experimental radio, sound sculpture and cinema sound design, alongside avant-garde music and gallery based audio work. The notion of sound art outlined here is not just a description of a discrete practice; it is also marked by a greater focus on the sonic across a range of creative practices. However, while Licht does not really engage with the issue of perception in any detail, his concluding paragraph does include a statement that attempts to draw, albeit in vague and humanistic terms, a distinction between music and sound art in terms of the perceptual apparatus:

> Music speaks to a listener as a human being, with all the complexity that entails, but sound art, unless it's employing speech, speaks to the listener as a living denizen of the planet, reacting to sound and environment as any animal would (with all the complexity *that* entails) (Licht 2007, p. 218 original emphasis).

While I wouldn't necessarily agree with the distinction given between music and sound art (with or without speech), this statement indicates that when the semantic or conventional codes of language and music are not present, sound art might be engaging, or making more apparent, a particular set of perceptual responses. This broad point will be explored further in the Section 2.2 in relation to the ecological theory of perception.

If LaBelle and Licht seek to produce surveys of the short history of the sonic arts, Seth Kim-Cohen's (2009) purpose is a polemical re-reading of what he takes to be the perceived consensus on this history. His aim with regard to the sonic arts is to

> rehear them, rethink them, reexperience them starting from a nonessentialist perspective in which the thought of *sound-in-itself,* is literally unthinkable. Against sound's self-confidence – the confidence in the constitution of the sonic self – I propose a rethinking of definitions, a reinscription of boundaries, a reimagination of

> ontology: a conceptual turn toward a non-cochlear sonic art (Kim-Cohen 2009, p. xx original emphasis).

The mention of a 'non-cochlear' sonic art is a reference to Marcel Duchamp's call for a 'non-retinal' visual art. From this starting position Kim-Cohen reviews sonic art through the concerns of what he calls the 'gallery arts' and the Duchamp-inspired turn towards the conceptual in art from the 1960s onwards. That is to say, an approach to art that acts to 'question the conditions under which art can and should constitute itself is, by association, to question the existential sanctity of all categories and phenomena' (Kim-Cohen 2009, p.xxi). Kim-Cohen's position is also openly informed by the deconstructive methodology of Jacques Derrida and its application to the gallery arts by Rosalind Krauss. Rather than regarding art as based on a perceptual encounter with a material object it is predicated on consideration of where the artwork connects to 'broader textual, conceptual, social, and political concerns' (Kim-Cohen 2009, p.xix). This position follows Krauss's critical approach to minimalist sculpture, which is not based on a 'raw perceptual premise, but on *reading* the object as an element in the expansive text of sculptural encounter' (Kim-Cohen 2009, p.xix original emphasis). Kim-Cohen's main line of attack is against what he defines as the 'sound-in-itself' tendency in sound art, which he ascribes to the work and influence of John Cage and Pierre Schaeffer in particular. His critique is based on Derrida's deconstruction of phenomenology and its critique of Husserl's and, to a lesser extent, Merleau-Ponty's focus on the 'primacy of perception'. By contrast, Kim-Cohen stresses a reading of the post-war history of sound art as being of interest not because of its focus on the materiality of sound but rather, in line with the dominant position in the visual arts, because of its conceptualism,

> the *work* of the work of art happens, not in the materials, not at the site of the object, not at the locus of the encounter, but in an elsewhere / elsewhen engagement with ideas, conventions, and preconceptions – with the modes of art as art' (Kim-Cohen 2009, p.37 original emphasis).

The emphasis of sound art on 'sound-in-itself' seems to Kim-Cohen to be basically at fault philosophically. This is partly because of its adherence to the precepts of phenomenology, but because, somehow, an interest in sonic materiality seems to

mean, *ipso facto,* that the artists concerned are blissfully unaware of or antithetical to other readings or engagements their work might generate. The somewhat forced dichotomy established by Kim-Cohen leads him to pronounce on sound artists who focus on the material basis of sound art as either 'gullible' – for instance, his view of Francisco Lopez, or as 'reductive' – LaBelle's description of Alvin Lucier's *I am sitting in a room* (1996) as an 'explorative pursuit of how sound works as physical phenomena' (LaBelle in Kim-Cohen 2009, p.193).

I would argue that it is Kim-Cohen's own reading of Lucier's piece (as set out in the introduction of this dissertation) that most clearly exposes the fault lines in Kim-Cohen's approach. To briefly re-cap, Lucier's *I am sitting in a room* involves the composer, who has a noticeable stammer, reading a description of his presence and actions in a room, which is then recorded on tape and replayed back into the same room. This is repeated until the recording and re-recording process, and the operation of the room's acoustics, transforms the words into abstracted rhythmical sound. The Derridean preoccupation with language leads Kim-Cohen to see meaning only in the linguistic element of the work and the way this situates itself conceptually, reflecting on the context of its own construction. While these are undoubtedly among the work's central concerns, the material nature of the piece – the fact of hearing the hesitant, stuttering speech slowly morph into sonic abstraction – utilises and interrogates the nature of recording technology, the acoustics of space and the essence of speech and spoken language as, indivisibly, both sonic and semantic. Given Kim-Cohen's obvious enthusiasm for the work's richness (he even gets Lucier to recreate it for a radio programme Kim-Cohen produced) his final comments on the piece are indicative of both the limitations of his approach and his over-excitement at the supposedly iconoclastic nature of his polemic:

> The most critical implications of the piece – as it inserts itself variously into the circuits of music, literature, the gallery arts, plain speech, psychology, speech pathology, ontology, and epistemology – are accessible to the spectator without recourse to that material fact of the recording. It might even be that close attention to the sonic results of *I am sitting in a room* occludes the more pressing conceptual concerns raised by the piece. Thus I might suggest that, in order to best engage it, one need not – perhaps even *should* not – listen to *I am sitting in a room* (Kim-Cohen 2009, p.193 original emphasis).

In spite of his claims to hold both cochlear and non-cochlear elements as important aspects of a new conceptual sonic art, the polemical nature of his framework does not allow for the materiality and experiential nature of sound to co-exist and be at work in conjunction with the conceptual and contextual complexity of the piece under review. I would argue that this re-reading of sonic arts through the visual arts and its concerns, over-burdens sonic art within a conceptual 'closed-system', reducing it to a creative practice that is overly, and exclusively, concerned with exploring its own codes, social construction and historical evolution. With his conclusion on *I am sitting in a Room,* Kim-Cohen gives little sense of the actual *bodily* pleasures or the challenge to perceptual processes that sonic art can offer to its audiences, *in tandem* with other conceptual or contextual concerns.

The writer and sound artist Salomé Voegelin (2010) functions, arguably, as a direct counter-weight to Kim-Cohen. Her writings are very much about 'sound in itself' and the listener's direct experience of sonic material is central to her project of developing a 'philosophy' of sound art. For Voegelin the endeavour entails casting the 'philosopher as listener', but the resulting philosophy does not make claims to 'truth' or concrete conclusions. It intends, rather, to develop 'strategies for engagement and efforts of interpretation' (Voegelin 2010, p.xiii). Voegelin argues that her approach

> does not make the philosophy irrational or arbitrary, however, but clarifies its intention to embrace the experience of its object rather than replace it with ideas. In other words, it does not seek to mediate the sensorial experience of the artwork under consideration through theories, categories, hierarchies, histories, to eventually produce canons that release us from the doubt of hearing through the certainty and knowledge of its worth, which thus render our engagement tautological. Instead, this philosophy seeks to produce a critical engagement that witnesses, documents and narrates what is going on in sound art and thus is an aid to develop what is being practiced and how it is being listened too. (Voegelin 2010, pp.xii-xiii)

Voegelin posits the direct sensorial experience of listening to work as primary, rather than the 'theories, categories, hierarchies, histories' that are the main concern of Kim-Cohen. This is not just a theoretical position; it is the basis of her methodology and a

large part of her writing consists in documenting her experience of intense listening to a range of sound art work, both 'canonical' and less well known contemporary work. Her project is as much about developing a new approach to the critical writing about sound art as it is about formulating an over-arching 'philosophy'. The subject-centred nature of the project is clear:

> However far its source, the sound sits in my ear. I cannot hear it if I am not immersed in its auditory object, which is not its source but sound as sound itself. Consequently, a philosophy of sound art must have at its core the principle of sharing time and space with the object or event under consideration. Its is a philosophical project that necessitates an involved participation, rather than enables a detached viewing position; and the object or event under consideration is by necessity considered not as an artefact but in its dynamic production. This is a continual production that involves the listener as intersubjectively constituted in perception, while producing the very thing he perceives, and both, the subject and the work generated concomitantly, are transitory as each other (Voegelin 2010, p.xii).

As well as outlining Voegelin's methodology, the quote above points to the centrality of Merleau-Ponty in her project. However, as Voegelin makes clear, Merleau-Ponty did not say a great deal specifically on sound, leaving her to extrapolate from his work. The idea of the subject 'producing' the work is a central conception throughout Voegelin's book and draws directly on Merleau-Ponty's idea, put forward in *Primacy of Perception,* of the world as 'a life world'. As Voegelin (2010, p.191) discerns, this 'life world' is one 'which one creates through ones being in it, and which in turn creates one's intersubjective subject continually at the moment of this interaction'. The 'production' of the work by the 'intersubjective subject' posits the act of audition by the individual as the site where meaning might be constructed. The source of the work, both the maker and the 'content', if not unimportant, come as a concern that is secondary to the experience as an engagement with the sonic object or event.

Although this idea of 'production' points usefully to a dynamic oscillation or interaction between the object perceived and the perceiving subject, its application here is problematic because through repeated use and the personalisation of her descriptive process, Voegelin may seem to suggest that the object does not exist separately of its perception. This stems directly from her methodology, which places the author as reporter on her own process of perception. Merleau-Ponty and

phenomenology are not Voegelin's only sources; there is also Pierre Schaeffer's idea of 'reduced listening', whereby the sound object is stripped of its visual or causal references so as to expand the possibilities of audition. The 'reduced' in Schaeffer's lexicon, is taken from an earlier proponent of phenomenology, Edmund Husserl. Husserl's notion of 'phenomenological reduction' signals an attempt to exclude extraneous elements in order to engage more openly with any given phenomena. However, although Schaeffer's acousmatic project is an influence on Voegelin, she sees it as flawed. By creating a series of self designed symbols to represent the 'objets sonores' he created, Schaeffer brings the sounds produced 'back into the context of language as a structural means of ordering' **(**Voegelin 2010, p.35). As these sounds have been visualised, 'by necessity [they] reduce the heard to this design' (Voegelin 2010, p. 35). Therefore, Schaeffer's attempt to liberate sound from the visual or causal referent is deemed by Voegelin to have failed, as he ends up bringing sound back into the bind of language and ocularcentrism, which much current sound art criticism – Kim-Cohen excepted – seeks to liberate itself from.

Voegelin's writing is of much interest and value, but a sense of the individual is, arguably, writ too large into the equation. Although it counters the downplaying of the materiality of sound to the linguistic and the cultural, as with Kim-Cohen, Voegelin's reading of Merleau-Ponty proposes an engagement with sound that is in my opinion far too subjective and anthropocentric to be truly effective as an analytical framework. In many ways the reader is overly implicated in her particular experience, while there is too little sense of the 'world' outside in the relationship between the sound and the (her) body. Voegelin's attempt to valorise audition against the dominance of the linguistic or the visual leaves the act of audition as somewhat divorced from both a broader perceptual system and the shared cultural or physical milieu. As Steve Goodman (2010) notes, recently many attempts have been made, particularly in the field of cultural studies, to refocus phenomenology through a concentration on audition. Yet, he suggest that this approach misses a more fundamental 'vibrational materialism' that probes deeper than the merely auditory and which focuses,

> before human hearing, on the primacy of the synesthetic. The sonic will be emphasised in its sensory relation, its intermodality, as rhythmic vibration, in excess

> and autonomous from the presence of a human, phenomenological subject or auditor' (Goodman 2010, p.9).

I would argue that the primacy given by Voegelin to audition prevents a more 'systemic' understanding of perception from emerging. It also plays down considerations, in sonic art practice and, in particular, in installation work, about the site of exhibition in terms other than personal audition. It is my contention that Voegelin's response to Schaeffer's failure to move away from linguistic and / or visual structures provides too purist an understanding of sonic art – purist because it takes sonic art to consist of sound alone, rather than as functioning also by making appeal to the broader sensory systems and physical contexts of encounter. The mode of analysis Voegelin adopts, while focussed on audition and 'sound-in-itself', ends up being more a record of a personalised set of responses, rendered in the form of creative writing. The dexterity of her prose obscures the real sense of the materiality of sound, the sound becoming too closely bound to the language that describes it. Sound, ultimately, does not stand here 'in-itself' but returns once more in the guise of 'text'.

2.2 – **Sound Art and Perception: Ecologies and Atmospheres**

To root the discussion of sound art and perception more firmly in a broader realist / materialist discourse, it is useful to investigate models that engage more directly with the processes of perception and which place the body and the auditory subject more concretely in the physical environment. German philosopher Gernot Böhme (2000) proposes an 'Aesthetics of Atmospheres' which emerges out of a more general notion of an 'Ecological Nature Aesthetics': the exploration of the relationship between the quality of the environment and human sensibilities. The development of Ecological Nature Aesthetics is an attempt to move an understanding of ecology beyond the preserve of the natural sciences or, in more popular discourse, as a sphere that has fallen into crisis and is synonymous with issues of man-made environmental degradation. The intention is to develop ecology into a fully-fledged science of human environments. For, 'whether an environment is experienced as human or not, does not depend on physiological or toxicological factors alone, but on qualities in the environment which are experienced aesthetically' (Böhme 2000, p.14). For Böhme the notion of *atmospheres* became the primary focus of this broader aesthetic. As he outlines:

> What is unique and also theoretically complex is that the term describes a typical in-between phenomenon. Atmospheres stand between subjects and objects: one can describe them as object-like emotions, which are randomly cast into a space. But one must at the same time describe them as subjective, insofar as they are nothing without a discerning Subject. But their great value lies exactly in this in-betweeness. (Böhme 2000, p.14)

Böhme argues that in this way *atmospheres* can also challenge the separation between an aesthetics of production and one of reception. That is to say, one can actively create *atmospheres*, and examine the objects and technology that make them, but it is also 'a matter of reading characteristics as ecstasies, that is, ways in which a thing goes out of itself and modifies the sphere of its surroundings' (Böhme 2000, p.15). In relation to reception by the listener, 'atmospheres are experienced affectively, and one can only describe their characteristics insofar as one exposes oneself to their presence

and experiences them as bodily sensations' (Böhme 2000, p.15).

Böhme's conception is particular useful here because it acknowledges both the producer and the listener while neither ignoring one side of the equation nor valorising the one above the other: the equality of the two residing in this 'in-betweeness'. As they might exist in acoustic space (or may be perceived by any of the other senses) these *atmospheres* may be a subtle state that can best be apprehended when moving from one to another. Böhme speaks here of *atmospheres* specifically in relation to music and Acoustic Ecology, and considers that music, in its widest sense, has shifted from a historical conception as a product of time – sounds unfolding thematically over a certain duration with an apparent unity that transcends the passing moment – to a more contemporary recognition of music's spatial dimension. This situation is made particularly relevant with the development of electronic production and reproduction technologies and techniques. In this respect music can be regarded as the most productive art for the creation of *atmospheres*:

> The discovery that music is the fundamental atmospheric art has solved an old, always annoying and yet inescapable problem of musical theory, i.e. the question: of what does music's so-called emotional effect actually consist? In opposition to the helpless association theories and the theories that called upon fantasy to mediate, the Aesthetics of Atmospheres gives a simple answer to the question: music as such is a modification of space as it is experienced by the body. Music forms and informs the listener's sense of self, (das Sichbefinden) in a space; it reaches directly into his or her corporeal economy. (Böhme 2000, p.16)

We can summarise that Böhme's conception of *atmospheres* situates the listening body as rooted in, and responding to the sculpting of acoustic space, while acknowledging the producer and the technology that projects sound into this space. Furthermore, it delineates three aspects of the creative use of sound, the producer (projector of atmospheres into space), the listener (a body affected by the particularities of the sound in space) and the sonic material (that which is projected into space and which shapes it and acts upon the listening body), and takes them into consideration simultaneously. Yet, I would argue that while these are part of a whole experience or event, and interact with each other, they are also, in many ways, discrete entities that do their own work. As such they can be brought under separate

modes of analysis, either through direct audition or technological means.

While sounds themselves can be regarded and listened to as detached from their sources, in a mode similar to reduced listening, and move through space 'much in the manner of objects' (Böhme 2000, p.17), for Böhme listening in this open manner leaves the listener vulnerable to emotional disturbance from the sounds heard, even if this can also be at times a joyous experience. He also distances himself from models of the listener that see them as possessed of an 'inside' and an 'outside':

> What resonates and delivers the 'inside' wherein the voices, tones, sounds and noises take place is the corporeal space itself. This experience rarely occurs in pure form because to a certain extent it forms the very ground from which we listen: the 'I' does not normally lose itself in the listening act, but protects itself by distancing the voices, tones and sounds, relegating them back to their sources, and thus leaping over the experience of the In-between. (Böhme 2000, p.18)

From this we can deduce that if the *atmosphere*, the 'in-between', is the site of the experience, then neither its comprehension nor its verbal description are without difficulty. It is perhaps is no coincidence that much of the writing I have discussed so far in this dissertation veers to one side or the other: to the producer and cultural context, with Kim-Cohen and, less dogmatically, LaBelle, or to the listener with Voegelin. What the concept of *atmospheres* emphasises very strongly is the specificity of the space: the actual site of the experience. If the shaping of acoustic space is a central concern then the physical specifics of the space of performance or exhibition are paramount to the experience. It is not, on the face of it, such a profound assertion, but it is, nonetheless, one that configures the producer primarily as an engineer of acoustic space, as opposed to a constructor of a work that investigates reflexively its own status as art. Neither, from this perspective, is the listening subject the site of the work's 'production', the co-creator of the sonic material that s/he encounter. The 'voices, tones and sounds' have a determinant source, an active point of reception and a semi-autonomous materiality, shaped by and shaping the space they inhabit.

The acoustics of space has always been a consideration in the performance of music. However, here I am not interested in an understanding of acoustical space as a quest for neutrality, to the effective rendering of studio sound or instrumental purity,

but rather of acoustical space as *atmosphere*. I am interested in other words, in the propensity of space to shape and mould the sound diffused within it, and vice versa. So, along with the affective / emotional aspect of *atmosphere,* there is also the experience and apprehension of the sonics of space as a distinctive signature and unique marker of place.

As discussed in Chapter 1.0, Murray Schafer's concept of the soundscape, the sonic elements of a particular environment, has entered common usage in the spheres of acoustic ecology and sound art. However, anthropologist Tim Ingold (2007) challenges its usefulness as a model for considering sound in the environment. While Ingold's comments are also relevant to my earlier discussions of sound and environment (1.0), I will discuss it here because he makes direct reference to the soundscape in terms of perception. To start his critique of the concept of soundscape, Ingold rejects the breaking up of the landscape through a process of 'scaping' – a process which 'slices-up' the sensory apparatus into discreet registers by which we may experience an environment. As he states, '(i)n ordinary perceptual practices these registers co-operate so closely, and with such overlap of function, that their respective contributions are impossible to tease apart (Ingold 2007, p.10). This idea of the perceptual faculties co-operating as a 'system', with the distinction between the different senses in play being hard to differentiate, aligns Ingold to other scholars with similar approaches. Apart from Steve Goodman's (2010) and his comments on 'sensory relation' and 'synesthesia' mentioned above, there is Michel Chion (1994) who, discussing the relations between cinematic sound and image, posits the idea of the 'transsensorial'. For Chion 'there is no sensory given that is demarcated and isolated from the outset. Rather, the senses are channels, highways more than territories or domains,' (Chion 1994, p. 137). Chion sees this as particularly relevant in relation to the perception of rhythm in audio-visual media:

> When a rhythmic phenomenon reaches us via a given sensory path, this path, eye or ear, is perhaps nothing more than the channel through which rhythm reaches us. Once it has entered the ear or eye, the phenomenon strikes us in some region of the brain connected to the motor functions, and it is solely at this level that it is decoded as rhythm. (Chion 1994, p.136)

While neither Chion nor Ingold take their ideas into a more detailed physiological or psychological framework, the concept of a 'perceptual system' that they posit is a central tenet of the ecological model of perception (I will be outlining the ecological model in more depth below).

Ingold goes on to draw a clear distinction between landscapes as being 'audible', as it is experienced, and being 'aural', as when a landscape has been recorded and replayed in some fashion devoid of other sensory stimulation. This distinction echoes what Ingold detects in the work of many visual theorists who talk about the history of seeing when they are in fact talking about the history of the contemplation of images. Ingold maintains that the concept of the soundscape is similarly problematic and stresses that it is important to,

> avoid the trap, analogous to thinking that the power of sight inheres in images, of supposing that the power of hearing inheres in recordings. For the ears, just like the eyes, are organs of observation, not instruments of playback. Just as we use our eyes to watch and look, so we use our ears to listen as we go forth in the world. (Ingold 2007, pp.10-11)

Ingold might have just as well have been referring to an older understanding of aesthetics. As Böhme (2000, p.17) reminds us, after Kant aesthetics became primarily concerned with theories of art and art criticism, moving away from a 'nature aesthetics' and thereby effectively abandoning the 'field of sensual experience and affective understanding'. The issue for Ingold comes down to what we might take to be the nature of sound itself, and thus to the division between conceptions which focus on the materiality of sound and those which see it rather as a process of the mind. This dichotomy appears to reproduce an age-old conundrum that sets up,

> a rigid division between two worlds, of mind and matter – a division that is reproduced every time that appeal is made to the *materiality* of sound. Sound in my view, is neither mental nor material, but a phenomenon of *experience*, - that is, of our immersion in, and commingling with, the world in which we find ourselves. (Ingold 2007, p.11 original emphasis)

Ingold draws here on Merleau-Ponty who insists that this form of 'immersion' is the

precondition for the isolation both of minds able to perceive and of objects in the world that can be perceived. As Ingold continues:

> sound is simply another way of saying "I can Hear". In just the same way, light is another way of saying "I can see"… For sound, I would argue, is not the object but the medium of our perception. It is what we hear *in*. Similarly, we do not see light but see *in* it. (Ingold 2007, p.11 original emphasis)

Perhaps inevitably because of his recourse to phenomenological concepts, Ingold's position usefully challenges both Kim-Cohen's downgrading of the materiality of sound, which regards an engagement with sound-based practices primarily a question of 'mind', and the counter suggestion that sound is entirely a question of 'materiality'. Further, Ingold connects with Böhme's idea of *atmospheres* as an 'in-betweeness', an experience rather than a strict division between object and subject. Third, Ingold points to a differential between the 'audibility' of an environment and it being made 'aural' through technological reproduction. This is partly with reference to the double use of the term 'soundscape', as being both the sonic manifestation of an environment and the practice of the audio recording, and playing back, of a sonic environment. Ingold's points are clearly pertinent. In response to his last point, I would argue that the differentiation between experiencing the sound of an environment *in* that environment, and the experience of it played back via recording, opens further questions about sound, environment and perception. After all, we only have the one perceptual apparatus to engage with both of these manifestations of the sonic, whether *in situ* or in a mediated form. I will return to this point in the next chapter.

It is worth mentioning here the similarity between Böhme's notion of the 'inbetween' and Michel Serres' idea of mediation, as described by Steven Connor (2002) as 'that which stands, comes or moves between things otherwise separated or opposed'. In addition, Connor outlines Serres' connected conception of 'milieu', where

> the medium of communication is not only that through and across which messages pass, but also an environment within which communication occurs – or fails to. Serres's work characteristically represents channels of communication as complex

> locations, as involutions of time and space, rather than simply movements between poles or positions in a stable space (Connor 2002, p.1).

What is being communicated in this configuration is not just the message, but also the 'medium' in which it occurs. While Böhme does not speak about *atmospheres* in the same terms, there is a sense that he is also discussing the connectivity between channel and environment in his focus on the *spatiality* of *atmospheres.* That is to say, *atmospheres*, as either 'naturally' occurring or formed through creative practice, are a discernable *intensity* or *event* born of particular environmental configurations and carry meaning. This description of 'milieu' is also clearly similar to Ingold's invocation of sound as medium: that we don't hear sound but hear *within* sound. As we shall see, this also echoes James Gibson's understanding of perception as being part of the dimensions of the environment: its visual information structured through the 'ambient light array' and sonic information perceived within the sound field. As Gibson himself states (1982a, p.356), the perceptual system 'responds to the sound field in the air, and we are misled when we consider only the wave train entering each ear separately'.

Musicologist and psychologist Eric Clarke's (2005) approach to the analysis of music is a major resource of, and impetus for this dissertation. Clarke draws on the ecological perceptual theory of James Gibson (1966, 1979) and Heft (2001), and applies this to the perception of a wide range of music, both classical and contemporary rock. I will return to Gibson and Heft and their position on ecological perception in more detail in sections 2.3-2.5. Here, I want to consider the productivity of Clarke's approach for an investigation of broader categories of sonic art. This is particularly relevant because Gibson's original conception viewed perception as being achieved via the brain and senses working as a 'perceptual system' functioning in a mobile body. The mobility of the body is of course highly pertinent to site-specific and installation work: such work generally encourages the audience to move through the space rather than to adopt static viewing or listening positions. So, while recognising that Clarke's study concentrates on more conventional definitions of music, the general principles of his conceptualisation can be maintained and might be applied *mutatis mutandis* to the specifics of sound art as a distinct category of practice.

Clarke's (2005, p.5) main objective is a discussion of the different ways the listener interacts with music as part of a general auditory environment. He discusses listening to music as 'the continuous awareness of meaning', and considers 'musical materials in relation to perceptual capacities'. In this way Clarke attempts to steer an understanding of musical meaning away from the customary linguistic or semiotic approaches, towards a method based more on questions of perception. He differentiates between gaining an understanding of music through the act, and at the point of listening, and reflecting or thinking about music when not actually engaged in listening to it. As he states, '[u]nder those circumstances music is imagined or recalled, rather than perceived, as nothing is going on in the peripheral auditory system' (Clarke 2005, p.5). Therefore, the emphasis is on deriving meaning from music on the basis of the information that is engrained in the sounds themselves.

Concepts of Ecological Perception

It is useful to summarise here some of the primary concepts of the ecological approach to perception as outlined by Clarke. A key point in differentiating the ecological approach from other psychological models is the emphasis placed on the structure of information in the environment that the perceptual system 'picks-up'. This idea of a 'structure' of information in the environment differs from cognitive, 'information-processing' type approaches that broadly take the environment to be a mass of confusing information that the individual organises and structures as an internalised model. It should be emphasised here that it is this fundamentally realist conception which places Gibson's work outside, or pits against, what might be considered the 'mainstream' of psychological models of perception. Ecological perception leads to a focus on what may be '*directly specified* by environmental information – not what a perceiving organism can interpret in, or construct from, a stimulus' (Clarke 2005, p.17-18 original emphasis). To reinforce this point, Clarke refers explicitly to Gibson:

> Instead of supposing that the brain constructs or computes the objective information from a kaleidoscopic inflow of sensations, we may suppose that the orientating of the organs of perception is governed by the brain so that the whole system of input and output resonates to the external information. (Gibson in Clarke 2005, p.18)

The processes of perception can be seen as developing an 'attunement' to the environment because '[p]erception is a self-tuning process, in which the pick-up of environmental information is intrinsically reinforcing. Therefore the system self-adjusts so as to optimise its resonance with the environment' (Clarke 2005, p.19). Or as Gibson puts it in more straightforward terms, a 'system hunts until it achieves clarity' (Gibson in Clarke 2005, p.19)

Taking forward the basic idea that perception occurs in the mobile body, perception and action can be seen as interdependent. Therefore, we should regard perception as 'essentially exploratory, seeking out sources of stimulation in order to discover more about the environment' (Clarke 2005, p.19) – for example, leaning forward to touch or turning the head to see better something glimpsed in the peripheral vision and so on. However, many aesthetic and entertainment experiences are structured to prevent, or at least, curtail these 'perception-action' functions, for instance the way the viewer or listener is prevented from touching a painting or video screen in a gallery, or the enforced codes of behaviour at classical concerts (remaining seated, regulated applause at prescribed moments and so forth). This 'curtailment' is particularly noticeable in high art forms in Western countries, the traditional mores of which encourages a contemplative or disinterested form of perceptual attitude, as opposed to folk forms, pop culture and some avant-garde forms, which overtly encourage a greater degree of active participation.

Another key term in ecological perception is *affordance.* It was coined by Gibson to indicate that once a perceiver has identified the constant properties of an object he / she can consider what action the object will furnish. *Affordance* refers this both to the properties of the object itself and to the requirements and capacities of the perceiver who happen upon them. The variants in the object and of perception will allow for a variety of *affordances*, depending on specific needs. Clarke gives the example of the chair, which may *afford* sitting in normal circumstances, but may also *afford* a means of self-defence in other situations. The object *affords* different actions depending on the changing requirement arising in different circumstances. *Affordances* can be understood as 'the action consequences of encountering perceptual information in the world' (Clarke 2005, p.38). So, for Clarke, music may *afford*, depending on context, dancing, marching, emotional responses, co-ordinated working or communal worship,

amongst a range of other possibilities. The *affordance* will change depending on the variation of the musical object and the specific needs of the listener. Clarke indicates that the development of the dynamics of this relationship can have a direct effect on the development of musical practices. It is important to note that *affordance* should not be understood to refer only in an overly reductive manner to an action between a perceiver's capacities and needs and an object's potential. It should also be considered a factor in social action, in the relations and interaction between various individuals.

This idea of *affordance* can be linked to another key concept of the ecological model, namely that of *invariants*. This is the notion that the perceiver is usually unaware of the sensory act of perceiving; that the objects and / or events are the focus, rather than the sensory aspect of the stimulation. However, when the relationship between sense and perception is problematic, then the structure of the stimulus itself becomes more evident and requires more direct attention. This is often apparent with ambiguous or degraded perceptual information. In terms of sound, this might occur when the relationship between sound and a specific source is disrupted. By contrast, the more easily understood a sound is, the less evident is the specific quality of the audio material becomes. Clarke uses the analogy of speech, where a native speaker pays more attention to the meaning of the speech than to the 'quality' (e.g. tone, pitch etc.) of the voice. However, when listening to speech in a language or dialect that is not understood, the wide variety of sounds that are a feature of that language are more obviously apparent. Speech also illustrates is another general characteristic of perception: that the environment is generally perceived as relatively stable, in spite of wide ranging and continual physical variation. Within a continually changing environment there are *invariant* properties of stimulus information that remain unchanged even if the stimulus information is undergoing continuous transformations. In music, for instance, there are certain themes or motifs that might be identified as *invariant*, even if they undergo a series of transformations in terms of key, pitch or instrumentation throughout a piece. This also links to the idea of perceptual learning, in that the listener might recognise patterns across a range of pieces that they may or may not have been heard before. This is most explicit perhaps in the recognition of musical style or genre. So, a listener accrues knowledge through perception and becomes better able to recognise *invariants* in the stimulus information.

Clarke's major extension of Gibson's conception of ecological perception rests primarily on the feat of applying the idea of perceptual engagement with the environment to the cultural sphere, specifically to music. As he argues, 'the material objects and practices that constitute culture are just as directly specified in the auditory invariants of music as the events and objects of the natural environment are specified in their corresponding auditory information' (Clarke 2005, p. 47). There is no clear divide in ecological perception between nature and culture because culture is (understood to be) built on nature. Clarke stresses that for humans all experiences and circumstances are cultural. There are however two forms of the cultural, material and immaterial. For Clarke these should be considered the same in as much as they have to be delivered in modes of stimulation: '[n]o symbol exists except how it is realised in sound, projected light, mechanical contact or the like' (Gibson in Clarke 2005, p.39). Although the world is permeated by representational systems it would be wrong to conclude that all human experience must therefore consist of symbolic cognition. If representational systems can guide and influence, either openly or implicitly, it remains that 'every kind of knowing rests upon or involves a perceptual relationship with the environment' (Clarke 2005, p.43).

With the ecological approach to music what 'are normally poles apart (physical sources and musical structures to cultural meaning and critical content) can be understood together' (Clarke 2005, p. 47). This last point rests on the distinctiveness of different phenomena and the manner in which they may be made specific – that is, the reciprocity between listener's perceptual capacities and *affordances* offered by the environment, which rest on the shared perceptual capacities that allows a sensitivity to these phenomena.

This relationship between culture and perception in Clarke's theory needs further development and finessing. As Clarke admits, his book consists of a first attempt at exploring the application of ecological perception to music and is meant to open up further work in this area. But while Clarke's theorising on the ecological model of perception is a fresh approach to investigating music practices and while it provides many valuable perspectives, his work is less convincing when he actually comes to concrete examples. Given his grounding in musicology and the fact his book is directed primarily at others in the same discipline, Clarke's examples of both classical and rock music are analysed via the score. Even Jimi Hendrix's notoriously visceral

rendition of *The Star Spangled Banner* (1969), improvised through a wall of guitar feedback, is given this treatment. This recourse to the score and associated musical practices raises a more general issue with much 'conventional' musicological work: the problem, as Trevor Wishart (1996) puts it, of being bound to the 'lattice'. In this respect, Clarke's background in conventional musicology exposes the limitations of notation, even when dealing with what might be considered 'conventional' musical sound. As Wishart (1996, p.30) observes, '(e)ven when it is clear that the lattice is only an approximation to musical reality, notation focuses our attention on the lattice', going on to add, pointedly, that '(i)n the long run, all 'respectable' theory is based on the lattice'. For Wishart, the 'lattice' represents the general conceptualisation of what constitutes musical objects, which, in turn, finds representation on the lattice. This process in then re-enforced by musical instruments that are designed to control variable pitch while maintaining a stable timbre (as particularly apparent in keyed, holed and fretted instruments), all of which adds to the 'myth of the primacy of pitch (and duration) in musical architecture' (Wishart 1996, p.23). This problematic aspect of the 'lattice' is marked in the conscious movement away from its proscriptions in the development of new music – a move facilitated by such means as the replacement of conventional notation with the graphic score, the growth of improvisational techniques, aleatoric compositional methodology, electronics and the influence of non-Western musical practices.

There is no doubt that many of the practices grouped together under the banner of sound art have their origin in these moves away from the 'lattice'. However, it would be incorrect to say that the examination of scores is Clarke's only method of analysis. His descriptions of the affective force of his chosen works and the ways they address the audience are both insightful and productive. I would argue, rather, that some of the problems he addresses with regard to the codification of behaviour and the environment of reception make conventional music practice more resistant to analysis according to ecological models (I develop this point in Chapter 3.0). It is this that makes Clarke's examples seem less clear or convincing in practice rather than flaws in his theoretical framework, a framework that has indeed great potential of application.

What unites the positions in most of the writing about sound art dealt with above is that, although there are differences in theoretical perspectives, each shares the conviction that some form of direct engagement with the sound work is of primary importance. Only Kim-Cohen's advances a stance that reaches its apogee with his analysis of Alvin Lucier's *I am sitting in a room,* that downplays the centrality of direct experience to prioritise 'higher' level processes that are not reliant on direct engagement. Both Böhme and Ingold conceptualise the experience of sound as a complex process of multi-dimensional perceptual systems and environmental flux. That is to say, both understand 'sound' as a dynamic vortex of the sound object, the active perceiving body and the environment: an event that unfolds in real-time. Clarke's application of Gibson's ecological model to musical practice opens up further useful perspectives for the analysis of sound art, lending them the rigour provided by a highly developed theory of perception and environment – a theory that forms a solid foundation for a methodology where the more productive perspectives discussed above are marshalled into a coherent set of analytical tools.

In order to provide a broader intellectual context for ecological psychology, in the following section I compare some of Gibson's concepts to the development of cybernetics and information theory: theoretical models that also examine the relationship between the organism and the environment. In addition, as part of establishing the intellectual foundations of the ecological theory of perception, I outline the philosophical basis of Gibson's work in relation to William James's philosophy of radical empiricism (James 1912, Heft 2001). This re-consideration of radical empiricism, in particular James' formulation of *percepts* and *concepts*, will enable me to refine further how the ecological theory of perception can be brought to bear more readily on cultural objects because these notions make room for a better grasp of perception as the basis for imaginative and cognitive processes.

Chapter 2.3 – **The Ecological Model and Information Theory**

If we examine James J. Gibson's work in relation to his historical and intellectual context, it becomes evident that one of the most obvious trends contemporary with Gibson's development of ecological model of perception is the evolution, in the post-war period, of theories of cybernetics and information theory. Both the ecological model and cybernetics sought to arrive at a comprehensive theorisation of how organisms interact with the environment. While there is scant direct reference to cybernetics in Gibson's work, there are a number of shared conceptions that may draw as much from similar influences and experiences as from the fact, as he developed his work, Gibson was party to the proceedings of these debates. Behaviourism is a common thread in both Gibson and in early cybernetic thought (the use of the 'black box' model is a case in point) [17] and both theories emerge from the technological and theoretical imperatives of the Second World War. Gibson started to refine his understanding of visual perception while training aircraft pilots, just as mathematician Norbert Weiner developed his initial cybernetic theory while working on the automation of anti-aircraft guns. However, even if they are not directly connected, it is productive to compare some key issues of Gibson's ecological model of perception and cybernetics if only to clarify Gibson's position in relation to (and difference from) cybernetics. Besides, given its importance to the understanding of human-machine interaction in relation to digital media forms, practices and cultures it is useful to consider cybernetics. As mentioned previously, contemporary sonic art practice is mostly predicated on digital technologies. My own work uses digital means to mediate the raw material gathered from the environment as part of both the production and exhibition process. A core aspect of sound-based practice is the greater ability of digital workstations to manifest sound as *material*, its specificities laid out for analysis and manipulation. A central aspect of the digital is that the intensities and energies of analogue technologies are transformed into the status of *information*: a shift that is also marked in relation to both cybernetics and the ecological model (which I discuss in more detail below).

Katherine Hayles (1999) posits that cybernetics emerges and develops over three distinct although connected and evolving phases.[18] As far as Gibson's work is

concerned it is mainly the first two phases, the initial discussions of cybernetics at the Macy Conferences and the subsequent work on reflexivity and autopoesis, that are of most interest here. On one level, there are a number of analogies, which can be seen between Gibson's work and that of the first wave of cybernetics. Most immediate is the joint focus on the interaction of organism and environment, although for cybernetics there was also the search for a system that could be applied equally to machines as well as to biological entities. There was also the status of information, which was a major preoccupation of the early Macy conferences. For Norbert Weiner and Claude Shannon information, rather than energy, became the most important element in the consideration of human and mechanical systems. This is similar to Gibson's move away from a concentration on stimulus energy, as registered by sense receptors, to a consideration of the structure of the stimulus *information* that is picked up by an active perceptual system. However, the implication of Weiner and Shannon's research to establish information as a stable value was that information should be regarded as independent of the contexts in which it was imbedded, which is to say it could be regarded as divorced from any inherent meaning. This move, according to Hayles (1999, p.54) 'allowed information to be conceptualised as if it was an entity that can flow unchanged between different material substrates'. This de-contextualisation of information was opposed by some other Macy participants who did not want to lose 'meaning' in the creation of a theory of information. Donald Mackay presented his ideas at the seventh conference and was clear that information would have different values dependent on what or, more pertinently, who, was measuring the information. The measuring of information could happen in the mind of an observer, which in turn can be observed and measured by someone else and so on. This seemingly infinite series of regressions brought a level of reflexivity into information theory which was opposed by Weiner and Shannon due to the apparent impossibility of creating a mathematical model that could quantify the mutability of information in the mind of the recipient (Hayles 1999). Due to this complexity the problem was shelved, although reflexivity returned as a central concern of second order cybernetics (which I will discuss later).

For Gibson, stimulus information would necessarily relate to features in the environment. Perception of the information from the environment would in turn relate to that notion of *affordances*, which imply a flexible series of meanings and potentials that shift from person to person and context to context. Cybernetic experiments and

theoretical models characterise both humans and cybernetic machine as 'goal-seeking mechanisms that learn, through corrective feedback, to reach a stable state' (Hayles 1999, p.65). The feedback that is received relates to the environment and / or other humans or machines. For Gibson, there is also a feedback process, yet the stability, the organism's ability to survive or flourish, is that the 'pick-up' of perceptual information leads to the organism being able to 'attune' to their environment more effectively. The 'goal seeking', in the immediate sense, relates to the *affordances* that the environment, or specific objects / entities within it, might offer.

It is worth saying a little more here on Gibson's understanding of *affordances*. One of the most significant aspects of the concept is that it challenges the dichotomy between subject and object. As Gibson argues:

> The meaning or value of a thing is what it affords… What a thing affords a particular observer (or species of observer) points to the organism, the *subject*. The shape and size and composition and rigidity of a thing, however, point to its physical existence, the *object.* But these determine that it affords the observer. The affordance points both ways. What a thing *is* and what it *means* are not separate, the former being physical and the latter mental, as we are accustomed to believe (Gibson 1982b, pp. 407- 408 original emphasis).

The emphasis on the observer(s) indicates a degree of reflexivity that was problematic for first order cybernetics, it being dismissed by some as akin to a form of 'neurosis' in a system (Hayles 1999). However, I suggest that the notion of *affordances* appears to limit the potentially endless regressions by *locating the site of meaning back within the environment.*

The term *affordances* was derived in part from Kurt Lewin's concept of *Aufforderungscharakter,* translated subsequently as *invitation-character* and then referred to as *valence.* Gestalt psychologist Kurt Koffka developed a similar concept namely *demand-character* (Gibson 1982b). Gibson conception differs from these, although both Lewin and Koffka describe the possibilities offered or invited by the object. For Gibson, the central difference was that both Koffka and Lewin assumed that the potential of an object lay in

> the *phenomenal* object but not in the physical object. It was in the 'field' for Lewin or, for Koffka, in what he called the 'behavioural' environment but not in the 'geographical' environment. In short, the value of something did not have any 'physical' reality. The valence of an object was bestowed upon it by the need of the observer….Thus the value of something was assumed to change as the need of the observer changed (Gibson 1982b, p. 409 original emphasis).

For Gibson (1982b, p.410) the *affordance* of something does not change as the need of the observer changes because 'the affordances of the environment are permanent, although they do refer to animals and are species specific'. In this particular respect they are *ecological*: they refer to the properties of the environment in reference to specific animals in terms of their arrangements and interactions.

A few scholars have directly applied cybernetics and information theory to questions of sound and music. Some of these works are of interest to a discussion of ecological perception. Heinz Von Foerster (1969) contributed an essay on the subject as part of a study of early computer music. In that essay, Von Foerster made an analysis of sound in relation to environmental information, which is essentially the identification of sources with regard to modifications of behaviour based on survival needs. This process of identification can be mathematically understood as a 'computation of invariants in a set of sources under various transformations' (Von Foerster 1969, p.3), which in turn relates to the sensitivity and neural organisation of the auditory system[19]. It is this application of the term 'invariance' which links Von Foerster's mathematical and neurological approach with ecological psychology, which also places the concept of *invariance* as central.[20] Von Foerster's cites a melody under transposition into different keys as a clear example of *invariance*, and the same example is given by Eric Clarke (2005) as a particularly clear indication of how Gibson's concept of *invariance* can be seen in music. The physiological analysis of this process by Von Foerster (1969, p.8) as being 'a direct consequence of a neural organisation which has to infer from the signals it perceives the class of sources that produced these signals', embeds Gibson's understanding of *invariance* into the functioning of the auditory and neurological system.

It is interesting to examine some aspects of Von Foerster's analysis of sound and, above all, his distinction between sound signals: those that suggest a source, and what

may be related to it, and those that are interpreted as symbols, such as language. Sounds that are un-interpretable are described as 'noise'. Von Foerster places the term within inverted commas to indicate that it is used here in both its common usage in relation to unwanted sound and its use within information theory to indicate interference within a communication channel. However, he also brings another aspect to the term 'noise', when he states that '(n)oninterpretability is a concept (…); hence "noises" may well be used in a symbolic way on a higher level of symbolization' (Von Foerster 1969, p.8). As he goes on to say:

> The proposition 2+2 = green is uninterpretable on the level of mathematical discourse. This proposition is not even false; it is pure mathematical nonsense, 'mathematical noise'. We cannot deny, however, that by its very form of nonsensicality this proposition generates a specific frustration in the search for its meaning, which is precisely the meaning it carries with it (Von Foerster 1969, pp.8-9).

This is a productive approach to the idea of sound / noise as carrier of meaning beyond what is straightforwardly causal or semantic. While in the context of a discussion of computer music this approach also brings to mind Schaeffer's concept of 'reduced' listening, it is also similar to Clarke's (2005) reading of sonic noise within a musical context. This is most apparent in Clarke's analysis of Jimi Hendrix's *The Star-spangled Banner* (1969). Here, a performance of what might be considered as comprised mainly of ' noise' (i.e. guitar feedback and over-loaded effects), can, in context, be a carrier of multiple simultaneous meanings of a social and political nature within its perceptual sources. One can also step beyond a standard semiotic reading of the melody and the bodily gestures of performance and understand meaning as engrained within the sonic material itself.

To continue with the concept of 'noise' in information theory, Abraham Moles (1958) stresses that the concept of noise should not be considered to be a fixed but a fluid category and that,

> there is *no* absolute structural difference between noise and signal. They are of the same nature. The only difference which can be logically established between them is based exclusively on the concept of *intent* on the part of the transmitter: *a noise is a*

> *signal that the sender does not want to transmit* (Moles 1958, pp.78-79 original emphasis).

Although again we need to be careful not to use its duel meanings in this context as transferable, this understanding of 'noise' offers a support for Clarke's attempt to apply ecological readings of 'noise' in relation to music. There is also a manner in which noise, from Moles perspective, relates to another aspect of *invariance*, in that noise can be seen as degradation of the *invariant* information within a signal or a perceptual source. Moles identifies this as a method that is fairly regularly applied in experimental aesthetic strategies, that is, to make apparent the operations of rules of form or aesthetics by mixing them together. While we do not require information theory to identify this as a creative methodology, Moles description from this perspective is of interest. As he states:

> To analyse a perception by this method, we destroy progressively the message which provokes the perception, then follow the correlative degradations of the perception and of its causes in order to estimate the relative values of the various message elements (Moles 1958, p.79).

Within the ecological model of the *invariant* aspects of perception it is also the degradation of the 'message' that leads to a greater awareness of perceptual processes – processes that are normally 'un-examined' during the normal business of perception.

A comparison of Gibson with first order cybernetics and information theory offers productive ways of re-examining some of his key ideas. This is also true in relation to second order cybernetics, if more through a comparison of differing conceptions. The most fundamental issue here is the shift away from what might be broadly described as a realist epistemology. Although this realist position held for most of the first wave of cybernetic thinking, it was clearly challenged by the work of Humberto Maturana and Francisico Varela, and the development of their theory of autopoesis. In Hayles' (1999) account, the starting point of the theory of autopoesis was a series of experiments on the visual system of frogs.[21] From this work Maturana and Varela developed a radical new description of the relationship between the organism and the

environment. In this reading, the organism was effectively a closed system, and while there was a something 'out there', it 'comes into existence for us, and for all living creatures, *only through interactive processes determined solely by the organism's own organisation'* (Hayles 1999, p.136 original emphasis). This idea of a closed, self-reflexive and circular system they dubbed autopoesis. As Maturana and Varela wrote in the introduction of their 1972 book, translated in English as *Autopoesis and Cognition,*

> the activity of the nervous system as determined by the nervous system itself, and not by the external world; thus the external world would only have a triggering role in the release of the internally-determined activity of the nervous system (Maturana and Varela in Hayles 1999, p.136).

In line with this, each species constructs a 'domain of interactions' and 'what lies outside of that domain does not exist for that system' (Hayles 1999, p.137). Although this is the briefest sketch of autopoesis, it sets the distance between Gibson and second order cybernetics in terms of epistemology,[22] specifically, Gibson's upholding of a realist epistemology, which Maturana sets out to counter. While both recognise species-specific engagements with the environment, for Gibson, the notion of *affordances* offers an elegant solution to the way an organism relates to, and survives within, specific environments: the complexity and flexibility of these relations varying between the different orders of organism.

2.4 – **The Ecology of Percepts and Concepts**

It is useful at this point to look further into the basis of Gibson's work in relation to a realist epistemology. It is its realism that differentiates the ecological model of perception from other psychological models and also establishes my method as distinct from conceptualist or phenomenological approaches to sound art analysis. By exploring this aspect further, a realist epistemology also furnishes a more comprehensive form of analysis of the engagement with cultural objects, an analysis that goes beyond the framework provided by the ecological model alone. Although growing in influence, Gibson's work is still at the periphery of psychology and goes against many of what might be termed 'mainstream' understandings of psychological processes. This is coupled with the fact that while Gibson does much to distance himself from many of the standard psychological formulations, he does not write extensively about the philosophical basis for his own work. This leaves some questions as to how the ecological model might be built upon to provide a more comprehensive mode of analysis.

Psychologist Harry Heft (2001) has engaged in the most comprehensive contextual study of Gibson's work, both in terms of its philosophical and scientific antecedents and with regard to more recent developments based on his work. Heft's study considers Gibson's theories as firmly rooted in the radical empiricism of psychologist and philosopher William James (1912),[23] the tenets of radical empiricism being passed on to Gibson by the psychologist Edwin B. Holt, his graduate school mentor, who was also originally a student and later a colleague of William James at Harvard. It is through recourse to some of the tenets of radical empiricism that we can begin to fill in the gaps in Gibson's ecological model and to identify some concepts that feed into the methodology I am seeking to develop in this dissertation.

William James sought to distinguish his approach to empiricism from the form he deemed to derive from David Hume and his descendents. James gave his conception of empiricism the appellation 'radical' because:

> To be radical, an empiricism must neither admit into its constructions any element that is not directly experienced, nor exclude from them any element that is directly experienced. For such a philosophy, *the relations that connect experiences must themselves be experienced relations, and any kind of relation experienced must be accounted as 'real' as anything else in the system.* Elements may indeed be redistributed, the original placing of things getting corrected, but a real place must be found for every kind of thing experienced, whether term or relation, in the final philosophic arrangement (James 1912, p.23 original emphasis).

Heft characterises James's work as an attempt to embrace the evolutionary theories of Darwin and Spencer in the field of psychology, and to overcome the problems that still beset the discipline because of its Cartesian legacy. At the basis of such problems are conceptions of the person and of the environment as distinct and different categories: the environment is considered as a realm of material in motion, and the mind as a dynamic realm of mental processes where such material considerations do not apply. One of the corollaries of this Cartesian model is that those processes of concern to psychological enquiry, such as human perception, are analysed as phenomena the origins of which are part of the environment. In addition, these explanations of environmental factors are mostly rooted in models borrowed from the physical sciences and which are designed to study mainly the properties of inanimate matter, not animate organisms. So the dynamic interactions of the person in and upon their environment, and vice versa, cannot be dealt with without a series of gaps and epistemological problems emerging in the understanding of these processes.[24]

Heft deems James's work to constitute a coherent functionalist theory that fully embraced evolutionary and mental processes as adaptive to environment. James did not merely map a functionalist analysis onto a Cartesian foundation; as Heft outlines:

> In James's metaphysics, the aboriginal world of experience is *not...* composed of two entities, matter and mind; rather, it is an undifferentiated, latent multiplicity of "stuff". What is initially differentiated or selected is a dimension of experience, a relation with its termini being the *knower* and the object *known.* Hence, the knower is not introduced into his framework as an isolated Cartesian observer standing apart from the object thought about. Rather, in James's psychology, the knower appears

> from the outset in relation to the thing known because of the essential selective character of knowing (Heft 2001, p.28 original emphasis).

In addition to drawing out the fundamental difference between James's position and the Cartesians, the passage above emphasises the extent to which selectivity is a crucial and fundamental basis for knowing. Such knowing through selection is achieved by extracting information from a world that is structured and knowable directly through experience. As Heft indicates, through the function of selectivity,

> some of the myriad possibilities of structure in the quasi-chaos that is pure experience are realised. Immediate experience consists of things and their relations. Knowing is an activity that traces out lines of potential structure in the immediate experience; structure is not imposed on experience (Heft 2001, p.28).

The products of this process of selection are, in James's words, *percepts* and *concepts.* These terms are understood as constituting two aspects of cognition. Rather than seeing perception as pre-cognitive, as most standard psychological formulations would have it to be, here perception is understood as *a mode of knowing in its own right*, alongside thought processes. This is a fundamental point for both the ecological model and the work in this dissertation: that perception is the basis of knowing and that therefore, the material / sensorial elements of sound *carry their own meaning.* It must be stressed in this formulation that perception is direct, since radical empiricism rejects explicitly the idea of a mental representation standing between the object and the perceiver. As James states:

> Throughout the history of philosophy the subject and its object have been treated as absolutely discontinuous entities; and thereupon the presence of the latter to the former, or the 'apprehension' by the former of the latter, has assumed a paradoxical character which all sorts of theories had to be invented to overcome (James 1912, p.28).

For James (1912, p.28), the representative and transcendental theories developed to overcome this apparent problem were misplaced, as '(a)ll the while, in the very bosom of the finite experience, every conjunction required to make the relation intelligible is given in full'.

In addition to being direct, perception is a continuous process. It is the action of an individual engaging in the world through the mobility of a body negotiating the world's features and events. In face of the flow of perceptions, thinking, or conception involves the,

> selecting and fixing particular parts of this perceptual flow. Through this process concepts are carved out of immediate perceptual experience at a remove from the action and are abstracted from it. Abstracting from the immediate flow of experience makes it possible for the knower to isolate and then to classify or otherwise manipulate, these extracted "moments" (Heft 2001, p.40).

In James' formulation, *concepts* operate independently of the structure that is discernable through perception, and this allows for the free play of the imagination and abstract thought. However, this abstraction should be grounded in perception and not stand disconnected or allow for an over intellectualism to cloud the knowing gained from direct perception. *Concepts* are intertwined in the everyday experience and can help the individual to better interact with the environment. Yet, this is not without problems: because *concepts* and *percepts* are both part of the perceiver's experience, one must avoid confusing the qualities of immediate experience with the *abstracted* products acquired from immediate experience. To validate or understand experience through imposing abstracted concepts upon it will return the perceiver once again to the dualism James was so determined to avoid. For this will produce a truth claim based on the correspondence between the ideas formulated in the interiority of the mind and their successful 'mapping' onto the exterior of the world 'out there'. For James (James in Heft 2001, p.41), *concepts*, 'monstrous abridgements though they may be', are necessary because of the potentially overwhelming nature of immediate experience and the limitation of *percepts,* on their own, as a means of knowing.

I argue James' distinction between *percepts* and *concepts* offers a more solid foundation for Gibson's formulation of *affordances*. It can do so because such a distinction embraces a notion of objects and events within the environment as pertaining to both sensory perception and the mind. It also makes for a clearer understanding of a possible relationship and interaction between the activity of

perception and cognitive process that Gibson's writings often leave underdeveloped. With both James and Gibson, the emphasis is not to privilege the cognitive or the conceptual above perception, but to see cognition and perception as a *seamless interaction*, based on the capacity of an evolving organism to best adapt to 'selecting' or 'picking-up', through perception, discernable structures of information within the environment. This question of 'selection' is also a crucial point in relation to my analysis of sound art, both in relation to listener's apprehension of sonic material and with regard to producer's perceptual and conceptual processes in the 'selection' of material to make the work. (I develop this point further in Chapter 3).

In James' description of pure experience as 'things and their relations' and in his challenge to the separation of subject and object one might also see concerns that are implicit within Gernot Böhme's notion of *atmospheres*: 'object like emotions' standing *in-between* the subject and object. *Atmospheres* might also be understood as a set of relations between environment, sonic material and perceiver: sound acting to modifying space and its affective experience. As James (1912, p.14) says of pure experience, 'it is made of *that,* of just what appears, of space, of intensity, of flatness, brownness, heaviness, or what not' – a description that might also conjure up, on a more intuitive level, a sense of the affective experience of *atmosphere* that Böhme is trying to portray. The notion of *atmospheres* opens up an aesthetic and affective understanding of the environment and the specific operation of sonic material, both in relation to those who experience atmospheres and to those who produce them through creative practice. This aesthetic and affective aspect of perception is mostly understated or missing in Gibson's work and James's description of pure experience can be seen to provide something of a bridge between the ecological theory and Böhme's useful concept of *atmospheres*. It also provides a model for how the type of site-specific work I discuss in detail later might be seen both as source of affective sensory works and as a means for both emotional and more 'concrete' knowledge. That is to say, *percepts* and *concepts* provide a broader theoretical basis of how a systematic perceptual facility, as identified by Gibson, integrates with cognitive and imaginative processes in apprehension of both cultural objects and the world at large.

2.5 – **Ecological Perception and Media Forms**

If Eric Clarke (2005) has made the most substantial attempt to apply the ecological theory of perception to a cultural form, there are others who have also explored the potential this approach may offer. Joseph and Barbara Andersen (1996) make a case for an 'ecological metatheory' which could clarify issues of perception and theory in relation to film analysis. Their impetus is to foreground psychological approaches in the consideration of the affective force of cinema and to view its 'accessibility' to audiences as primarily an issue of perception rather than of culture. Surprisingly, given that they are attempting to outline a 'metatheory' of cinema, the Andersens do not consider sound at all in their piece. Gibson also regards film as, basically, a 'pictorial' art (Gibson 1979). This underlines what can be regarded as a general problem with film analysis; namely, that historically its focus has been primarily on the visual, even though for the majority of its history cinema has been an audio-visual medium. That aside, the Andersens open up some lines of enquiry that help define the application of the ecological model to cultural work and which may, *mutatis mutandis,* be relevant to sound-based work.

For the Andersens the central problem is whether the cinema, in its presentation of a fictional world, operates on a symbolic, and therefore high-level cognitive register, or whether it functions on a more direct perceptual level. They consider that with film the

> dancing patterns of light *specify* an entire fictional world. And that is just the point: that the dancing, flickering patterns of light *specify* rather than symbolize the world. If we take symbols to be more or less arbitrary vehicles for conventional meanings, then we can state emphatically that our perception of motion pictures is not symbolic. The motion picture does not symbolize a fictional world, it allows the patterns of light and therefore the information for a fictional world to be substituted for the ambient optic array of the real world (Andersen and Andersen 1996, pp. 359-360 original emphasis).

The ecological model suggests that the perceptual system processes the information from both the real world and its cinematic substitute in the same way, and this

accounts for the 'compelling' sense of reality that cinema can affect upon the audience. They are quick to raise the point that the patterns of light that reach the viewer provide information about both the fictional world on the screen and the screen itself, both 'scene and surface' (Andersen and Andersen 1996, p. 360) and that our attention moves between the two. What is being driven home here, is that we are engaging primarily with direct perception of the ambient light array and that what might be brought to it in terms of filmic conventions, cultural knowledge and personal experience, is not reliant on the film being in front of the audience. Indeed, this aspect of the film may be discussed separately without the film being viewed. It is on the basic, perceptual level of the cinematic experience that film may lay claim to universality; this is the foundation on which the other 'higher level' processes are built upon. The Andersens point out that, as Gibson suggests, perception is not reliant on 'higher level' processes that might be assigned to humans only. Other 'lower' animals extract information from the environment and act on it accordingly. One can see connections here with Merleau-Ponty's description of the way we engage with visual art works:

> If I accept the tutelage of perception, I find I am ready to understand the work of art. For it too is a totality of flesh in which meaning is not free, so to speak, but bound, a prisoner of all the signs, or details, which reveal it to me. Thus the work of art resembles the object of perception: its nature is to be seen or heard and no attempt to define or analyse it, however valuable that may be afterwards as a way of taking stock of this experience, can ever stand in place of the direct perceptual experience (Merleau-Ponty 2008, pp. 70-71).

For Merleau-Ponty, there is a clear distinction between the perceptual encounter and the post-encounter recall and analysis. The same point is made by Eric Clarke and by the Andersens in their application of the ecological model to music and cinema respectively.

What I consider to be crucial here is the idea of a play between 'scene and surface'. The Andersen's and Gibson's discussion of film are both broadly in relation to 'realist' approaches to cinema, but they do not touch on how we might engage with more abstract moving image media, with or without bringing sound into the equation. Indeed, Gibson (1978) is dismissive of approaches to filmmaking that seems to

wilfully contradict the logic of perception (the montage of Eisenstein being a particular *bête noire).* Film, with its high level of verisimilitude, can modulate perception more towards the 'scene' – at least in relation to the broad mass of mainstream cinema production. There are of course experimental approaches that operate to counter this seemingly inherent naturalism and explore film's abstract potential, which, in spite of Gibson's disquiet, both audiences and film makers find both highly affective and productive of meaning.

Be that as it may, one of the many affective potentials of cinema is this oscillation between 'scene and surface' – that is to say, the shift between, on the one hand, experientially 'inhabiting' a 'scene', made possible as one engages the perceptual apparatus in a way that is in line with how we perceive the natural world, and, on the other hand, the apprehension of its 'surface': the play of light, form, colour, sound and the signs of its construction as a medium.[25] Scene and surface may perhaps be best translated in film theory terminology as the difference between 'naturalistic' or 'illusionist' and 'reflexive' or 'structuralist' formal strategies. Clearly, the more 'abstract' the method, the more extensive is the play on 'surface'. I would argue, however, that there is, at the same time, an extension, a heightening or challenging of our perceptual register to 'experience' wider possibilities than are normally presented by the world. This dimension is a key aspect of much contemporary creative practice, sound art included. Through creative practice forms of experience and knowledge can be communicated that do not conform to *invariant* perceptual information but are nonetheless apprehended by the perceptual system. (I will return to this point later). These attempts to apply the ecological perception to film raises questions which are also of relevance to sound-based work, provided one accepts the basic principles of the ecological model whereby the perceptual apparatus operates as a system and sound is constructed as *information*.

While looking at other applications of ecological terms in relation to media, it is worth also returning to the concept of *affordances*. This particularly so because the term is the one aspect of Gibson's work which has started to become more commonly encountered in academic works, especially in relation to media cultures, even if at times it is in danger of being used as a simile for various 'potentialities' offered by particular forms, rather than in its more comprehensive meaning. It is a valid criticism that the social aspects of Gibson's theories were not developed in much depth, partly

because he downplayed the division between the physical and the social environment. Yet, Gibson was aware of this social dimension and that, alongside the 'pick-up' of information of the environment and of the self, for the perceiver it is another person that provides 'the richest and most elaborate affordances' (Gibson 1979, p.135). This is particularly important in relation to the most densely semantic of sound emanations of both the self and others, namely language. This social and linguistic sense of *affordances* is the most difficult to unravel and given the complexity inherent in social and linguistic systems it might be regarded as too reductive to think about them in these terms. Yet, given that one function of cultural practice is to relay knowledge and understanding of the broader environment and social formations, it is useful to have some sense of how the idea of *affordance* in a functional sense, that is to say, the potentials, arrangements and restraints offered by the environment, can be mapped onto cultural production. For example, as Eric Clarke (2005) observes, certain music might *afford* dancing, in turn one can say that dancing might *afford* a whole series of individual and social benefits, such as sensual pleasure and enhanced bodily dexterity alongside social interactions such as forming friendships, finding sexual partners, promoting group bonding and so on. If we consider this social aspect of media culture with regard to sound art, it seems that many of the practices we will examine later in this dissertation *afford* this complex and open-ended form of 'sociability'.

Indeed, many of the 'sociable' aspects of sound practice can be seen as examples of what Nicolas Bourriad calls 'relational aesthetics': artworks that might be judged 'on the basis of the human relations which they represent, produce or prompt' (Bourriad 2002, p112). Relational aesthetics signifies work that is open to dialogue and interaction rather than the product of a 'closed' private symbolic system. The political aspect of 'relational aesthetics' is to form activities and spaces that counter the prevailing disciplines and regimes of contemporary social formations. So, rather than art being the production of a commodified object, it is the production of socialised experiences that builds new relations and forms of knowledge. When we consider what a site-specific sound art might *afford* with regard to an enhanced understanding of place, it is in some respects these 'relational' effects that are engendered by an audience's encounter with the particularities of a sonic artwork and its site of exhibition.

Alongside these aspects of the social there is the wider question of *affordances* in relation to a broader political dimension and power relations. While seeing the

value of *affordances* as a way of considering objects in detail in terms of their arrangement rather than their essence, Matthew Fuller (2005), regards Gibson's worldview as too 'static'. Gibson regards humans as engaging in complex ecological interactions. Such interactions, however, tend to oscillate towards a form of homeostasis: that there is, 'no sense of a will to power or of change or disequilibrium within this ecology' (Fuller 2005, pp. 45-46). Although, the wider social implications of his work on perception is not Gibson's main focus, Fuller is right to show the areas where the ecological model provides little traction and where other theories and methods must be introduced to extend the perceptual analysis to wider arena of politics and power, both within the complex media ecologies Fuller explores in his own work, and in the social formation as a whole.

This dissertation deals with the specifics of sound art and ecological perception. What I propose, however, is not just a mode of art criticism concerned with formal and psychological processes. It is essential for this dissertation that the role of sound art practice be considered in this political sense. Here it is the question of site-specificity, in line with the individual artworks mode of address, which can open up this broader political perspective. Because it is the form and nature of the work's 'siting' that brings most clearly into consideration questions of political agency and contestation, as the art engages, to greater or lesser extent, with the social. It is this aspect that grounds the aesthetic and perceptual explorations dealt with in this dissertation and the point where sound art might present a case for its social productivity and consequence.

Chapter 3.0 – **Methodology**

In this chapter I will extend some of the more productive theoretical approaches to sonic art and perception that I have outlined in the chapter 2. I will focus, in particular on Gibson's ecological theory of perception, Gernot Böhme's conception of *atmospheres* and William James description of *percepts* and *concepts*. I will add to this by examining Augoyard and Torgue's (2006) notion of *synecdoche*. As my approach focuses on the material / bodily experience of sound based works, I will also consider the application of both sound production and diffusion technology and its implications in relation to issues of perception and environment. Using these various resources, my intention is to frame an analytical approach that enables us to engage with site-specific sound art by placing the ecological theory of perception at its foundation.

My interest in utilising the ecological model is to give some purchase to an investigation of sound art practice that moves beyond the customary musicological or phenomenological approaches or forms of critical analyses borrowed from the visual arts. Productive as these readings might be, there seems to be a space left open to try and consider sound art in relation to questions of perception and to offer readings that take stock of both the material base of sound art, that is to say, of sound itself, and of the specific ways by which sound art is exhibited and received. It seems to me that this is particularly relevant to the issues of installation practice and the development of new technologies for the diffusion of sonic material. A focus on site-specific work also raises questions about the acoustics and psychoacoustics of particular spaces and how these can be related to broader social and cultural specificities of place.

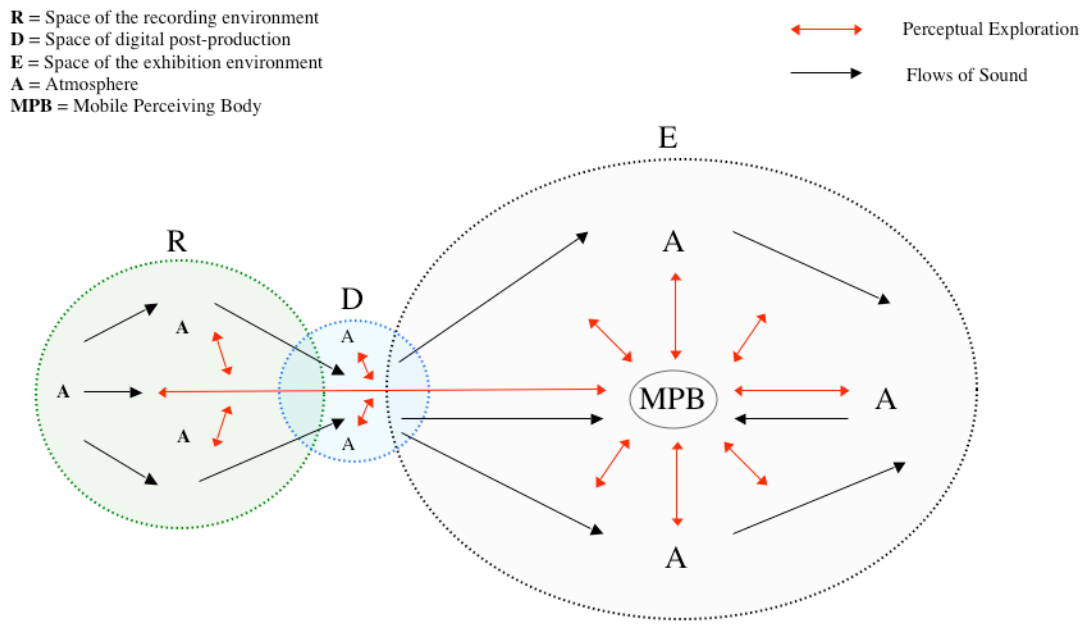
This chapter is organised around three broad areas: the Sonics of Space, the Mobile Perceiving Body and Selection. At the end of the chapter I will summarise the key concepts of the methodology developed in this and the previous chapters.

The Sonics of Space

In discussing the notion of the 'soundscape', Tim Ingold (2007) specifies that there is a fundamental difference between the 'audibility' of an environment and it being made 'aural' through technological reproduction. This distinction is also terminologically important due to the double use of the work 'soundscape' as referring both to the sonic manifestation of an environment and the creative practice of the recording and playing back material gleaned from the sonic environment. However, I would emphasise that the difference between experiencing the sound of an environment *within* that environment and the experience of it played back via a recording is not definitive. In relation to the ecological theory it opens up some very important issues. The fundamental point here is that that the same perceptual apparatus is clearly in play for *both* sets of experiences. That is to say, we have not evolved a new perceptual apparatus in the short amount of time since the invention of audio recording. Yet, the question does arise as to how an apparatus that evolved to engage with the environment as *direct* experience engages with its playback in the secondary environment of an exhibition space? In this context an exhibition space can refer to either a domestic or a public space of reception. In addition, other questions arise in relation to the particularities of the exhibition space itself and the technological means for the diffusion of the work. In response to these questions, and given the exploratory nature of the perceptual apparatus, I argue that in the exhibition of a sound work the process of audio playback engenders a perceptual and cognitive oscillation between the space of audition and the aural space (re)-presented in the sound work itself. Further, I suggest, a third environment or sphere should also be brought into consideration, namely, the post-production environment. While this might be based on analogue technology, today this is almost universally a digital environment. The manipulation and arrangement of sounds in post-production, with regards to panning, binaural positioning and levels of reverberation, are directly working on audio recordings in relation to developing and enhancing spatial effects. In short, I would argue that in any sound installation (and even in wider categories of audio work) we perceive *three simultaneously occurring strata of acoustic environments*: the sound of the space of the recorded environment, the sound of the 'virtual' space of the post-production environment, and the sound of the exhibition

space in which the sound work is presented (the work being contoured by the audio speaker array and the acoustics of the space). The listener may perceive these as a unitary audio experience or, depending on the specific address of the work and / or on the particular actions of the listener, as a conscious shifting of attention between or through these different environments. However, for analytical purposes it is useful to identify them and examine their functioning as separate, if integrated, stratum or environments. To support this notion of three *perceptual* spaces, one can observe that most sound artists working with environmental sound will, to a greater or lesser extent, record and / or organise sound in three stages in line with the three strata. That is to say, they will record sounds in the natural / built environment, arrange / modify sounds in post-production, and finally diffuse sound through audio speakers and mix sound levels in relation to the acoustics and / or physical parameters of the exhibition space. [26] *Figure 1* below illustrates how this perceptual process might be understood.

Figure 1.



With regard to the space of the recorded environment, the initial recording techniques themselves are also predicated on spatial considerations. The choice of microphones, based on their response patterns, their placement and the various combinations of these factors, are utilised to create specific stereo 'images': particular spatial relationships to sonic events within the recorded environment, albeit the concert hall, studio or other interior or exterior locations. Stereo recording set-ups, such as 'middle and side', 'ORTF,' 'coincident pair' 'binaural' and so on, refer to the particular use of specific microphones in various combinations and their placement in relation to the sound sources. Each of these set-ups creates particular stereo images that might be selected from a mixture of personal preference and the particular recording situation.

These recording methods and effects might also be further designed in relation to the diffusion technology, albeit speaker arrays or headphones. The speaker arrays themselves can be predicated on a variety of spatialised formats and possibilities for frequency ranges (in particular additional low-frequency bass). These may be designated as forms of 'surround sound', often incorporating low frequency speakers, (i.e. 5:1, 7:1,), or multi-channel arrays from 2-channel stereo onwards to advanced ambisonic systems. These already 'spatialised' configurations also allow for multifarious possibilities for further sonic spatialisation through the particular placement of individual speakers. This point of diffusion (speaker or headphone) can be regarded as the interface between the recording and post-production space and the environment of reception. In speaker-based diffusion, the interior or exterior space of exhibition will also operate to further shape and colour the sound.

It is useful to think about this development of spatialisation techniques and multi-channel systems within more long-term processes of media evolution. Jay David Bolter and Richard Grusin (2002) have promulgated the useful concept of 'remediation', a process by which all developing media re-configure and re-define existing media, which in turn re-defines itself in relation to that new media. While this is a long-term historical process their work focuses mostly on the massive changes to media forms with the shift from analogue to digital media, which made these processes more apparent. We might also think about the development of multi-speaker systems in this context. That is to say, this is not just as a development of creative potential for acousmatic music / sound installations but as a process of 'remediation', which is also manifest in the evolution of the domestic consumption of

media. Bolter and Grusin identify remediation as two, seemingly, contradictory impulses, what they describe as the double logic of 'immediacy' and 'hypermediacy'. As they state, [o]ur culture wants to both multiply its media and to erase all traces of mediation; ideally it wants to erase its media in the very act of multiplying it' (Bolter and Grusin 2002, p.5).

This drive for immediacy is the desire for a transparent media and a greater sense of 'thereness': the idea that the media will recede and leave us in the presence of the thing represented. However, this drive for immediacy, which nearly all new media forms have striven to achieve, is accompanied by both a 'revelling' in the media itself and a multiplication of media; a process Bolter and Grusin dub 'hypermediacy'. Their study tends to focus on visual media, or in order to be more precise the visual aspects of what are often audio-visual media. For a pre-digital example of the process, they cite the development of film as both a 'remediation' of photography, in terms of a greater immediacy through movement, but also, as it develops, as a 'hypermedia' melange of graphics, sound, music and special effects while also drawing on a range of literary and dramatic forms. Each of these additional elements (sound and colour being particular step changes) are understood in terms of a greater immediacy.

To apply this analysis to the developments of multi-channel speaker arrays, we might consider a process of remediation in the line of travel from mono to the current development of ambisonics, via the stages of stereo, quad, and surround sound systems. Each of theses developments promised a greater immediacy in sound reproduction (either in itself or in connection with the presentation of visual media such as film, television and video games), while multiplying its 'media' in relation to the increased delivery of sonic material via amplifier and speaker hardware. Even though this is not in itself 'remediation' in terms of a recombination of other media forms, I argue that it *can* be regarded as a 'remediation' of sonic spatial effects and frequency range. These multi-channel systems, especially when combined with visual media, offer a greater causal immediacy of sound, alongside sound structures that occupy broader spatial zones with enhanced directionality. Alongside this, the addition of low frequency speakers in more recent surround sound systems extends the range of sounds in terms of causal verisimilitude, as well as providing a more visceral / haptic dimension to the sound experience.

This consideration and application of spatialising effects is not confined to sonic art works or experimental composition, such as the pioneering work in the 1950s of Karlheinz Stockhausen and Iannis Xenakis, amongst others. It draws in addition on a long history of their use in popular music. As Peter Doyle (2005, p.2) describes in his study of the use of echo and reverb effects in the history of popular music recordings, '(t)he combination of lyric content, vocal harmony, instrumentation and studio contrivance here sets up a virtual geography, a coherent, highly specific sense of place and space'. Doyle (2005, p.2) is referring here specifically to blues and country recordings which use reverb and echo effects to give a sense of imagined geographical space, such as the wide open prairie, the railway yard and so on, while positioning the various elements in the mix to create a sense of 'near and far, a sense for the listener that the musical sounds are emanating from different "locations" within a musical field'. Doyle's study stops in 1960 but the increasing sophistication of recording methods, post-production techniques and hi-fi reproduction makes these spatialisation effects even more marked in subsequent periods of popular music production.

To summarise this section, I argue that with sound installation (and even wider categories of audio work) we perceive three simultaneously occurring strata of acoustic environments, even if the listener may well perceive them as a unitary audio experience or, depending on the specific address of work and / or the particular intentions of the listener, as a conscious shifting of attention through these different environments. This shifting of attention can also be thought of in the same way as that shift from 'scene to screen' in the cinema, as theorised by Andersen and Andersen (1996). The difference is that is sound installations, the 'scene' is the audio gleaned from real-world environment and the 'screen' the audio spatialisation effects and diffusion technologies that organise and contour sound within the studio / computer environment and the topography of the exhibition space. In sound-based work, the listener's attention can thus be understood to oscillate between these various elements: the apprehension of a perceptually coherent sense of space, and the technological process by which this coherence is achieved. We might also see this from a producer viewpoint, with regard to the perceptual facilities directing the spatialisation of sound through the production workflow of recording, post-production and exhibition (I discuss this aspect in more detail in Chapter 4).

The Mobile Perceiving Body

In the consideration of sound spatialisation and speaker placement, an issue to take into account is the positioning of an 'ideal listener' and the creation of what is commonly termed the 'sweet spot'. The ideal listener position is the site of the optimum listening experience. This might be in relation to live musicians or to a speaker-based diffusion that provides as close an audio experience as intended by the composer / artist. In the domestic setting this applies to creating a focal point between two speakers of a hi-fi system so as to produce optimum listening conditions. In the formal concert hall the 'sweet spot' is often organised through a pricing structure that controls access to points in the hall (normally a central band through the stalls and lower circle) that offer the most balanced sound, less affected by reverberation from the walls and outside noise. Historically, the positioning of the listener was allied to a whole series of other disciplines and etiquettes around the reception of music – an etiquette developed in the 19th century in order to move the listening of music towards a more contemplative mode (Clarke 2005).

Jonathan Crary (1999, p. 248) observes that this aspect of music performance and presentation came to the fore in the 19th century in the work of Richard Wagner and his concern for issues of community cohesion and desire for the music event to affect a 'uniform form of perception and response'. For Wagner, the design of the opera houses promoted multiple distractions. He wanted instead venues that could promote the sustained attention of the audience. The design of Bayreuth is in part based on Wagner's desire to 'exercise a fuller control over the attentiveness of the audience, to subordinate it to the will of the artist and to generate a collective state of reception worthy of an art with such social aspirations' (Crary 1999, p. 249-250). While Wagner made this kind and degree of control explicit, we can perhaps accept that traditional music / sound practices impose disciplines that are predicated on a certain suppression of the exploratory qualities of the perceptual system. In contrast, the performance of popular forms of music is generally less prone to this form of 'perceptual management'. Popular music is often presented in formal concert venues; there are, however, many more 'open' environments (i.e. bars, clubs, village halls, dances, family gatherings etc.) where popular music is received. Arguably, given the

breadth of technological methods for diffusion, sound art practice offers even more possibilities to work with the grain of the perceptual system's exploratory nature. I would go further and claim that there is a clear distinction to be made in sound based artworks between aesthetic strategies built on the figure of the static perceiver - the 'perceptual management' of listeners around an ideal position, the 'sweet spot'- and sound work that structures its aesthetic on the potential of audio technologies to address the 'mobile perceiver', as described by Gibson within the ecological model. (I will develop this aspect at more length in Chapter 4).

Selection

The concept of selection, as can be seen in the previous discussion of *percepts* and *concepts,* is a fundamental facet of how we might conceptualise an active perceptual system and processes. This aspect is also key to understanding how perception functions for both the listener, what elements they 'select' from the material presented, and in relation to the producer's choices in creating sound works.

On the question of attention to, or selection of, specific sound objects, the external physical mechanisms for hearing (i.e. placement of ears, movement of head to enhance binaural synchronisation and so on) have evolved to isolate specific objects within the wider sonic environment. Gibson (1966) describes these auditory isolation and selection processes as a combination of *overt* hearing, the external process of head and ear positioning, and *covert* hearing, what happens internally, which he presumes to occur at a neurological level. As Gibson indicates:

> The function of the auditory system, then, is not merely to permit hearing, if by that is meant the arousal of auditory sensations. Its exteroceptive function is to pick up the *direction* of an event, permitting orientation to it, and the *nature* of an event, permitting identification of it. Its proprioceptive function is to register the sounds made by the individual, especially in vocalizing (Gibson, 1966, p.75, orginal emphasis).

The proprioceptive function mentioned here indicates that Gibson's theories are not restricted to the pick-up of perceptual information being provided by objects or physical environment. As Tudge, Gray and Hogan (1997) point out, this limited conception of Gibson's theory misses its essentially interactive nature. Further,

> the actor also must pick-up *self*-information to respond to the information provided by the environment. If perception of the environment is coperception of the self, then the information that specifies the environment also specifies the self, or the actor's position in the environment (Tudge, Gray and Hogan 1997, p.82, original emphasis).

It should also be stressed that it is the actor's position in relation to other actors that forms another complex area of information 'pick-up': the whole gamut of information gained from social and linguistic interactions.

To open-up another useful understanding of auditory selection, Augoyard and Torgue (2006) address this process through the notion of 'synecdoche'[27]: the ability for an individual to select and valorise specific sound element from a more complex audio environment. This they consider to be a psychological process that goes beyond the physiological apparatus and behaviour for isolating sound. They also note that to-date there is no evidence for a physiological site for this process to occur, so it should be considered as a complex psycho-physiological phenomenon. Synecdoche can be seen quite clearly as having an evolutionary function in relation to the need to isolate sounds of the greatest importance from the sound field that surrounds the individual. Selection allows both the exploration of the environment, and attention and response to the potentials and dangers the environment might contain: a form of basic auditory engagement sometimes characterised as the 'primitive ear'. However, upon this 'primitive' level more complex psychological, social and cultural strata are constructed. Augoyard and Torgue draw attention to research that see this process of selection as being important in the structuring of a sense of duration:

> At the same time, valorized sounds vary across time and succeed each other. The move from one valorization of a sound to another produces discontinuity in individual lived experience. The synecdoche effect operates in our perception of time, according to the continuity-discontinuity binary (Augoyard and Torgue 2006, p.125).

Synecdoche also facilitates the structuring of space, as the listeners valorises distinctive sounds. This is indicated by Murray Schafer's concept of the 'soundmark', which hold emotional or symbolic weight for the inhabitants of specific geographical locations. Augoyard and Torgue also usefully take synecdoche into the area of cultural production, as the practice of musicians, composers, sound engineers and designers are all based on the selection and arrangement of sonic material. Distinctions between what sounds to include or exclude and the relative volumes of the sonic elements or instruments, to either prioritise or suppress, are fundamental to creative sonic practices.

Therefore, the flexible concept of synecdoche might be regarded as way of linking the basic auditory functions with both the marking and discernment of space and duration and a complex superstructure of social and cultural listening and production. Although Augoyard and Torgue make no direct reference to Gibson's work, their multi-disciplinary approach can be seen in this instance as aligning with Gibson's thesis, in that the perceptual facilities that have evolved to attune to the environment are not separate from social and cultural concerns, but rather, the foundation from which they are constructed.

3.1 – **Summary of Methodology**

This section recaps the concepts and methodologies that I consider productive for investigating sound art practices and, more generally, conceptualising ways of engaging with the sonic environment. It summarises the methodological 'tools' drawn from the range of perspectives and debates presented in this and the previous chapters. My aim is to develop a better way to understand sound art projects, one that is based on a synthesis of what I consider to be mutually supporting concepts. These are grounded in ecological perception theory, but also bring into play ideas and positions from other fields of knowledge that help to extend ecological theory more firmly into a consideration of environmental sound and sound-based cultural practice. These key concepts will form a coherent framework that will enable us to understand sonic art as a material culture that can open up and interrogate the physical characteristics and cultural specifics of place.

Gibson's notion of *affordances* posits that a clear distinction between sound as *object* and listener as *subject* is not sustainable, objects being both a function of both matter and mind. Gernot Böhme's (2000) concept of *atmospheres*, which deals with aestheticised sound, similarly challenges the separation of object and subject and formulates an understanding of sound as 'object like emotions' (Böhme 2000, p.14). Given this shared conception, *atmospheres* might be considered as a means of translating *affordances* into the area of aesthetics, as both a means of providing perceptual / sensual pleasure and of transmitting knowledge. Böhme's understanding of creatively generated sound in the environment behaving as 'object-like emotions' suggests that in discussing sound art work the *atmospheres* they generate has a particular 'emotional' quality or affect, which in this analytical context requires a descriptive system. As Roland Barthes (1979) suggests, in the discussion of music one is seemingly led inevitably to the adjective and the epithet. While it is tempting to avoid conventional adjectival means to describe mood or emotional quality, this approach does have the advantage of being easily understood. It is also true that a more generalised description of *atmosphere* avoids the myriad individual connotations that might pertain in relation to any artwork. However, this should not disguise the fact that there are materially quantifiable 'emotive' responses to certain sounds. For example, the sense of anxiety created by the low–frequency sounds and what are described as 'nonlinear' sounds: sounds that distort as they exceed the

normal range of musical instruments or animal vocalisation. In popular culture non-linear sound is particularly associated with the horror film genre. A well-known example is the scratchy violin accompanying the shower scene in Alfred Hitchcock's film *Psycho* (1960). Non-linear sounds appear to causes sensations of anxiety because they seem to relate closely, in terms of frequency and timbre, to the vocalisation of fear and stress in animals (Blumstein, Davitian and Kaye 2010). In more general musical production, at least in western traditions, certain intervals, key signatures or chords structures are used to create certain 'emotional' effects. For example, the diminished fifth interval, the so called, 'devil's interval', is considered 'sinister', the minor keys melancholic, diminished chords creating feelings of suspense and so on. So we might suggest that the operation of creative sounds diffused in a specific environment imparts on the listener both a material and an emotional / intellectual influence.

It has also been suggested that when the perceptual system is confronted with a combination of high levels of volume and low frequencies, it can respond with a 're-ordering' of the senses, prioritising hearing and haptic sensations over vision. This situation is described by Julian Henriques (2005), when he discusses Jamaican reggae sound systems as 'sonic dominance'. This phenomenon occurs,

> when and where the sonic medium displaces the usual or normal dominance of the visual medium. With sonic dominance sound has the near monopoly of attention. The aural sensory modality becomes *the* sensory modality rather than one among the others of seeing, smelling touching and tasting (Henriques 2005, p. 452, original emphasis).

Here, the prevailing ocularcentrism is 'blasted' into a new sensory formation. While this observation relates to a specific cultural situation, it suggests the potential of sound-based practice and of a specific use of audio technology to significantly re-fashion perceptual experience.

Böhme's notion of *atmospheres* in relation to creative sound production also needs be considered with reference to his broader category of 'Ecological Nature Aesthetics': the exploration of the relationship between the quality of the environment and human sensibilities and how the environment can be experienced aesthetically. I would suggest that the use of the term 'nature' should not preclude the possibility of experiencing also urban environments 'aesthetically'. These concepts of Ecological

Nature Aesthetics and *atmospheres*, underline a consideration of the site-specific on an affective level. The notion of *atmospheres* offers a way of pushing Gibson's concept of *affordances* into the area of aesthetics. That is to say, what sound-based work *affords* is an engagement with *atmosphere* as a form of sensory experience or knowledge: embodied pleasures that might open up other understandings.

The objective in proposing an approach to the analysis of sound artwork based on these concepts is not to displace existing modes of analysis but, rather, to arrive at a way of considering and examining aspects of such work that are not covered by existing approaches. As examined in Chapter 2.0, discussions of sonic art that focus on issues of perception have taken two, somewhat polarized, positions. On one hand the tendency is to downplay perception and construct sound artwork as a locus of conceptual idea that function to interrogate their own status as 'art object' within broader social and cultural contexts. This position, developed most consistently by Seth Kim-Cohen (2009), rejects what he describes as the 'sound-in-itself', tendency, which considers the work in terms of its materiality and the experience of listening. Here, the actual experience of the work adds little to its conceptual / contextual positioning. At the other end, are stances that concentrate on the specificity of the sonic material presented and on the act of audition. Salomé Voegelin (2010) develops a formulation based on phenomenology which does not 'seek to mediate the sensorial experience of the artwork under consideration through theories, categories, hierarchies, histories' (Voegelin 2010, pp.xii-xiii**).** However**,** her attempt to valorise audition as an escape from the dominance of the linguistic or the visual leaves the act of audition as somewhat divorced from both the workings of a broader perceptual system and a shared cultural or physical milieu. It is, in the end, too subjective and leaves little space for other, more distanced, critical engagements to emerge.

This is not to say that certain aspects of these contrasting positions do not have any value in relation to the analysis of sound art, and in many respects facets of these positions are also in to be found in my own approach. It is clearly difficult to discuss cultural works in any detail without regard to conceptual intentions and how they circulate in relation to both art history and contemporary social / cultural contexts. This is particularly true when considering site-specific practice. When discussing (and producing) my own work some form of conceptualisation is often the starting point to the process. Likewise, the act of audition is also central to approaching sound work

and any discussion of it is predicated on concentrated listening and on what might be described as 'phenomenological description'. Yet, audition alone seems to work against both the systematic nature of the perceptual system as identified by Gibson and the very notion that sound art functions as sound only, without recourse to a range of visual / sculptural / environmental framings which must also be treated as integral parts of the works, or at least how they are experienced. Therefore, while my methodology accepts some aspects of both these approaches, it is through its foundation in the ecological theory of perception that I seek to provide a more inclusive analysis, which has both the rigour of being grounded in a developed psychological model but is also open to a range of factors in relation to perception, environment and cultural practice. If we take the ecological model as having a broader philosophical basis in William James' radical empiricism, by revisiting James' work, specifically his notion of *percepts* and *concepts*, we can see how the ecological model of perception can be further nuanced to understand better how autonomous, if interconnected, imaginative and rationalising processes can be based on perceptual information. That is to say, by returning to his foundational epistemology, we can extend our understanding of Gibson's writings, which often leaves the broader psychological and cultural processes of ecological perception more implied than directly addressed.

Where I believe my methodology is of particular, additional value is in the way it can be deployed to examine the functions of both producer and receiver. This is not to return to an older model within communications or media theory of the 'encoder / decoder', but, rather, to advance a methodology based on the consideration of a shared perceptual apparatus in play throughout the process, informing both production modes and listener experience.

To conclude this chapter, here is a summary of the key aspects of my methodology:

<u>The Sonics of Space</u>

The sonic signature of a space and the operation of sound in a specific environment can be understood to have several aspects. According to Augoyard and Torgue (2006, p.7) the sonic effect acts as a form of 'code' that defines the potential configurations between 'acoustical sources, inhabited space, and the linked pair of sound perception and sound action'. The 'effect' therefore should also be regarded as dynamic and

contextual and it denotes both a sonic cause and an event. The ecological theory of perception provides us with a mode of analysis to understand sound perception in this tripartite understanding of environmental sound, while this conception of the sonic effect offers a comprehensive and analytical account of the operation of sound in the wider environment.

Gernot Böhme's concept of *atmospheres* describes the operation of sound in space in relation to aesthetics and affect. It looks at the production of music or the sound installation as 'a modification of space as it is experienced by the body' (Böhme 2000, p.15). For Böhme, *atmospheres* are an 'in-betweeness', a space between object and subject, with sound behaving as 'emotion-like' objects yet in need of a perceiving subject. In this description there is clear similarity to Gibson's understanding of *affordances*, which also challenges the dichotomy between object and subject. In this way atmospheres might help us to move the idea of affordances more firmly into the creative realm: music and sound art *affording* both a semantic and bodily experience, one that is designed to engage and excite the perceptual processes of the receiver / perceiver. This is also a way of considering how a producer creates an *atmosphere* which moulds the sonics of space for the creation of pleasurable and / or semantically enriched perceptual / sensory experiences. The way the above processes might be understood is that the exploratory perceptual apparatus of an audience can perceive these different audio spaces (as indicated in *Figure 1*, on page 86 above). Each sonic artwork will vary in the prioritisation of these three spaces, in line with the particularities of the material and the aesthetic strategies adopted (this process will be illustrated in relation to the case studies in Chapter 4).

The Mobile Perceiving Body

Gibson's theory of ecological perception is based on the notion of a perceptual system within a mobile body, which 'hunts' for clarity in an environment comprised of highly structured perceptual data. Just as the perceptual system 'attunes' to the wider environment, I suggest it also probes and registers the spatialised environments of sonic media and oscillates within and across these various audio strata. That is to say that three acoustic environments obtain: the environment of the recorded space, the 'virtual' space of post-production technology, and the environment of diffusion / exhibition. This provides a more grounded basis for analysing the strategies of spatialisation within sonic media, installation practice and sound diffusion

technologies. What this 'systems-orientated' conception necessitates is a move away from a consideration of sound art merely in terms of audition. A perceptual system must also pay heed to other stimulus information in the environment.

Selection

Selection is concerned with the question of the perceiving body 'picking up' structured information within the environment. It is a Gibsonian conception that might be seen as rooted in William James' idea of *percepts* being isolated from the multiplicity and density of 'pure experience'. Selection is also closely linked to the concept of *affordances*: properties of objects / environment that the perceiver utilises for their needs at a given time.

We can also think of selection through the concept of synecdoche (Augoyard and Torgue), which in cultural practice opens up the issue of selection from the position of both the producer and the receiver of sound in a specific context. However, when engaging with a sound work, how are these processes made manifest? What 'selections' has a producer made? How might these selections be addressed to, or apprehended by, a receiver? Such focus on the producer should not be taken as a move to reinforce the 'Romantic' notion of the artist – a notion that regards artist intentionality or conceptualisation as the origin and main locus of understanding of an artwork. While acknowledging that an artwork is produced and aesthetic strategies adopted to create specific affects and meanings, it is the particularity and form of the material, its *atmospheres,* that the producer has generated, as well as the *affordances / concepts* a receiver might discern or generate, that should be the central point of analysis. Similarly, an understanding of selection by an individual receiver should not be seen as the main site of experience and comprehension, as it might be with more phenomenological forms of analysis focused on audition. Synecdoche / selection should be understood in terms of a more materialist and unified understanding of the perceptual system and the processes that allow exploration of both environment and *atmospheres* to occur.

The Technology of Sound Production and Exhibition

The sculpting of sonic space, that is to say, the creation of *atmospheres*, relates to both the nature of the sonic material produced and to how that material is diffused within a space**.** In the context of sound installations, a close consideration of audio

technology raises a number of questions. How does the combination of technologies for recording and diffusion work to excite a particular site and the perceptions by its audience? Additionally, how does the arrangement of sonic material in a space engage / encourage the mobility of the audience, whether in terms of sound moving around the speakers and / or the body navigating the sonically excited space. Technology here is not just a means to an end, that is to say, the delivery of content / bodily excitement; it actually sonically shapes the space and the experience within it and thus contains a spatial stratum of its own. The audio diffusion equipment is also sculptural - an object of attention in its own right – its shape, dimension, colour and placement are also part of what we experience.

The Site Specific

The notion of the 'site specific' needs to be thought not simply as the place for which the work is produced or where it is exhibited. The notion of specificity here applies as much to the work as to the site itself. The site possesses particular acoustic characteristics, its 'sonic signature' that might be exploited to create both the work and *atmosphere*. It also relates to wider cultural resonances or histories, which might additionally be referenced within the material presented. Further, the space of the experience needs to be understood as 'place': a spot of habitation, history and contestation. The idea of place is itself a shifting category, its specificity under pressure by a homogenising economic and political culture that operates to flatten out its texture and inconsistencies: to render it as 'non-place'. A central question to be examined is how site-specific content, which might be described as operating on a semantic and / or symbolic level, might be built on the initial perceptual encounter?

In order to explore the analytical potential of the framework proposed here for the understanding of sonic art, the next chapter will examine work produced by a variety of sound artists as well as my own sound work. This is work that was developed contemporaneously with this dissertation.

Chapter 4.0 – **Application of Methodology to Sound Art Practice**

In this chapter I will be applying my methodology to the practice of established sound artists as well as to my own work. The work examined will be selected to illustrate various themes and creative strategies and I will look at what might be deemed 'canonical' works, alongside work that is less well known. As my focus is on the question of site-specificity and on experiential and perceptual response, most of the works covered here, and each of the case studies, is work that I have encountered personally and *in-situ*. In addition, I consider installations that I might not have experienced directly but which are particularly useful as examples in relation to the themes of this dissertation. Each of the case studies selected for analysis serve as examples of one or more of the themes that are central to my methodology and the areas of particular interest in relation to sonic explorations of place. Some of the case studies are chosen to illustrate certain site-specific practices or because they isolate specific areas of interest in relation to audio technology and perception – that is to say, the use of technology as a way of stimulating and organising the 'mobile perceiver' and how it can also reproduce and / or create spatialised sonic environments. Finally, the selection of these works here should not be interpreted as a validation of their 'value' above other examples I might have selected.

At the centre of my approach is the listener, considered as a mobile perceiving body, whose perceptual apparatus is able to *actively explore* a series of spatialised sonic environments – that is to say, in a creative context, the three strata of sound environment: the space of the recording, the space of digital post-production and the space of exhibition / reception. In sound installations, the space of exhibition features both as a technical matter in relation to speakers (i.e. type, number, placement etc.) and as an interface / response to the way sound is shaped and contoured by the exhibition environment in a dynamic relation to the perceiver. For each of the case studies and for my own work in sections 4.2 and 4.3, I have provided schematic diagrams (based on *Figure 1,* page 86), which indicate an approximation of how the three strata might be understood in relation to the perception of the listener. It is important to stress that the conceptualisation of the three strata, as represented in the diagrams, is predicated on the ecological theory of perception, and on the active, exploratory nature of the perceptual system as described by Gibson. Alongside this, it is useful to consider the three strata from the producer's perspective. The producer's

perception of space is also in operation; it maps on to his / her workflow (i.e. production, post-production and exhibition) and forms the basis of the artist's aesthetic strategies (i.e. selection of sounds, choice of recording technology, post-production arrangement and processing, and choice and placement of speakers in the exhibition space).

4.1 – **Overview of Site-specific Sound Practices**

Before starting with the detailed case studies, it is useful here to outline some site-specific practices used by sound artists both in terms of a conceptual engagement with 'site' and with regards to the technological means used to generate and exhibit sound material. As discussed in Chapter 1.2, Miwon Kwon (2004) outlines certain tendencies and developments in site-specific art – that is to say, art that focuses on phenomenal or experiential' responses to site, that challenges art institutional practices, that is co-opted as part of regeneration projects, or that is the result of some form of community collaboration. Additionally, site-specific art can be seen as transforming in its definition from a notion of permanence, an immoveable fixture in the urban or rural landscape, to one of transience. This more transient sense of 'site' can be manifest either as an actual space or as a virtual or conceptual one.

As far as sound art is concerned, I can identify some examples of permanent or semi-permanent work, such as the previously mentioned *Dark Arches* project in Leeds, or Greyworld's *Playground* (1999),[28] sited in the Yorkshire Sculpture Park. However, most sound installations are more likely to be housed on a temporary basis in a gallery or in a variety of appropriated spaces, as is the case with other forms of contemporary art. Sound installations can range from the relatively standard multi-channel arrays, as common with acousmatic concert presentation (intended to provide an optimum listening position), to a myriad of more particular arrangements that integrate speakers within the site and might be placed in relation to other visual or sculptural media or to topographical or architectural features. Works such as Janet Cardiff's *The Forty Part Motet (A reworking of "Spem in Alium" by Thomas Tallis 1573)* (2001), has singing voices diffused over forty audio speakers around which listeners are usually free to move. In contrast, Francisco Lopez often employs a more regimented strategy, presenting works based on speaker arrays placed in relation to a fixed circular seating arrangement. In addition, the audience are obliged to wear eye-masks to prevent any visual stimulation distracting from the audio experience. In works such as John Wynne's *Installation for 300 speakers, pianola and vacuum cleaner* (2009) and, on a lesser scale, Robert Worby's *Shape Changer (2005)*, the speakers feature as a sculptural element. The use of discarded hi-fi speakers in these two works function both in reference to a history of domestic sound technology, as well as the technical means by which the sound material is diffused in the space. In a

similar sculptural vein, Susan Hiller's *Witness* (2000) comprises a forest of mylar speakers (i.e. speaker diaphragms without the cabinets) suspended at different heights from the ceiling. Each speaker transmits tales of UFO sightings and the raised circular shapes of the speakers are themselves suggestive of a fleet of flying saucers in the dimly lit gallery space.

Other practices might make use of the site itself for sound generation. For example, Jacob Kirkegaard's *Broadway* (2007), installed in the Swiss Institute in Manhattan, makes use of recordings of the vibrations that pass through the steel columns in the gallery, located below the Broadway thoroughfare. These sounds are then played back through the columns, which act as speakers to diffuse the sound throughout the gallery.

To give examples of what Kwon describes as a transient, 'nomadic' site-specific practice, a number of artists move beyond the boundaries of gallery / site installation and use specific technologies to map audio material that lies outside the normal parameters of the perceptual apparatus. The artist Scanner (Robin Rimbaud) became known initially for accompanying his live performances with mobile phone conversations electronically scanned from the locale surrounding the performance venue. Christina Kubitsch's *Electrical Walks* (Since 2004), which have been conducted in many cities across the globe, equips participants with headphones sensitive to electro-magnetic fields. These provide access to the normally inaudible emissions given out by the perfusion of electronic devices, such as automatic doors, ATMs, streetlights and so on, which are now an integral part of the contemporary urban space. These technologically dependent works extend the human sensorium, allowing perception of frequency spectrums outside the normal range of human hearing. These works also extend contemporary notions of the site- specific beyond the terms of 'conceptual' or 'virtual', in the sense of digital processes and networks as indicated by Kwon, because they hack into a material constituent of place which is *there* even if beyond the normal perceptual register. In a similar vein, Graeme Miller's *Linked (2003)* makes use of a series of 'narrow cast' transmitters based alongside a 4-mile section of the M11 Link Road in East London. Listeners equipped with receivers and headphones can listen, along the route, to reminiscences from those whose homes or jobs were destroyed in the construction of the road.

If the work of Scanner, Kubitsch and Miller utilises specialised technology, other forms of 'audiowalk' [29] make use of commercially available headphones and

portable playback devices to add layers of sound material to merge with, or supplant, the material found in the environment. In this way these works operate as an audio, and technologically simpler, form of 'augmented reality'. This approach basically takes the familiar audio guide, as commonly found in art galleries or tourist venues, and extends and subverts the form, crucially, moving it away from the art institutional setting. It is also an approach that integrates sound art practice into the wider popular culture of portable media devices, such as walkmans, ipods and smart phones. Headphones and portable playback devices forms a core part of the work of a number of artists, the most well know being Janet Cardiff (I discuss one of Cardiff's work in more detail below) whose audiowalks engage with a number of specific sites and feature the artist's voice adding a narrative layer to the participant's perambulation along a designated route. In these headphone-based works, whatever the technological arrangement, the works are imperceptible to those not suitably equipped. They do not impinge on the general public but lie latent within the sonic environment.

The recent development of 'virtual acoustics', that is to say, the modelling of the acoustics of structures no longer in existence or yet to be built, is another form of sonic latency in relation to the site-specific and the particularity of acoustic space and time. Here, sound material can be reshaped through computer modelling so as to create 'sonic signatures' of non-existent or imaginary architecture. (I discuss virtual acoustics in more detail below in Chapter 4.3).

As well as through installations and headphone-based work, site-specific sound material can circulate as recordings, a practice developed from a long history of phonographic recordings of the environment and given a more focussed social and cultural purpose by Murray Schafer's development of the World Soundscape Project. Artists, such as Chris Watson and Peter Cusack produce work that is predicated on accessing sonically notable sites and then circulate the work via recordings, sometimes alongside installation or live presentations.

In the following case studies and in the discussion of my own work, I will cover a number of the above approaches to site-specific sound art in more detail.

4.2 – **Analysis of Sound Art Practice 1: Case Studies**

Chris Watson – *Weather Report* (Touch, 2003)

Within the visual arts, the site-specific has a particular sense, although the forms, processes and methodologies can vary considerably. However, with sound-based art site-specific work commonly circulates as recordings. The work of Chris Watson [30] raises a number of key points in relation to the site-specific in his recordings. In a manner developed after Murray Schafer and the World Soundscape Project, this category of work functions as a representation of sites or events of particular sonic significance, or vulnerable to change or loss, and which the listener might not be able to access in actuality. It also builds on a much longer tradition of phonographic recording of the natural world that stretches back to pioneers of wildlife recording such as Ludwig Koch and his 'sound book' albums of the1920s and 30s and programmes for BBC Radio in the post-World War 2 period.

My specific interest with Watson's work is that it is predicated on the reproduction of natural environments with a strong commitment to audio 'naturalism'. In line with the ecological theory of perception, I would argue that his work endeavours to create what might be described as *perceptually coherent* sound environments that can be probed and explored by the perceptual apparatus of the listener. However, this 'naturalistic' reproduction should not conceal the constructed nature of the work undertaken to produce *Weather Report* and his other recordings.

Watson's current practice as a natural history sound recordist for the BBC is predicated on hi-fidelity recording standards and development of both technical and field-craft solutions to the many demanding remits of this type of work. This, coupled with travel to many remote locations, provides Watson with the opportunity to capture sound material of environmental and bioacoustic specificity that would be inaccessible to most. Watson's work on CD or as live presentations comprises a number of techniques[31] to create perceptually coherent sonic environments. That is to say, we are able to perceive spatial directions, depth and sonic events in a way that is recognisable in relation to our experience of perceiving *actual* environments. It is Watson's tripartite approach to the layering of sound, both in recording an environment and in the organisation of material in post-production, which is central to

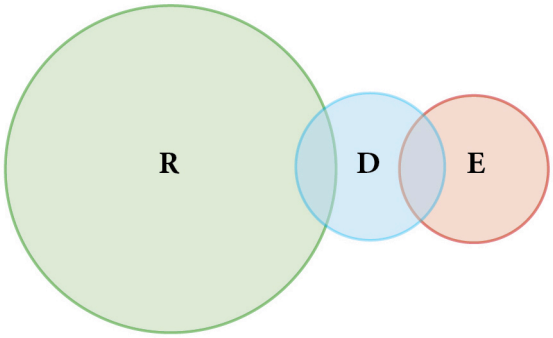
this effect. Watson creates a foundation layer of the general atmosphere of an environment, which is used to give a sense of geographical space, then a secondary layer of more detailed sounds of the specific habitat, and then as a top layer, a fore-grounded sonic element, such as a species specific sound or notable environmental sound event. Some of the recording techniques he employs also explore the environment in relation to sound working as a dynamic sonic event. In this instance, the recordings use reflected sound, that is, sound moulded by the topography of the specific place, not just direct recording of its source. Through this layering method, Watson creates a structure of sonic information that *affords* exploratory perceptual probing across the strata of audio presented in the work.

The spatialisation processes adopted in the post-production environment enhances the spatial qualities already apparent in the natural environments recorded. Watson's drive to create naturalistic and perceptually coherent audio spaces means that these processes are not always discernable to the listener. That is to say, they maintain the *invariants* in the perceptual register. Having said this, due to the impact of the sounds introduced in terms of volume or specific characteristics, there are some instances which make demands on the perceptual processes of the listener and draw attention to the constructed nature of the piece.

The sense of perceptual coherence that Watson generates is greatly enhanced when the work is accessed via headphones because it avoids bringing into play factors of room acoustics and listener / speaker placement. This means that it restricts the need to perceptually engage with an additional audio stratum. To examine *Weather Report* in relation to my conceptualisation of the three strata of sonic space, it might be useful to present a simplified version of the diagram in Chapter 3 (*Figure 1*, page 86). Here 'R' is the space of recording, 'D' the space of digital post-production and 'E' the space of exhibition. The space of exhibition (E) is the point of sound diffusion and physical location of the perceiver, that is to say, the particular operation of sound in relation to its diffusion in specific locations. The balance of the audio spaces in Watson's work discussed here is schematically represented in *Figure 2*.

Figure 2.

R = Space of the recording environment
D = Space of digital post-production
E = Space of exhibition environment



Watson describes his approach to his current work using the term ‘time compression’. For him, time compression involves the selection of significant elements from the durational recording of an environment. In *Weather Report* Watson foregrounds this technique, as the track listing for the album indicates the degree of ‘time compression’ used for two of the three tracks: *Ol-Olool-O*, eighteen minute from fourteen continuous hours recorded in Kenya's Masai Mara and *The Lapaich,* eighteen minutes selected from recordings of a Scottish glen over a four month period of autumn and into winter. Here, the process of *synecdoche* is clearly announced as the basis of the creative method. However, this wider selection process is also based upon recording methods and technology chosen to record a sound environment as perceptually coherent as possible. In this way Watson’s work seeks to represent the experience of sonic environments beyond those that are possible for most listeners to access in the course of their daily lives. In this way his work *affords* a perceptual exploration of distant environments and extraordinary spaces, such as the crevices of glaciers or the interior of a zebra carcass as vultures are consuming it. These highly developed techniques form the basis of an aesthetic built on rendering the strangeness and drama of the acoustic world in ways that are also familiar in their structure and spatial organisation.

The time compression and layering used for *Weather Report* contrasts with earlier recordings, such as *Outside the Circle of Fire* (Touch 1998) and *Stepping into the*

Dark (1996). These collections were based on the recording of specific 'atmospheric' places or bioacoustics events in a more direct manner, without significant post-production mixing. It is worth looking more detail at Watson's use of the term 'atmospheric'. While not a direct reference to Böhme's usage, it is clearly describing the same area of experience. Watson, in a correspondence with David Toop (2004)[32] stated,

> the quiet atmosphere of a place, location or habitat can be a revelation – a profound "presence" made up of the component parts. I tried to capture this real sense of place with my Touch CD – *Stepping into the Dark* – after experiencing several atmospheres that I felt had a tangible character (Watson in Toop 2004, p. 52).

Watson goes on to say that the atmosphere of some of the places he records can fill him with an 'overpowering sense of foreboding'. This can be related to Böhme's broader category of Ecological Nature Aesthetics: the exploration of the relationship between the quality of the environment and human sensibilities and how the environment can be experienced aesthetically. In this regard, Watson's process of *synecdoche* doesn't simply relate to selecting interesting sound events as objective elements to be recorded in a technically sophisticated manner; it also involves attempting to capture the way sound operates, to use Böhme's terminology, as 'object-like emotions'. That is to say, the sounds of place have a tangible sense of emotional intensity that Watson might be able to record and transmit to an audience who has not experienced the place in actuality. This 'atmosphere' might be considered as already apparent, as a product of the multitude of factors that shape the sound as it emanates from and within a specific environment.

The sleeve notes accompanying *Outside the Circle of Fire* (Touch 1998) and *Stepping into the Dark* (1996) list the diverse stereo set-ups and techniques used for these recordings. This is not just a matter of technical interest to other field recordists but also a clear acknowledgment that the technical choices made modulate the spatial sense of the recorded environments or sound events. Through these techniques Watson creates coherent, if intensified, sound environments where his own exploratory perceptual processes, allied to a precise use of sound technology, relay his listening experience in the field to the listener.

In the Introduction, I quoted from Watson's correspondence with David Toop (2004), where Watson sets out a question that can be regarded as central issue for this dissertation. To re-cap the statement here, Watson observes that 'the paradox is that some sounds can convey clarity and depth even when played back or broadcast over the compressed mediums …I'm fascinated by this but can't explain it!' (Watson in Toop 2004, p.51). I would argue that, as outlined by the ecological model and my concept of the three strata of audio environments, that this 'paradox' can be explained by the ability of the perceptual apparatus to probe and explore sonic space even through the degradation of signal that occurs through the various levels of transmission. That is to say, in spite of this mediation, something of the essential dimensions and *atmosphere* of the sounds as contoured by a particular environment - *its informational structure* - remains intact. It is perhaps the uncompromising search for technical and 'atmospheric' integrity in Watson's approach that makes an examination of his work here so fruitful. That he is consciously exploring the perceptual and emotional elements of environmental sound through intense listening and precise high-resolution recording creates exceedingly productive material to scrutinise in relation to a methodology based on the ecological model of perception. Although clearly a product of Watson's personal selection processes, the work comes as close as any to the re-creation of natural sound environments in a mediated form.

Janet Cardiff - *The Missing Voice (Case Study B)* (1999)

Janet Cardiff's work *The Missing Voice (Case Study B)* (1999)[33] is a headphone-based audiowalk that commences in the, now defunct, Whitechapel Library in East London, and then moves through various streets in the surrounding areas of Whitechapel and Bishopsgate. The work is of interest here because its aesthetic strategies are largely predicated on playing with the listener's perceptual exploration of what I identify as the three audio strata*,* the spaces of recording, digital production and reception*,* to both delineate and enhance the various elements of the work. An analysis predicated on the ecological model's notion of the perceptual system as being 'exploratory': seeking out what any given environment might *afford*. The work also clearly attempts to both articulate the specifics of place through sonic material and to investigate the creative potentials of mobile audio technology.

The Missing Voice (Case Study B) is based on a narration by Cardiff which both describes features and events that occur along the route and makes personal reflections (delivered 'straight' or as recordings from a Dictaphone). This is interwoven with a crime story plotline that is borrowed initially from a Reginald Hill novel found in the crime fiction section of the library where the walk begins. Cardiff's voice-over persona then drifts between narrator of a journey through the physical environment, who relays various observations, thoughts and memories, and a female character of a fictional narrative who is under observation and the subject of some form of unspecified threat. This narrative element is then developed by the inclusion of various male voices (the main one a detective following the fictional woman), music, an old film soundtrack and sound effects. The breathy intimacy of Cardiff's voice and her North American accent, along with some of the musical elements, enhances the cinematic qualities of the work, since both the accent and voice-over are redolent of the off-screen 'narrator's' voice that is a common convention in Hollywood Film Noir and detective genres. Although Cardiff's voice is central to the work, there is a constant question as to what might be the 'authentic' voice of Cardiff the person / artist in this un-delineated mix of observer, guide and fictional personas.

The main technical foundation for Cardiff's audiowalks is the use of binaural recording. With this method microphones are placed within the ears (or on a 'dummy' head) and consequently the stereo recordings made equate closely to the spatial and directional patterns of human hearing. When played back via headphones, this allows a perceptually coherent experience and a sense of a 360-degree audio field. This method creates a spatial effect that is more consistent with a normal hearing experience. In this instance, the foundational binaural recording is built on in post-production through the addition of other elements spatially arranged in the mix. The sense of sonic space created by the piece is enhanced by the seepage of sound from the actual environment being walked through that mixes with the audio received via the headphones. The relatively high noise level of the traffic on the main thoroughfares encountered is particularly useful to blend exterior sounds with those occurring in the work.

Cardiff cleverly orchestrates the piece by the sound of her footsteps, which the listener is invited to follow. When matched with one's own, the rhythm of her footsteps enhances the sense of the mapping of her earlier experience of the walk onto

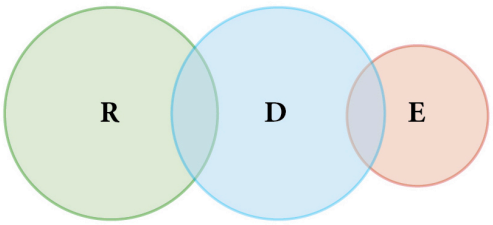
the listener. At the same time, if the pace can be maintained, it creates a highly effective synchronisation between the voice-over's observations of the environment and the listener's experience. While the quality of the binaural often creates a seemingly perceptually accurate rendering of a 'possible' acoustic environment outside the headphone space, this is disrupted by what were *actual* sound events for Cardiff (passing conversations, street musicians, traffic and so on) but which are now no longer there, and therefore do not match the visual field. When I took this walk eleven years after the piece was first unveiled, there were obvious mismatches between what she described as being, then, fixed elements of the environment (shops, buildings, signs etc.), and the current situation. This was particularly effective given the intention of the piece to map an area open to consistent social and economic pressures forcing change – a process made more explicit by the passing of time. Yet, there were also many elements still in place and some surprising matches between events recorded by Cardiff and those still experienced by myself (for example, there were road works on the same corner of Brick Lane as when Cardiff recorded the walk – presumably not the same ones?). These oscillations, between matches and mismatches, between what is seen and heard, play on the systematic nature of the perceptual system. The cues for the ears and eyes to create some coherence in the structure of information perceived is constantly both confirmed and challenged as the piece unfolds. That it to say, the piece is alternately constructing and disrupting *invariant* perceptual information. There is also a clear sense of *The Missing Voice (Case Study B)* using and making apparent the three spatialised audio strata: the environment being recorded, the digital space and the space of exhibition. With the latter, the perceptual exploration is excited by the effect of not always being able to establish a clear division between the sound field presented via the headphones and that which is seepage from the environment traversed. Once the listener is acclimatized to the acoustic quality of the recorded material, the surround effect of the binaural recording encourages the need to check what might be a part of the work, as opposed to in the environment. This is particularly apparent with sounds seemingly emanating from behind the listener. However, this 'naturalistic' sound field is under constant disruption from the voice-over and added narrative sound elements, which in themselves make clever reference to sound cues that might or might not be experienced for real, such as following footsteps. In one part of the narrative Cardiff's 'character' is grabbed from behind. This has a particular affective charge, because

being largely isolated from the sounds that aid orientation and engagement with the surrounding environment the walker with headphones feels vulnerable. In this way, headphones function as a suppressor of the 'primitive ear', that element of audio perception that alerts us of threats from the environment, even if in this work the 'primitive ear' can also be regarded as being manipulated by the disjunctions between its external suppression by the headphones and the audio 'alerts' emanating from the sonic material in the audiowalk itself.

As for the *atmosphere* generated by the work, this is a shifting element partly because the way the audiowalk interacts with the built environments travelled through (for example, Whitechapel back alleys, St Botolph-without-Bishopgate Church and Liverpool Street Station), and how these in turn change depending on time of day, time of year, weather, the number of other people around and so on. Given the degree of threat, in the narrative, that emanates from male characters and directed towards the female character, gender adds a further layer to the *atmosphere*. All these elements create a different sense of the *atmosphere* experienced, as the latter is modulated by a variety of factors relevant to each individual 'audiowalker'. Overall, however, the combination of headphones, the implied threat in the narrative, and the nature of the environment passed through, create an *atmosphere* of anxiety – perhaps further enhanced by the historical reputation of the East End as an area deemed to be the dark 'other' to the more prosperous, safe and 'respectable' environs of the City and West End. There is a noticeable shift in the walk as one arrives in the busy areas around Liverpool Street from the more lonely back streets of Whitechapel. This geographical shift is perhaps matched with a shift in the walker's sense of personal vulnerability and concomitant response to the environments passed through.

Figure 3.

R = Space of the recording environment
D = Space of digital post-production
E = Space of exhibition environment



From *Figure 3* above, we can see that in *The Missing Voice (Case Study B*) the prominent audio strata are the space of the original binaural recordings of place and the space of digital post-production where the other audio elements are added and spatially arranged. The point of exhibition, in this work, is less prominent due to the headphone delivery. Saying that, the seepage of sounds from the 'live' environment remains an important element. These sounds interact with the audiowalk that was recorded in the same environment, but at a different time, causing doubts as to the sound's source.

The Missing Voice (Case Study B) operates on numerous levels to either conform with or challenge the nature of the information *picked-up* by the perceptual system. Its aesthetic strategies are largely predicated on playing with the listener's perceptual exploration of the three audio strata, to both delineate and enhance the various elements of the work, and to provide a range of perceptual and psychological identifications and disruptions. Apart from the multi-dimensional play on narrative elements and the artist's personas, the environment Cardiff describes (which has often physically changed) and the fleeting sonic events recorded *en passant* make the work function, partly, as reportage or oral / aural history. That is to say, *The Missing Voice (Case Study B*) becomes a means of exploring and relating to a place which has a rich past but which is, simultaneously, under dynamic pressures of social and physical change.

Susan Philipsz – *SURROUND ME:A Song Cycle for the City of London (2010)*

Susan Philipsz's has achieved a great deal of public attention as the first sound artist to win the Turner Prize in 2010.[34] While not describing herself specifically as a 'sound' artist, and while previously being relatively unknown in sound art circles, her work has involved sound for a number of years, particularly in relation to the use of song forms. The work I want to look at here is Philipsz's *SURROUND ME* (2010),[35] a series of sound installations sited at various street locations around the City of London. Apart from one based on instrumental sounds, each of these installations feature Philipsz's voice performing songs from the late Elizabethan and early Jacobean period.

The work is of relevance to this dissertation because, being situated in specific locations, the material chosen is intended to engage and comment on the particularity of place. Each of the individual installations that comprise *SURROUND ME* also employs different technical arrangements to mobilise the listener into a dynamic relationship with the environment and the sound work itself, even if with varying degrees of effectiveness. This is a central concern in relation to my analysis of sound art practice in relation to ecological perception. That is to say, how both the material and its content can be perceived by the listener and organised in such a way that it works either in line with the normal functioning of the perceptual system and / or challenges and excites it for the purpose of pleasure or transmission of knowledge –in short, to create either naturalistic reproductions or more abstracted sonic forms.

Before I look in detail at some of the installations that comprise *SURROUND ME* it is worth describing here how the piece is experienced as a whole. The work is set in the City during a series of winter weekends, when it is largely deserted by workers and tourists. Therefore, with reference to Böhme's concept of Ecological Nature Aesthetics; a somewhat stark and mournful *atmosphere* is already apparent, formed, in general, by poor weather and few people. Philipsz's decision to use songs of a melancholic nature operates within, and enhances, this general atmosphere, adding to the (presumably intended) sense of loss for a vanished city and time.

To look in more detail at the various installations, Philipsz's 'Moorfields Highwalk, *Weep, O Mine Eyes*'[36] is a 4-channel piece based on a John Bennet madrigal and has the song arranged in four parts, with each part assigned its own speaker and arranged in a square formation. This is a similar arrangement to 'Mark Lane *Oh My Love*'[37], which is in canon form and also has a speaker allocated to each vocal part. These two pieces are probably the least interesting in terms of sound diffusion strategies because they offer only a limited interaction with the surrounding environment and have a fairly conventional 4-channel array arranged in a square. Due to this they both offer a 'sweet spot' that encourages the listener to adopt a central position between the

Figure 4.

Susan Philipsz, *Moorfields Highwalk Weep, O Mine Eyes,* (John Bennet, 1599) 1 minute 58 seconds, every 5 minutes, four channel sound installation.

Figure 5.

Susan Philipsz, *Mark Lane, Oh My Love,* (Thomas Ravenscroft, 1609). 21 seconds, every 5 minutes, four channel sound installation.

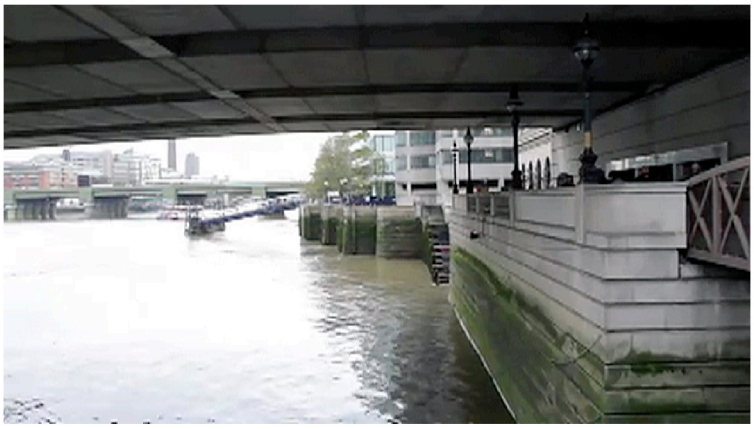


Figure 6.

Susan Philipsz, *London Bridge Flow My Tears,* (John Dowland, 1600). 3 minutes 35 seconds, every 10 minutes, single channel sound installation.

Speaker visible on river wall.

Exhibition commissioned by Artangel. Images Bec Garland.
Figure 6, is a still from the video *SURROUND ME: from Moorfields to Milk Street,* filmed and edited by Lorrin Braddick and produced and directed by Jared Schiller.

speakers. This may have been prompted by the fact that the complexity of the sung parts can be more easily apprehended through this set-up. Be that as it may, this arrangement does little to mobilise the listener's exploratory perceptual facilities or to encourage mobility around the location. Even so, 'Moorfields Highwalk *Weep, O Mine Eyes'* with its selection of one of the most beautifully sorrowful of the English madrigals, creates an *atmosphere* of loss and lament which reverberates around the stark, brutalist architecture of this pedestrianised thoroughfare.

The installation 'Mark Lane *Oh My Love',* tucked away in small courtyard, also lacks much sense of sculpting an environment or creating a dynamic sonic event: it basically sets-up an acousmatic performance of the song via its 4-speakers. The installation's proximity to the 14th century tower of All Hallows Staining Church does create an intentional juxtaposition between the new city and this fragment of medieval London. However, this is more of a contextual effect than a sonic one. It is the siting of the work that makes this connection – a connection which is part of the work's thematic of re-laying an audio fragment of a past, and by implication, more 'human-scale' London, in contrast to the dominating corporate structures of the present.

The installation 'Change Alley *New Oysters'* [38] is much more effective in sculpting space through sound and mobilising the listener to more exploratory use of the perceptual apparatus. The former coffee houses of Change Alley were a forerunner of the stock exchange and the source of the speculative dealings that led to the South Sea Bubble. The artist's intention in using this particular song, *New Oysters*, based on a street seller's cry, is to contrast the complex machinations of the stock market with the simple transaction of food for money. Although the song, *New Oysters*, follows again the canon musical form the speakers are placed in different sections of a 3-way junction in Change Alley, with a speaker in each arm of the junction. The narrow alley and the position of the speakers lead to a shifting perception of the sound. Perception changes depending on position and movement. There is clearly a more dynamic *sonic effect* being created here: there is no ideal listening point equidistant from the speakers because the walls of the alley effectively occlude the sound. This is a good example of what Aguoyard and Torgue (2005) describe as 'cut-out'[39]. The piece invites an exploratory mobile listening because it

Figure 7.

Susan Philipsz, *Change Alley, New Oysters, (Thomas Ravenscroft, 1609), 56 seconds, two repetitions every 5 minutes, three channel sound installation*

Listeners in space between the three passgeways,

Figure 8.

Susan Philipsz, *Milk Street, Lachrimae or Seaven Teares,* (John Dowland, 1604).
36 minutes, continuous loop, seven channel installation.

Speakers are mounted on ledge of building.

Figure 9.

Susan Philipsz, *Tokenhouse Yard, The Silver Swan*, (Orlando Gibbons, 1612). 1 minute, 20 seconds, single channel installation.

Single speaker mounted on building on left of the image.

Exhibition commissioned by Artangel. Images, Bec Garland

sounds different depending on the position one chooses to adopt, given the arrangement of the piece itself and the reverberations colouring the sound from the surrounding buildings.

'Tokenhouse Yard, *Silver Swan',*[40] also situated in a narrow street, is, in my opinion, a less interesting installation. The single speaker activates the space in a relatively simple way. Here the song, with its metaphorical reference to mortality, is sited in a yard where Daniel Defoe made a telling description of sudden plague death in his *Journal of the Plague Years*. In contrast, the installation 'London Bridge *Flow My Tears'* [41] is also comprised of just one speaker, but its placement, under London Bridge, is far more engaging acoustically. The arch of the bridge and the water create a reverberant space in which the sound operates without it being possible to identify its source through hearing alone. The sound seems to emanate from the river itself and in this manner it creates a form of 'perceptual hallucination' that challenges the perceptual system to locate and orientate towards the source. The water also changes the nature of the sound throughout the day as the tidal drop of several metres alters the acoustics of the space. In this manner the work sets up a dynamic interaction between the source sound, the built / natural environment and the listener: the shifting parameters of the sonic effect destabilises the *invariant* nature of the perceptual information generated by the work.

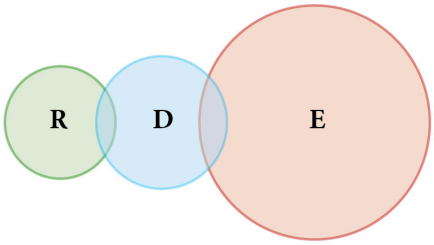
The installation 'Milk Street, *Lachrimae or Seaven Teares'*, [42] is, technically speaking, the most complex piece, comprising seven channels. It also differs from the others in that it is not based on the voice. This piece is based on a free interpretation on cello of Dowland's composition, with the notes being played separately on each of the seven speakers. The work's situation on a junction produces varying levels of reverberation and cut-out as the sound from the speakers spreads out across the frontages of the nearby buildings. Being continuous, as opposed to the short bursts of the other pieces, this installation sets up a more complete re-sculpting of the space. There is no discrete sonic event, as was the case with the song-based pieces which operate at set intervals, instead 'Milk Street, *Lachrimae or Seaven Teares'* generates what might be described as a sombre but meditative *atmosphere* in this largely nondescript city corner.

Considering the installations in their entirety, there is little spatialisation discernable in either the recording or digital strata, as the voice and instruments are apparently

close-recorded with just a slight reverberation added in post-production. In this schematic form (*Figure 10*), the works in *SURROUND ME,* within a certain parameter of difference for the various installations, might be represented thus:

Figure 10.

R = Space of the recording environment
D = Space of digital post-production
E = Space of exhibition environment



In assessing *SURROUND ME* as a whole, the semantic content of the song does much of the work to create meaning through its metaphoric comment on the contrasts between past and future of the chosen location. Philipsz's alleged desire to explore the poetics of place is based primarily on filling her selected sites with an additional layer of poetics. By using her own voice Philipsz places herself at the centre of the work and while her voice is not unpleasant and she is a competent enough singer to carry the tune, there is a conscious sense of 'amateurishness' about the delivery. This is related to a common trope within contemporary visual arts practice of utilising forms identified with another creative discipline, in this case music, but undercutting the professional or virtuoso element as an ironic or reflexive comment on the conventions of the discipline or form being adopted for the work. To relate this to the perspective of Abraham Moles (1968), discussed previously, the 'amateur' voice might be understood here as a form of 'noise', that is, as a kind of deliberate signal degradation to make clear the nature of the message being transmitted.[43] From either perspective, the voice here functions as much as a conceptual gesture - one that foregrounds the conventions of the work's construction - as a musical one. In addition, the use of 'tannoy' style public address speakers to diffuse the sound material lends the

atmosphere of the works a specific quality, with the voice being given a limited frequency range and 'metallic' timbre, similar to many of the amplified announcements common in public spaces. These loudspeaker pronouncements might be regarded as part of what Marc Augé (1995) describes as 'instructions for use', directions that guide us through the numerous 'non-spaces' of the contemporary urban environment. Here, 'instructions' are replaced by a series of songs that act as a poetic corrective to this sonic regime of commands. Crucially, however, the *atmosphere* of the songs is also perceived in its material quality, as the product of specific recording and diffusion choices, and not just at the semantic level of the words themselves. The nature of the melodic constructions and delivery, even if stripped of the lyrical content, operate on an affective level - at the level of its sonic material - to create an *atmosphere* of sadness and lament. It suggests something irretrievably lost in the present construction of the City, built on an erasure of the cultural and material layers of an older London.

Florian Hecker – *Installations* (2009 - 2010)

The exhibition work of musician and sound artist Florian Hecker is of interest here because in his work he consciously explores the use of technology to sculpt space and to address issues of audio perception. Hecker is also one of the few sound artists to make some reference in discussions of his work to James Gibson's concepts of an active, exploratory listening. Third, Hecker's practice explores the work of various researchers into psychoacoustics, notably Al Bregman and his concept of Auditory Scene Analysis,[44] referenced in the title of one of the pieces under discussion here. Although Hecker's installations are less about place and site-specificity than those of other artists, they are useful to consider here in relation to the potentials of technology for the perceptual management of the listener. His solo exhibition, which was shown in a number of British galleries,[45] employs various technologically determined strategies to stimulate active audition and create audio effects, described, in the text accompanying the exhibition, as 'perception-as-hallucination'. This work acts as an example of the possibilities for technology and the application of spatial and psychoacoustic phenomena to both mobilise exploratory audition and perambulation

around a work, and to create perceptual conundrums which challenges how the auditory apparatus isolates and 'picks-up' sonic information. Hecker's work is exemplary in this ability to create a range of auditory effects. The mostly high directional speakers are chosen and arranged to create apprehensible sonic zones within the gallery setting. It is worth noting that all the works in the exhibition are played sequentially as opposed to continuously. This allows the various works to overtly activate their respective audio zones and effects without interfering with each other in a relatively small space.

To briefly describe the installations, *Untitled* (2010) [46] uses a ceiling mounted directional speaker emitting sound onto a tiled surface. The pulses are dispersed around the space and off the wall and the exact source of the sound is obscured. This is a dispersion of sound similar to the one found in Susan Philipsz's 'London Bridge *Flow My Tears',* where the sound also reflects off surrounding surfaces and occludes the ability to orientate towards its source. The work *2 x 3 Kanal* (2009) [47] comprises two separate 3-channel pieces that rotate sounds simultaneously - one clockwise, the other counter clockwise - around the ceiling-mounted three-speaker array. This piece seeks to make use of the Tritone Paradox,[48] where a sequence of tones creates a continuous upward or downwards shifting sonic formation. *2 x 3 Kanal*, with its recourse to keyboard and some melodic motives is more clearly a composition. However, even within a musical framing, the utilisation of a perceptual 'conundrum' in the form of the Tritone Paradox indicates the potentials of contemporary audio technology to actively engage the perceptual apparatus in a challenging manner. The notion of 'perception-as-hallucination' operates here in line with the ecological model, if we regard this as a destabilising of *invariant* sonic information. Or more precisely, a structuring of sonic information in a form that is unlikely to be encountered in the natural environment and which the perceptual system has some difficulty 'attuning' to.

Auditory Scene (5 Fold) (2010) [49] is a 5-channel piece of five ceiling-hung speaker arranged in a row with two of the speakers in a raised position. A series of electronically generated tones are emitted and move across the speaker array, and the perceptual pick-up of information is very much related to the position of the audience

Figure 11.
Florian Hecker, *2 x 3 Kanal* (*2x3 Channel*, 2009). 3 x channel electroacoustic sound, loudspeaker system.

Figure 12.
Florian Hecker, *Untitled* (2010) 1 x channel computer generated sound, ceramic tiles, and directional speaker.

Figure 13.
Florian Hecker, *Auditory Scene (5 fold)* (2010) 5 x channel computer generated sound, loudspeaker system.

Figure 14.
Forian Hecker, *Magnitude Estimation* (2010) 2x channel electroacoustic sound, loudspeakers system.

Figure 15.
Forian Hecker, *Magnitude Estimation* (2010) 2x channel electroacoustic sound, loudspeakers system. Alternate View.

Figure 16. Overview of the installations,

Exhibition co-commissioned by Chisenhale Gallery, London and Ikon Gallery, Birmingham, Sadie Coles HQ, London and Galerie Neu, Berlin.
Images: Andy Keate

in relation to the shifting sound source. The work actively eschews the creation of a 'sweet spot' and encourages perambulation by the audience. Audience mobility is further aided by the use of ceiling-hung speakers, leaving a free space un-restricted by speakers or cables.

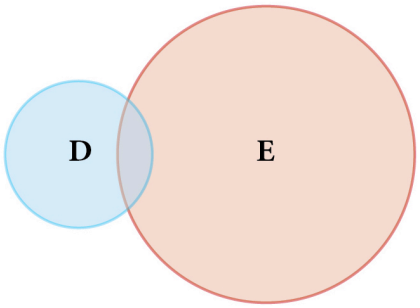
The work *Magnitude Estimation* (2010) [50] is a 'self-reflexive' piece that comprises a voice reading the loudness values of the accompanying electronically generated sound. These declarations are emitted synchronously from audio speakers mounted on opposing walls. The doubling-up of the sound of the voice, emanating from different speaker positions, again creates a perceptually challenging audio effect. The speaker placement, like the other works, allows for an exploration of the sonic field the work generates.

This notion of the work being an exercise in auditory perception research is compounded by its installation in a featureless art gallery 'white cube': the customary minimalist gallery space reconfigured here as the research scientist's 'clean room'. The work exploits the acoustics of the rectilinear gallery space but these are not significant as a 'sound signature' of place. The gallery's acoustics function, rather, as a 'neutral' environment, which is organised by both the positioning of the speaker arrays installed for each of the pieces and by the demarcation of the space through the generation of dynamic audio zones. The pieces create localised sonic environments that though the precise use of technology and audio material attempt to organise both the space and the listener's engagement and passage through it. The material generated by Hecker points to the other aspect of his practice, as an electronic musician. Apart from the use of the voice in *Magnitude Estimation*, the sounds produced are computer or keyboard generated and there is a lack of semantic material or references to spaces beyond the digital production environment.

The work here is primarily an exploration of the digital environment and its output in the exhibition space. *Figure 17* indicates how Hecker's work might be represented in relation to the three audio spaces:

Figure 17.

R = Space of the recording environment
D = Space of digital post-production
E = Space of exhibition environment



Hecker's work in this series of installations is a play on audio perception both stimulating the perceptual apparatus and working to raise question about the stability and structure of the information 'picked-up' by it. This paucity of semantic or referential material makes apparent the potentials for perceptual management just by the arrangement of technology. In this regard the works *affords* an active experience of the way sound works within the space in relation to the body. As with the work of La Monte Young (discussed in Chapter 1.3), Hecker's installations are also predicated on intense listening and put into play a series of sonic relations between his material, the performance space and the act and apparatus of aural perception. Hecker's work, I would argue, clearly encourages and responds to the exploratory nature of perception in the ecological model, creating technologically driven work which makes clear the action of sound in a space and the subtle perceptual tools the body possesses to identify these actions.

The analysis of all these case studies offers, I hope, an indication of the potential of my methodology to create a connection between the operation of the perceptual apparatus, the technological mediation and diffusion of sound, and the use of sound art to explore specifics of place. I will draw further general conclusion on these works in Chapter 4.4. Before I do so, however, I will extend this approach to the analysis of my own sound art practice.

4.3 – **Analysis of Sound Art Practice 2: Personal Practice**

In this section I demonstrate the productivity of the methodology developed in Chapter 3 by examining critically the sound practice I have produced recently. The practice-based works that I have produced during the period of this PhD dissertation consists of *Re-sounding Falkland* (2008-2010), a collaborative durational art project with Louise K Wilson [51] focussed on sound and on the interaction of sound with visual media in an exploration of designed spaces on the Falkland Estate in Fife, Scotland, [52] and a solo work, *Octo: Sotto Voce* (2009), an 8- channel piece designed for, and installed in the octagonal Chapter House of York Minster. In this section I will contextualise and outline the conceptual aspects and the development of the work, and furnish an analysis based on the methodology set out in Chapter 3. It is worth noting that the methodological aspects of this dissertation were formulated and developed during the production of these works. So, while these ideas directly informed some of these installations in production, others are being considered more in retrospect. I will attempt to make this clear in the analysis of each piece. It is important to stress that this is an important feature of the methodology itself in its wider application, that it can function both as a framework to inform the generation of sound-based work as well as the basis for the analysis of existing work.

Re-sounding Falkland **(2008 -2010)**

In the autumn of 2007 my collaborator, Louise K. Wilson, and I embarked on the research and the development of *Re-sounding Falkland*. The project was produced in three phases: Arcadia (April 2008), *Falkland Audiowalk* (July 2009) and a series of sited audio and video installations shown in Falkland on 29 – 30 May 2010. This series included *Cascading* (2010), *The Temple of Decision* (2010) and *Chase a yard worse than last* (2010).

Arcadia (2008)

The first work we produced at Falkland was *Arcadia* (2008), [53] made as part of an event called 'Sound of the Deer' and held in Falkland Palace to celebrate its history as a Stuart hunting lodge. We were commissioned to create a work that would engage with this theme as part of a larger event that would also comprise music, song, food

and talks on the local history of deer hunting and husbandry. In one of its galleries Falkland Palace holds a 30-metre-long seventeenth-century Flemish tapestry, featuring an arcadian landscape replete with an outlandish mix of native, wild and domestic animals alongside more exotic fauna (see *figures 18 / 19*). This surprising mélange of animals makes an oblique reference to another early use of the palace, as the site of the King's menagerie. This fantastical landscape also contains the exotically attired figures of courting couples and huntsmen both on foot and on horse.

We were interested in attempting to create a soundtrack to accompany the tapestry and to voice some of its visual elements. [54] The relating of sound compositions to apparently disconnected visual material drew initially on a process that Michel Chion (1994) has dubbed 'synchresis'. Chion (1994, p. 63) defines synchresis as 'the spontaneous and irresistible weld produced between a particular auditory phenomenon and visual phenomenon when they occur at the same time'. For Chion, it is synchresis that makes dubbing, post-synchronization and other post-production sound mixing possible. While Chion is writing primarily about the cinema, he acknowledges that the phenomenon also goes beyond mainstream cinema and might be more universally applicable. In more abstract audio-visual work, synchresis also functions, as he says, 'out of thin air – that is, with images and sounds that strictly speaking have nothing to do with each other, forming monstrous yet inevitable and irresistible agglomerations in our perception' (Chion 1994, p. 63). Chion's notion of synchresis offers a description of a psychological process: the giving of a relationship and coherence to two sets of phenomena (image and sound) when occurring simultaneously. Although a useful general term, Chion does not give a more comprehensive indication of what might be the nature of this provision of coherence. It is therefore pertinent, as I have argued elsewhere (Chapman 2009), to consider this process in relation to ecological perception.[55] From the ecological perspective, the perceptual system 'self-tunes' to increase its absorption of information from the environment and to optimise its 'resonance' with it. In short, 'a system "hunts" until it achieves clarity' (Gibson 1966 p.271). This 'hunting after clarity', when coupled with the acculturation of audiences to both the operation and sonic 'quality' of audio-visual media, suggests that the presentation of sound and vision together *invites* connectivity. With *Arcadia*, the very literal act of 'sounding' the various figurative elements in the tapestry is sufficient to create a situation for the exploration of this connectivity. The inanimate nature of the tapestry and its naïve representational

Figure 18.

Visitors to *Arcadia* (2008), Tapestry Gallery, Falkland Palace.

Image. Lewis James Houghton

Figure 19.

Tapestry Detail.

Figure 20.

Conducting a sine-wave sweep of the Royal Tennis Court, Falkland Palace.

system did not prevent an audience making a connection between what is seen and heard. This is also coupled with the work's use of environmental sounds not in isolation, but within a production that organised the illustrative sounds in a constructed but, nonetheless, recognisable sound environment. The sounds were a *perceptually coherent* accompaniment to the highly stylised visuals within the tapestry.

In keeping with the ethos of the Centre for Stewardship's focus on local economies and cultures,[56] we decided that all these sounds should be obtained in the vicinity, from various nearby locations and sources of activity.[57] These were added to our field recordings of other wild and domestic fauna and environmental sounds recorded on the estate. We also worked with local singer Sheena Wellington, and recorded her singing an old Scottish ballad, 'Johnnie o Brairdislee', which recounted an ancient tale of a deer poacher and his battles with the local stewards. A song that makes reference to the human figures depicted in the tapestry (i.e. hunters and courting couples). The use of locally sourced sounds seemed of particular interest to the predominantly local audience. The audio accompaniment acted to reflect the exoticism of the tapestry's imagery back onto the native environment, alerting them to places and activities they were unaware of and creating surprise at the audio diversity in their local soundscape. The present day nature of the recorded sounds also led to a form of temporal connection between the historical object of the tapestry and the period representations it contains: the audio elements providing continuity of experience between the sound worlds of past and present.

The final piece was an eight-channel work with the eight speakers arranged along the length of the gallery. The eight speakers were arranged as four stereo pairs, with four different tracks of six-minute duration played as a continuous loop. We consciously recorded the sounds with conventional recording technology and treated them with a minimal amount of post-production processing.

As the event took place in the evening the guests were also handed torches so that they could pick out the complex visual detail of the tapestry as they walked up and down the gallery. The emphasis of this piece was to provide a spatialised audio experience via a promenade through the gallery, the sounds triggering a more precise and focussed attention to the scenes and figures within the tapestry. To reinforce Gibson's understanding of the perceptive facilities as a 'system', anecdotally many

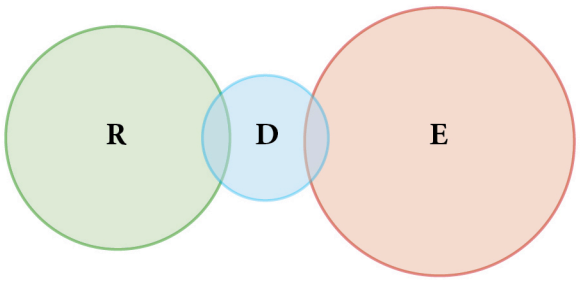
regular users and workers in the palace said that the addition of sounds had alerted them to visual details they had not previously noticed. I would suggest that through the sound installation's addition of a supplemental perceptual register, that is to say, the provision of a richer *informational structure*, the acuity of visual perception was also enhanced.

The dimensions of the gallery itself prevent the multiple narratives represented in the tapestry being viewable from a distance. This necessitated perambulation along the tapestry's considerable length to experience it in its entirety. The act of promenading along the tapestry gallery is also an important aspect of the work, emphasised by the placement of the eight speakers. Each pair of speakers had their own stereo mix, but they were also mixed in relation to the other speakers. The piece was then effectively 're-mixed' in relation to the audience's movements along, and position within, the gallery: people choosing to linger at certain points or walk back and forth, thus creating their own personal version of the piece. This latter aspect is a particularly important function of this work because it provides openness to the audience's engagement based on bodily mobility and perceptual exploration. In other words it questions the notion of a supposed ideal viewer / listener positioned by the work to assume an optimal viewing / listening position or to inhabit an audio 'sweet spot'. With *Arcadia* the arrangement of the piece does not present a single optimum listening position but can be considered as creating a number of them. This is with regard both to the sound composition itself and the position of the listener in relation to the arrangement of the sounds alongside specific visual element in the tapestry. It is an aspect of *Arcadia* that relates closely to Gibson's conception of the exploratory mobile body and perceptual system, and to the application of sound technology to contour spaces and encourage this exploratory and mobile mode.

To consider this piece in relation to my concept of the three strata of acoustic space, the space of the recorded environment is highlighted through precise naturalistic recordings, which in turn are spatially organised through both stereo recording techniques and arrangement in post-production. The speakers themselves had a stereo image created for each pair of the eight, which was clearly discernable for listeners as they moved along the gallery. The room itself, being narrow and tall, had a certain degree of reverberation, but the action of perambulation itself creates a sense of dynamic sonic zones, which were helped by the slightly active acoustic.

Figure 21.

R = Space of the recording environment
D = Space of digital post-production
E = Space of exhibition environment



As with most historic buildings, the Falkland Palace cultivates a mood of hushed reverence, occasionally punctuated by a museum guide's explanations or a school party. *Arcadia* pierces this ambience with a diverse panoply of sounds, which both disrupts the quiet and highlights the visual dynamism within the tapestry. The work creates an *atmosphere* of sonic plenitude and exoticism that promotes a sense of active audition, a surprising counterpoint to what one would expect to experience in this building. In addition, the introduction of these sounds make an historic reference to the clatter and noise of the Palace as it would have sounded in its days of use by king and court.

Falkland Audiowalk (2009)

The *Falkland Audiowalk* (2009)[58] is a pre-recorded MP3 player-based walk around the grounds of the House of Falkland. It leads the participant on a journey through the varied terrain of the Estate and draws from a range of informed narratives by geologists, historians, poets and estate workers. The interviews we recorded encouraged us to undertake a wider survey of the sonic properties of the Estate, and the edited interview material was mixed, in post-production, with field recordings of the environment around Falkland. We also introduced more playful elements, such as songs or improvised 'micro-dramas' that were designed to explore specific historical

themes and moments, as well as to activate the acoustics of architectural spaces.

A headphone-based audiowalk is predicated on mobility and wandering through a space, rather than on experiencing a work from a fixed viewpoint. The use of MP3 players with headphones, as used for *Falkland Audiowalk*, additionally affects bodily orientation, given the centrality of the ear as an organ of both hearing and balance. To wander while listening to an audiowalk also means engaging one's haptic sense, for instance, in feeling the terrain underfoot, touching walls, steadying yourself on steep paths, brushing away branches and so on. As Michael Bull (2007) reminds us, these mobile audio technologies are a device for filtration of one stream of sensory stimuli that emanates from the surrounding environment, in favour of another stream seemingly more under the individual's control. So any enhancement of sensory experience they offer is also met by a concomitant level of sensory deprivation. For all the flexibility and pleasure that can be offered by MP3 technology, the latter can also 'stand as both example and metaphor for a culture in which many of us increasingly close our ears to the multi-faceted world through which we daily move' (Bull 2007, p. 4). With this in mind, the *Falkland Audiowalk* was not intended to replace what was already there but, rather, to interact with the actual sonic environment and create overlaps between the recorded elements and the ambient environmental sounds which seeped under the headphones. In order not to compete or replace the existing sonic environment, walkers were instructed to activate the audio tracks only at specific locations during the walk, rather than playing it as a continuous accompaniment. There was also an intention that the more dominant sounds from the external environment, such as waterfalls, would also seep under the headphones and mix with the sound issued by the MP3 players.

A technique featured in *Falkland Audiowalk* (and one which was also used for a number of the *Resounding Falkland* works) was the use of added reverberation and, more specifically, the digital post-production process of 'convolution reverb'. Briefly, convolution reverb works by recording an impulse response produced in a real space (either by producing a loud bang, or, for a more accurate reading, by generating a sine-wave sweep of the space - See *figure 20*) and 'convolving' it with a new sound. In essence, the new sound is combined with the original recording of the space and has the acoustic properties of that space imposed upon it. Convolved reverb can be used to archive the acoustic signature of a space and subsequently be made to 'carry'

sounds that have been recorded elsewhere.[59] Here, we were interested in investigating this 'effect' on bodily navigation and awareness of one's location in space: the quality of a sound is transformed with this additional convolved reverberation, and in turn this creates shifts of association and meaning. Temporal and geographic markers are deterritorialised when, for example, a voice can be heard to apparently emanate from a space the speaker never even visited (or indeed, if in combination with 'virtual acoustics' techniques discussed below, no longer existed or yet to be built). The ability to evoke place through audio alone is strongly suggested in the *Falkland Audiowalk* by the use of the convolved reverb of the spacious interiors of the House of Falkland (Track 4. 'House': Pam McIlroy, local historian**)**. In this instance, the narrator's commentary on the design of the house apparently alters from what is clearly an exterior acoustic space to an interior one, achieved through adding 'convolved reverb' of the interior to the voice. The listener experiences this shift as they view the House from a group of trees some distance away, offering, by means of sound, access to a building normally off-limits to the public.

The acoustic of the spacious interiors of the House of Falkland evokes grandeur, scale and wealth, what Blesser and Salter (2007) describe as a building's 'aural architecture'. Their notion of 'aural architecture' infers that the way sound operates on the composite of multiple surfaces, objects and geometries does not just create an acoustic effect but might also impart a social meaning. Further, the effect of this piece is also enhanced by the use of binaural recording and / or post-production arrangement. With the binaural recording method microphones are placed in the ears (or on a 'dummy' head). So, accordingly, the stereo recordings made equate closely to the spatial patterns of human hearing, allowing, when played back via headphones, a perceptually coherent experience and a sense of a 360-degree audio field. For example, on *Track 4* a door opening apparently from 'behind' the listener produces a physical effect where the listener turns in response. In this case, the creation of a perceptually coherent soundscape *overrides* evidence from the visual. The fact that the listener hears the inside of the house while viewing from outside does not prevent them projecting themselves into, and perceptually exploring the audio environment presented. In this way, our Audiowalk is characterised by a sense of play with the perceptual apparatus similar to Janet Cardiff's headphone work (see Chapter 4.1 above). That is to say, the use of binaural techniques here creates perceptually coherent audio where the relationship with the visual information moves from being

contiguous (e.g. the sound of a waterfall heard next to a waterfall) to being discontiguous (e.g. hearing an interior space while viewing a building from a distant). In these situations the work allows for the perceptual apparatus to explore the variable spaces of recording and digital post-production.

Figure 22.

R = Space of the recording environment
D = Space of digital post-production
E = Space of exhibition environment

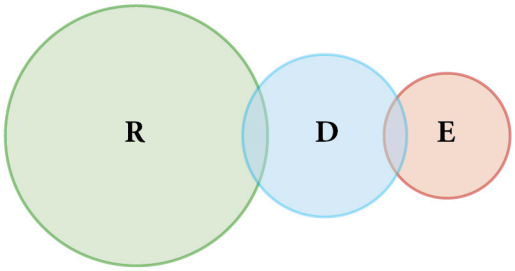


Figure 7 indicates the relative weight of the spatialised audio strata in the *Falkland Audiowalk*. Although each of the fourteen parts of the Audiowalk may vary in specifics, in the work as a whole it is the space of recording that is most dominant, with the digital enhancement and arrangement of sound apparent in different degrees across the various constituent elements.

To conclude, it might also be useful to consider *Falkland Audiowalk* in relation to Steven Feld's notion of 'poetic cartography' (see Chapter 1.0): the idea of sound and sonic expression as a means of fixing and navigating place. Although initially developed by Feld in a very specific cultural context, the ideas of 'poetic cartography' can be used to discuss to how *Falkland Audiowalk* uses sound to mark out the contours of the Estate's topography and built structures, as well as to assess how such a use of sound acts as a form of knowledge of place. The *Falkland Audiowalk* consciously encourages its audience to tease out and ponder the various layers of knowledge and experiences that constitute a multi-dimensional understanding of this particular location. It brings to the fore various forms of contemporary engagement with place, alongside focused historical research and the play of cultural memory.

***Cascading* (2010)**

Our initial interest in the Falkland Estate was sparked by the story that the burns that traverse the grounds of the House of Falkland had been 'tuned'. The Estate had been extensively developed in the nineteenth century, with the building of the House of Falkland and the landscaping of the grounds that surround it. During this process, the burns that run down from the East Lomond Hill were formed into a series of cascades and stories circulate that these had been deliberately manipulated to produce different pitched notes. Although our research found no firm documentary evidence for this, there are nonetheless marked workings visible on the stonework of the cascades, which a local stonemason had latterly suggested would have been made to alter the flow, and thus the sound. Certainly these cascades were created for a pleasure walk that was designed to 'cleverly indulge and delight the senses' (Anon quoted in Carter and Jamieson 2001, p. 92) on a range of levels, as well as to make an interesting contrast to the natural, and much wilder cascades and falls in the nearby Maspie Den gorge. The Estate is criss-crossed by a large number of different watercourses and features such as waterfalls, ponds, pipes, fountains and wells. There are also associated structures like bridges, tunnels, carved stone beds and constructed banks. So, throughout the grounds of the House there is clear evidence that water has been harnessed and its courses shaped for both practical purpose and aesthetic effect. As a 19th century gazetteer comments on the creation of the gardens, 'the use of rockwork steps and rustic timber bridges is characteristic of a picturesque 'wild garden', which manipulated the contrasting mood and flow of water, be it gurgling brook, gentle cascade or roaring waterfall and exploited other natural elements - rock, trees etc' (Anon quoted in Carter and Jamieson 2001, p.92).

Speculation on the 'tuning' of the cascades raises some of the key questions that face archaeoacoustic investigation, including interpretation of structures or features that appear to have specific acoustic effects. As Chris Scarre argues:

> In the case of built structures … the presence of specific acoustical effects can be subject to at least three alternative interpretations:
>
> a) that they were an integral part of the design, intended from the very outset;
>
> b) that they were an accidental by-products of the design, but were recognized and exploited to enhance rituals and ceremonies;

> c) that they were an accidental by-product of the design, and were never used in an intentional way (Scarre 2006 ,p.6).

Although Scarre's work relates more to the investigation of pre- and early historic structures, it is also relevant to later structures where intentionality is not clear from the written or oral records.

To investigate more precisely the alleged 'tuning' of the cascades, we approached acoustician Dr. Damian Murphy (University of York) [60] to conduct a frequency analysis of our field recordings of the cascades. He noted that there seemed to be at least two dominant frequencies for each cascade (*see Figure 24*). Yet, while there was certainly a change in pitch, the relationship between frequencies in each example, and from cascade to cascade, was not obvious. Murphy concluded that there is no systematic pattern as such and that any deliberate differentiation of the sound of the cascades was achieved through approximation. Even so, the dominant frequencies identified formed the basis of the six-channel sound piece *Cascading* (2010).[61] This work explored the sonic complexity of the cascades by mixing stereo microphone and hydrophone recordings of the cascades with computer-generated sine waves and recordings of the human voice.

For the final installation, the six speakers were placed in a horseshoe arrangement with the sound mix to create a spatialised sound diffusion with different elements assigned to each speaker and movement around and across the speaker array. The voices – one male, two female, from the St Andrews Renaissance Singers – attempted to embody the cascades by voicing the tones corresponding to the dominant frequencies of each cascade. At times, the male singer's effort to locate and sustain the tone was an audibly challenging one as he was being asked to 'sing' well below his normal vocal range. At these moments, the listener is made more starkly aware of living, breathing physicality of the singer's body. This heightened sense of the singer's corporeality, and the body as sound generator, can be theorised and discussed on the basis of Gibson's notion of *invariants*, given that the vocal quality of these moments move the voice beyond language or conventional notions of singing, making the listener more aware of the structure of the audio information that is being perceived. It can also be related to *invariants* in another sense. The literal 'voicing' of the dominant frequencies of the cascades is, in Clarke's (2005) and Von Foerster's (1969) musicological terms, an illustration of how a constant musical theme might be

Figure 23.

Section of the Cascades, House of Falkland.

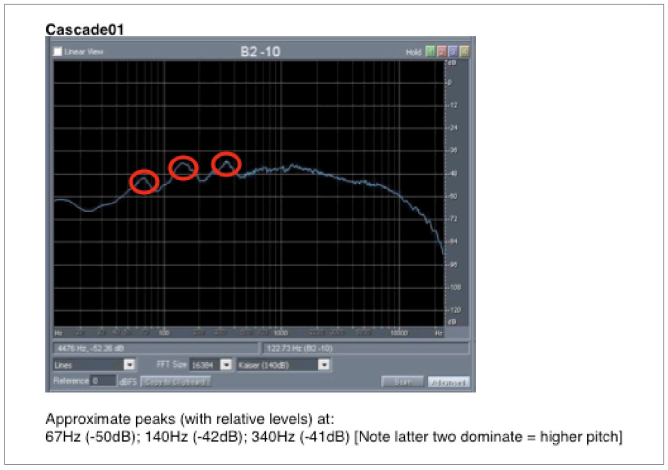


Figure 24.

Frequency Analysis graph of a cascade, indicating peak frequencies.

Figure 25.

Cascading (2010). Installation in House of Falkland.

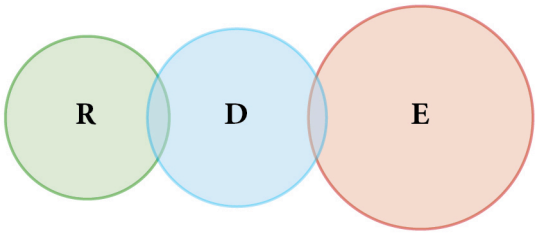
carried through a piece, even though it is voiced by different instruments or in different pitches or keys.

Finally, I want to consider *Cascading* in relation to the three audio strata that are perceived by the listener: the recorded environment, the digital stratum and the sound in the space of exhibition. In this regard, the piece makes no pretence to be perceptually coherent as a sonic environment, given the nature of the material and its arrangement. While the field recordings of the cascades create a bed of sounds that are identifiable as water flows, the other audio elements, namely, of voice, sine waves and hydrophone recordings[62] intervene to disrupt this naturalistic foundation.

The arrangement and movement of sound around the speaker array makes apparent the digital stratum of spatialisation, in that the sound element of the piece are clearly being organised through digital manipulation rather than being the result of natural occurrence. For example, in one section the hydrophone recordings are arranged to circle the six speakers in sequence, creating an echo effect. The horseshoe arrangement of the six speakers in the centre of the room was organised without chairs, so as to encourage mobility within the speaker array and in the room more generally (see *figure 25*). The listener could then experience the piece both within the array and / or explore the room and the different acoustic effects. The approximate balance of the three audio strata is represented in *Figure 26.*

Figure 26.

R = Space of the recording environment
D = Space of digital post-production
E = Space of exhibition environment



While the cascades could not be seen from the room itself (even if they had to be passed to reach the exhibition space), the decorative regime of the room and the views

of fountains and landscaped garden outside heightened the sense of the cascades as part of a highly designed and aestheticised building and landscape based on mid-nineteenth century tastes. *Cascading* sonically manifests and challenges the supposed separation of the natural and the aesthetic by taking powerful sounds from harnessed nature and attempting to pull these into a codified structure of an identifiable tonal schema and a vocalised musicality. The atmosphere of the work emphasises this sense of disquiet. The 'white noise' of the cascades, the deep reverberance of the hydrophone recordings and the 'discordant' harmonies of voice and sine waves creating a dark edge to counter the sense of pleasure, the material well-being and the taste that the House and landscaped grounds were designed to provide for its owners and to display to society. As Christopher Tilly (1994, p.34) reminds us 'landscape' can be, 'a visual ideology masking the social forces and relations of production, relations of exploitation and alienation'. In this respect, in *Cascading* the idea of *atmosphere* is in operation, both in terms of its affective dimension, and with regard to how, through the combination of material and context, other analytical and imaginative engagements with place might be engendered.

The Temple of Decision **(2010)**

A recurrent theme of the *Re-sounding Falkland* project was the exploration of the artifice of Falkland's built spaces. How sound is contoured and coloured by the specifics of these spaces provided much material for the various pieces and we were keen to 're-voice' some of Falkland's more particular structures. In *The Temple of Decision* (2010) the attention was directed to the ability of the perceptual system to discern the specific quality of environmental acoustics, specifically in relation to built structures.

The Temple of Decision (2010) is an eight-minute single-channel HD video piece with stereo sound that surveys the traces of a ruined eighteenth-century folly through various technical and fictional strategies. Designed by Alexander Roos and built during 1850-1856, the Temple of Decision, located high on a hillside, was intended as a focal point and promontory for viewing the Falkland Estate. Its current ruinous condition and enigmatic name had prompted our curiosity about the imagined sounds and past activities in this space, descriptions of which are now outside the range of

oral history. *The Temple of Decision* comprised a slow rhythmic visual montage of both still and video images of the ruin's current state and grainy archive documentation, showing the building when it was both whole and at various stages in the process of ruination. There were also images of the wireframes of the temple used in the computer modelling of the 'virtual acoustics' (see *figure 28*). These visual elements were accompanied by an audio track that alternated 'naturalistic' ambience, a voice-over [63] treated by a simulated 'virtual acoustic' and on-site recordings gathered using contact microphones. The 'naturalistic' stereo recordings of the ambient sound in the ruin's vicinity (primarily consisting of birdsong, light wind noise, distant traffic, sheep bleating, etc.), acted as a familiar 'ground' for the other constructed audio elements.

The central conceptual and sonic element of the video was the application of 'virtual acoustics', a technique that has been used to model the acoustics of lost or yet to be constructed buildings. The reconstructive potential of this technique has been employed mainly for heritage projects, for example, to understand better the acoustic design of a ruined Cistercian monastery in relation to historic liturgical music practices. But the idea of virtual acoustics can be extended to the concept of the site-specific, because although it relates to specific spaces it also involves a dislocation of spatial and temporal relations as they apply to the space's 'sonic signature'. If the 'site' is in effect no longer extant, or yet to be built, one can still can create sonic events which enable a perceptual exploration as close as possible as when (or if) if the building did in fact exist.

With regard to the practicalities of this technique, the best scenario for the creation of a virtual model is to work from the architectural drawings. However, despite conducting extensive archive research both in London and in Edinburgh,[64] we were unable to find the original architect's plans of the Temple. We did discover, however, letters from the architect, Alexander Roos, to both Onesipherous Bruce, the Temple's commissioner, and to tradesmen involved in its making.[65] This correspondence discussed the building of the Temple and gave some indications as to the construction materials and interior furnishings. Without the original plans, we used ground measurements of the ruin, archive photographs and the descriptions of the building's materials in the Roos correspondence to create a virtual model to simulate the room's acoustic signature.[66] Our recorded voices were subsequently

Figure 27.

Rear-view of the ruined Temple of Decision, Green Hiil, Falkland Estate. Photograph taken in 2009.

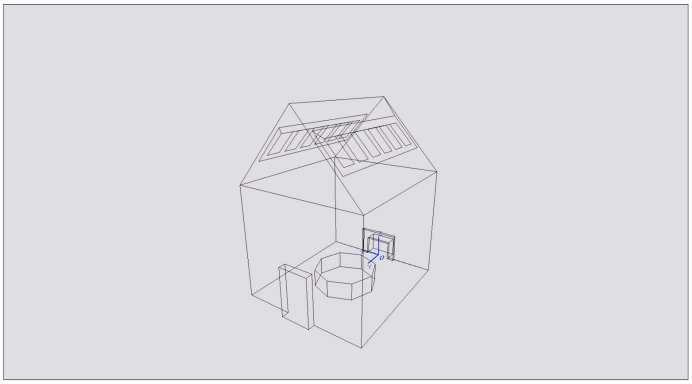


Figure 28.

Wire-frame image from the software used for creating reconstructive virtual acoustics.

Figure 29.

The Temple of Decision in the early 1900's.

Photo. J. Blyth, Newton.

treated by the reverberation of this 'virtual temple' and were now, in effect, coloured by the acoustic of the Temple as it might have been before its structural integrity was undermined. The two discursive monologues which formed the voice-over for the video ranged from our personal experiences when encountering the ruin to ruminations on the nature of ruins and the previous uses of this enigmatic building (see Appendix 2 for text of the voice-over).

To cite the architectural theorist Juhani Pallasmaa (2005, p.50), '[a] space is understood and appreciated through its echo as much as through its visual shape, but the acoustic precept usually remains as an unconscious background experience'. The video *The Temple of Decision* brings acoustic specificity to conscious attention, because the voices become coloured by the introduction of the building's (virtual) reverberative signature. As the video progresses, the acoustic quality of the voices shift from seemingly emanating from a 'dry' recording space to the reverberant 'space' of an apparently extant building.

By foregrounding the materiality of the ruin and its exposure to natural forces – the action of the wind as a single thread of a spider's web is buffeted in the breeze, clouds scudding across the sky, and so on – the video offers a visual analogue to the temporal nature of ruination. The montage of imagery cut across significant tracts of time: a tiny pencil sketch by Roos of the proposed roof is followed by a black-and-white archive photograph of this completed portion.

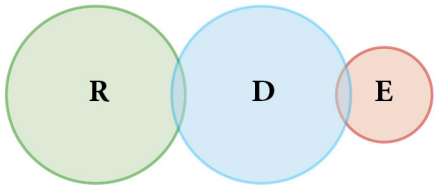
With a reference to the 'mythology' of stone's ability to act as an audio recorder[67], we also generated sonic material that would allude to the desire to hear the ruins 'speak'. Recordings from contact microphones formed an additional texture to the video's audiotrack, the sounds being gathered by walking on, scratching and banging the stones that had fallen from the ruined temple. These sounds were then laid over close-up still images of the stones, emphasising their texture and the changes wrought by weathering and the colonisation by moss and lichens. In this instance, image and sounds call attention to the tactility of the stones:

> It's been said that stonework absorbs and holds energy, that a powerful emotional event may be captured within the stone and played back like a tape recording. The building listens and the ruin plays back. (Extract from *The Temple of Decision*)

The Temple of Decision is a video work and therefore presents a different kind of experience than the other sound pieces. Even so, it is still useful here to present a schematic of the three sound environments in relation to this piece. While the creation of sound through reconstructive virtual acoustic techniques is clearly a digital process, the experience offered to the listener is (a rendering of) a coherent and 'naturalistic' acoustics of the Temple. Since it is announced that the work utilises these digital techniques, the audience is in effect matching their knowledge of the acoustic's artificiality against the perceptual coherence of the sound itself. The audiences approach to the work is therefore not so easily mapped. On the other hand, from a producer's perspective the work is constructed broadly in line with the schematic below.

Figure 30.

R = Space of the recording environment
D = Space of digital post-production
E = Space of exhibition environment



Sound, some have argued, is particularly suited to investigating the relationship between the body and the environmental or architectural space because 'where vision only ever gives us information about the surface of things, sound can inform us about otherwise invisible interiorities' (Connor 2003, p.1). Virtual acoustics, predicated as it is on relations between various material elements and architectural space molding the quality of bodily experienced sound, makes this connection between environment and body more apparent. The audio material created by this method forms a coherent sonic field for the perceptual apparatus to investigate. This technique of acoustic simulation facilitates the desire to open up a past interior, both of the space itself and of the auditory experience of the individuals who used it. I would argue that this technique also creates a series of auditory *affordances,* providing experiential

knowledge of the built environment that transcends an actual presence and offering in its stead a sonic materiality of either an erased past or an imagined future.

Chase a Yard Worse than Last (2010)

Chase a Yard Worse than Last was a live work that involved the playing of a number of games of 'Real' Tennis on the sixteenth-century real tennis court in the grounds of Falkland Palace. We wired the gallery section of the court (named the 'penthouse') with four contact microphones. As the game began, the clattering of the balls against the gallery's wooden roof was picked-up by the contact microphones and then processed using the 'convolved reverb' isolated by previous acoustic measuring of the court (see *Figure 20*). The sound of the physical contact of the balls with the architecture of the court was fed through the acoustic signature of the building and played back through four speakers in the penthouse, where the games were viewed behind thin netting.

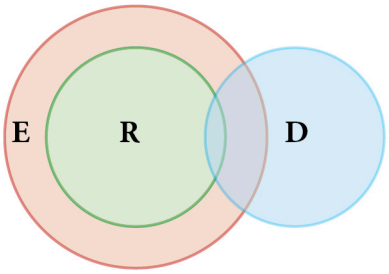
The processed sonic material was generated during the progress of the game and added to the sounds produced by the players (members of the Falkland Palace Royal Tennis Club) as they ran around, thwacked balls and called out the arcane scoring of this ancient game. Although loud, the processed sound was also intermittent and produced a surprisingly subtle intervention. Viewers / listeners new to Falkland Palace were perhaps most immediately arrested by the sight of the game being played, but after spending further time in the space and allowing for the initial novelty of the game and the verbalization of its arcane scoring system to subside, one was alerted to the enhanced auditory 'liveness'. Such enhanced sense of the 'live' was, however, deceptive, since one is hearing both the present (the live game) and the past (the impulse response of the convolution reverb, gathered months previously). The sound of the game was reflected back on itself and the work redistributed the sound from source to the speaker array placed in the viewing area.

Given this relaying of one form of recording (the convolved reverb created by a sign sweep of the space) back on to the exhibition space, the construction of the work in relation to the three strata of audio (as represented in *Figure 31*) is characterised by a particular pattern. While subtle, *Chase a Yard Worse than Last* again attempted to stimulate the exploratory nature of the perceptual apparatus by

creating surprising sonic events and making apparent and activating the acoustics of the space itself.

Figure 31.

R = Space of the recording environment
D = Space of digital post-production
E = Space of exhibition environment



***Octo: Sotto Voce* (2009)**

Octo: Sotto Voce [68] is an 8-channel sound installation that was created for the Chapter House of York Minster. It consists of an audio montage of eight whispered voices. Like the liturgy and the choral, the whisper is a category of voice associated with religious space. The whispered prayer, the respectful tone or the irreverent aside are characteristic of the voice hushed to convey private conversations not intended for widespread dissemination. The eight channels and their eight recorded voices were suggested by the distinctive octagonal design of the Chapter House. The voices themselves are improvising on prepared texts drawn from written material relating to York Minister. This approach is influenced by the technique of 'grammelot'. Popularised in the 20th century by Italian playwright Dario Fo, grammelot was originally developed by Commedia dell' Arte troupes in the 16th century. It is a mode of speech delivery designed to impersonate existing languages or voice patterns of individuals, even if neither the 'words' used nor the grammar have a semantic meaning. They are, in practice, just sounds, although sounds resonating with suggested meanings through performance, context and tone. The work was also

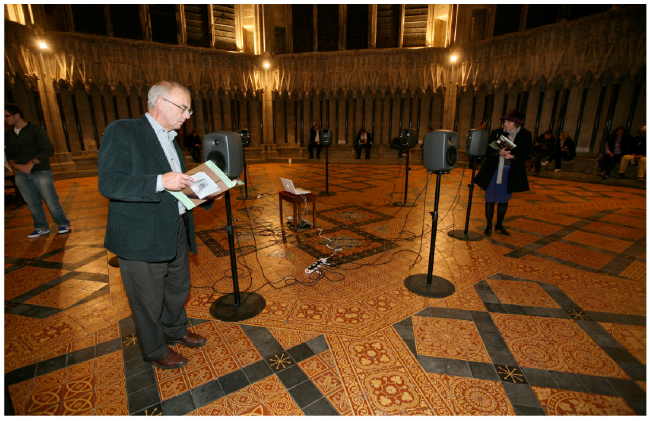


Figure 32.

Octo: Sotto Voce (2009). Installation in the Chapter House, York Minster.

Figure 33.

Octo: Sotto Voce (2009). Showing circular speaker placement.

Figure 34.

Octo: Sotto Voce (2009). Close listening to isolate individual voices.

Images. Kippa Matthews

intended to respond to the dynamic acoustics of the Chapter House. The design of the Chapter House was conceived deliberately to create an acoustic that would amplify the voice. The extreme reverberation of the building allowed for only one person at a time to speak: anymore than one would have created an incoherent cacophony because of the voices echoing around the space.

Octo: Sotto Voce utilises the acoustics of the Chapter House to creates a sonic experience that encourages a search for meaning from material that is resistant to clear-cut interpretation, accentuating instead its sonic properties. It is directly influenced by the ecological theory of perception and by the concept of *invariants*. Normally we are unaware of the business of perception due to the invariant properties of perceptual sources. However, when a source is 'degraded' in some way (as is the case here with non-semantic use of voice and a strong room reverberation), we are made more aware of our perceptual apparatus and its functioning. When the relationship between sense and perception is problematic, then the structure of the stimulus itself becomes more evident and requires more direct attention. In terms of sound this may occur when the relationship between sound and a specific source are disrupted. In the opposite way, the more easily understood a sound is, the less easily detected is the specific quality of the audio material. Spoken language is a good example of this process. When we understand the words the audio aspect of spoken language is less considered; the less we understand of a language the more speech is perceived as a series of sounds (Clarke 2005).

The mobility of the body, which is also a central concern of the ecological model, is encouraged in *Octo: Sotto Voce* by pointing the speakers outward in a circular arrangement. This denies access to an idealised listening position (the 'sweet spot') and encourages exploration of the work and of the space in which it plays. The audience can either focus on the individual speakers to isolate the sounds emanating from each or stand back and allow the work to sonically sculpt the space of the Chapter House. The piece creates an ambiguous *atmosphere* where the voices fills the space in a manner which is both uncanny and incongruous: the architectural splendour and antiquity of the Chapter House filled with spectral whispers (interspersed with other utterances - shushes, suppressed laughs and loud breaths) creates a sense of the uncanny, while the relatively high amplification of the piece points to the incongruity

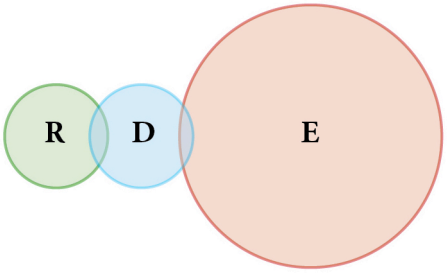
of ‘loud’ whispers. The piece also features planned moments of silence where the reverberation of sound in the space is heard to decay, giving a palpable sense of the way sound is shaped by the space.

The eight speakers used for *Octo: Sotto Voce* were arranged in a circle in the middle of the space facing outwards. This makes most use of the acoustics of the space, in terms of activating room reverberation. The placement also worked in other ways to create a more fluid listening experience. The placement did not offer an optimum listing position, a ‘sweet spot’ where the piece can be experienced in its totality. This leaves the listener experience in a flux, as every position in the room offers a different experience with no one point being optimum. It also encourages mobility in the listener to sample the work from different standpoints: to effectively ‘mix’ the piece through their own movements and choices. Listeners moved up to the speakers to sample the isolated voices unaffected by the spaces reverberation. The use of ‘dry’ mono recording and minimal digital manipulation of the voices (i.e. some basic equalisation), meant that the spatialisation of the piece was enacted mainly by the extraordinary acoustic of the Chapter House itself.

In relation to the three sound environments, the work prioritises the exhibition environment and sets sound working within the particular acoustics of the space to mobilise and stimulate the listener. *Figure 34* indicates the balance of the various sound strata of this piece.

Figure 34.

R = Space of the recording environment
D = Space of digital post-production
E = Space of exhibition environment



As can be seen in *Figures 32 & 33,* the placement of the speakers and computer also had a sculptural dimension: the speakers were arranged in relation both to the octagonal shape of the room and to the design of the floor tiling (which is itself is listed as culturally significant). Rather than hiding the mechanics away, the central position of the laptop, lid open, showing the software in action, operated, as was remarked on by several visitors, as a kind of 'digital shrine'. In a somewhat ironic fashion this was in keeping with the religious setting of the work.

4.4 – **Summary of Application of Methodology to Case Studies and Personal Practice**

The case studies presented in Chapter 4, of both my own work and that of others, examine a range of approaches to the creation of sound work. I hope to have demonstrated, with these case studies, how various aspects of my methodology can be used productively to arrive at a detailed analysis of such heterogeneous works and practices. What is central to the analysis offered here is the way these works, in their different ways, address the perceptual system through a modulation between creating perceptually coherent sound worlds and perceptual challenges and play. In other words, that my analysis and methodology focus on the oscillation between work that attempt a reconstruction of a sound world that 'fits' with our perception of the everyday environment and work that foregrounds the apparatus of production and presentation (audio speakers, headphones and resonant spaces). Of course, many of these works examined employ both strategies as part of their mode of address. This shift between the two states points to the ability of the perceptual system both to explore and understand sound environments as technologically reproduced, and to be cognisant of the means by which the reproduction is enacted. This oscillation can be thought of in relation to Gibson's concept of *invariants*: since much perceptual information remains 'consistent' we are not normally aware of perceptual processes until a particular challenge to them is presented.

The works selected in the case studies shows these tendencies within a spectrum of practices, both in term of conceptual approach and of technological delivery. In works such as *Weather Report*, Chris Watson creates highly perceptually coherent work that allows for the audio exploration of specific and, often, remote environments and the sonic richness that they hold. Although in part based on post-production selection processes, Watson's work is predicated on using a range of recording technology and field-craft techniques to convey the experience of the sounds that mark out or lie latent within a specific natural environment. By contrast, Janet Cardiff's highly playful audiowalk forces the audience to constantly shift between perceptually coherent recorded audio environments, a variety of recorded voices, sound effects, and the perceptual disjuncture between the work as recorded and the sounds and

sights of the physical environment. Here, the perceptual process is continuously being disrupted and the recorded work is in a constant dialogue with the shifting elements in the environment. My own work, *Octo: Sotto Voce* is indicative of the extent to which the acoustics of the space of exhibition constitute the crucial factor in the work's address: the significant reverberation of the Chapter House moulding the sound diffused from the speaker array, which in turn gives a tangible sense of the building's acoustics.

All the works, whether delivered in the form of multi-channel arrays or headphones, make use of production and post-production techniques and exhibition strategies that seek to either replicate and work with the spatial nature of human hearing or, alternatively, to consciously challenge and make more apparent the functioning of the perceptual apparatus. One way I have attempted to describe this oscillation between perceptually coherent and perceptually challenging audio (i.e. between a naturalistic representation and a more abstracted presentation of sonic material), is in relation to the idea of the three strata of audio space: the space of the recorded environment, the space of digital reproduction and the space of exhibition. Based on an understanding of the exploratory nature of the perceptual apparatus within the ecological model of perception, the schematic diagrams reproduced throughout this chapter indicate a way of understanding the construction of the work in relation to a series of ratios between the three strata. While these are merely illustrative of tendencies rather than exact descriptions, they offer a more systematic way of understanding of how the works are constructed and function than available in existing literature. That is to say, they enable us to build into the analysis of the work how and where sound is produced and to what degree it is formed or shaped, either in the recording environment, the realm of technological processing and diffusion, and the topographical or architectural space of exhibition. The balance of the ratios brings to the surface both a technological process and an aesthetic in relation to sound material. The attempt at faithful reproduction of an environment, the processing of sound for affective purposes, the exploration of the acoustics at the point of production or a mixture of all three are fundamental to a work's aesthetic. Depending on the focus of the work, they can also constitute an ethical choice in relation to the work and its mode of address.

While these ratios point to the producer's choices and practices, they also relate to the exploratory and probing nature of the perceptual apparatus; the spatial

dimensions of theses strata can be perceived and surveyed. This process is key to unravel the phenomenon identified by Chris Watson (see Introduction) whereby clarity and depth of sound can be conveyed, even via compressed media. I would argue that it is the ability of the perceptual apparatus to probe and map the spatial dimensions of the three strata that explain the phenomenon identified by Watson. That is to say, the *structure* of the perceptual information remains intact and can be 'picked-up' by the perceptual apparatus even as it is subject to various levels of mediation. The compression and noise brought into the signal through processing and transmission does not degrade, at least up to a certain point, the structural integrity and particularities of the sonic information. This is a crucial point of the ecological model, that we consider the perceptual apparatus as engaging with sound (and other sensorial material) as *information* rather than energy.

While the delineation of the three audio strata provides a model for understanding the structure of a sound work in relation to the perceptual apparatus, on this foundation a whole series of case-specific meanings can be constructed that enable us to examine producer's conceptual processes and content generation, alongside audience experience. Gernot Böhme's (2000) notion of *atmospheres* has proved useful to translate Gibson's concept of *affordances* into the realm of aesthetics and to account for an emotional and intellectual response to sound works. Creative work *affords* the engagement with *atmosphere* as a form of sensory experience or knowledge. This is distinct from an indication of potential or 'use function' of objects and features of the environment, which is what the term *affordance* more readily refers to in Gibson's original usage. In relation to site-specific work, *atmosphere*, within Böhme's broader Ecological Nature Aesthetics (and by extension urban environments), also takes into consideration the relationship between the quality of the environment and human sensibilities, and how the environment can be experienced 'aesthetically'. Susan Philipsz's work is illustrative of this: the *atmosphere* of the place where her work is sited frames the experience, which the work itself, at best, can work within. The use of mournful historic songs signifying a sense of loss in *SURROUND ME:A Song Cycle for the City of London* is added to specific city sites that have their own historic resonance. This sombre ambience is exacerbated by the work being exhibited on dreary winter weekends, when the City is largely deserted of people. While the songs used by Philipsz do much of the work of developing the particular *atmosphere* of her

work, other, more abstract work can also forge a connection between perception, affect and knowledge of place. With my *Cascading* the material used, the 'white noise' of the cascades, the deep reverberance of the hydrophone recordings, and the 'discordant' harmonies of voice and sine waves create a disquieting *atmosphere* which acts to counter the opulence (if now somewhat faded) of the House of Falkland and its landscaped grounds. This disquiet raises the spectre of the discordant social and material relations that lie beneath the setting's material splendour.

The idea of *atmospheres* as 'object like emotions' brings out the potential of sound works in forming 'resonances' with place – resonances that acts at both an experiential level and as a foundation for a wider interrogation of the specifics of place. The linkage explored previously between *atmospheres* and *affordance* can be strengthened if one bears in mind that the ecological theory is grounded in William James' notion of *percepts* and *concepts*. That notion conceives of autonomous, if interconnected, imaginative and rationalising processes based on a dynamic relationship to perceptual information. What is important here is that perception, rather than being understood as pre-cognitive, is *a mode of knowing in its own right*. This conception of perception acts as a foundation on which we can see better the usefulness of Gibson's work on perception as well the productivity of Böhme's concept of *atmospheres*. More fundamentally it enables us to grasp how the perceptual system furnishes 'understanding' and 'knowledge' from the art works under investigation here, and, by extension, other work. That is to say, *percepts* and *concepts* provide a model for how art can function beyond the fact of perception and affect, of how, in a very real way, both perception and affect are modes of knowing and integral, indeed foundational, components of broader cognitive processes.

James' formulation provides a model for how a subtle and developed knowledge of place might be related to the perceptual exploration of the various spaces presented in audio material: the spaces of recording, post-production and exhibition. In this manner, *atmospheres* – the aestheticisation of sonic material in space – also functions as a way of making linkages between perception and – the central theme of this dissertation – sound work with a close regard for the specifics of 'place', by which I mean sound work that responds conceptually and materially to the natural and the built environment. The mediation of locality is an important feature of the work considered in this chapter. It is assessed both in the audio material produced and in its exhibition in relation to the particularities, structural / topographic and

acoustic, of specific locations. This attention to both place and perception is at the root of the methodology developed in this dissertation for production and the analysis of sound work. It is a methodology that deals both with the materiality of sound and with how sound can aid an interrogation of the cultural, social and historical aspects of particular locations.

One of the issues that I have stressed in relation to the specifics of sound installation work is the question of listener mobility. It is an issue that draws on the idea of the mobile perceiving body, as outlined according to the ecological model, and on the technological arrangement of work designed to encourage a mobile and exploratory audience. I have suggested that work which presents an optimum listening position or 'sweet-spot' can be regarded as overly determining the listener experience and restricting the potential of sound installation to work *with* the mobile nature of the perceiving body. This, of course, does not preclude the movement of sound within a space and / or across a speaker array offering an appeal to the perceptual apparatus of even a stationary listener. This is a dimension of sound that was openly explored in my works *Arcadia* and *Octo: Sotto Voce,* both of which encourage a more open reading either by presenting multiple sweet-spots (*Arcadia*) or eschewing one completely (*Octo: Sotto Voce*). Both works invite the perceptual apparatus to explore and respond to environmental information stimulus. Florian Hecker's *Installations* (2010-2010) also work with aspects of sound / listener mobility. Through the use of directional speaker technology and intelligent arrangement, Hecker's works create engaging audio experiences by organising sound in the gallery into a series of shifting zones. Coupled with the use of specific audio effects (reflection off surfaces to obscure sound source) and psychoacoustic phenomena (Tritone Paradox), this leads to a series of works that attempt to both establish the potentials of audio technology to fashion and play with space and listener mobility while also making apparent the operation of the perceptual system. Although these works are not, in themselves, about the specifics of place and largely eschews semantic material, they do act as a form of laboratory for testing the potential of contemporary audio technology to offer and direct structured and challenging sound experiences.

Although, through their various strategies, *Arcadia*, *Octo:Sotto Voce* and *Installations* offer more potential and openness in the way they are engaged with, they should not be regarded as without any level of determination. An approach that eschews the positioning of an 'ideal listener' raises a series of important issues that

should be considered in both the production of a work and in the analysis of its form of engagement with the listener. This is not to say that one should regard the parameters of any work as totally 'open' and without some level of 'perceptual 'management'. But if sound art is to develop its own trajectories it needs to consider how it might offer forms and experiences that differ from more traditional modes of concert, or even, in some cases, gallery presentation. Working with approaches that align with the functioning of the perceptual apparatus, rather than trying to restrain its exploratory nature, is one away of broadening the potential of both production and analysis as ways of grasping how the material and its content can be perceived by the listener and organised in such a way that the work either in line with the normal functioning of the perceptual system and / or challenge and excite it for the purpose of pleasure or transmission of knowledge. I would go further and say that this is a fundamental, perhaps even a *defining* aspect of a sound art aesthetic. It is the possibilities that sound art offers that form both the basis of its varied and particular modes of address and its potential for the exploration of the specifics of place.

It has been my intention in this chapter to demonstrate, through examples from both my own and of other artists' sound work, that the use of the ecological theory of perception, in concert with other compatible theoretical models, provides an inclusive mode of analysis that, having the rigour of a developed psychological model, can extend that model into a methodology – one that can open up a wide range of interconnected factors in relation to perception, environment and site-specific sound art practice.

The schematic diagrams in this chapter are intended to provide an indication of the spatial ratios of the works presented in terms of the three spaces of environmental sound I identify: the space of the recording environment, post-production and exhibition. Across the next three pages I present a chart that briefly recaps the works examined in the case studies in relation to six other key concepts of my methodology: the mobile perceiving body, invariants, affordances / concepts, sonic effect, synecdoche / selection, and atmospheres. As I mentioned before, the specific nature of the works means that some are more indicative of these functions than others.

Figure 36. **Mapping of Case Studies Against Key Concepts**

	Mobile Perceiving Body	**Invariants**	**Affordances / Concepts**	**Sonic Effect**	**Synecdoche / Selection**	**Atmospheres**
Chris Watson *Weather Report*	Creates perceptually coherent sound environments for perceptual exploration. Precise capturing of spatial arrangements in the recording environment.	Creation of perceptually coherent environments.	Perceptual access to what are often inaccessible natural sonic environments.	Sounds recorded molded by local topography.	Durational recording of specific environments: 'Time-compression'. Valourisation of significant local sounds.	Records and presents various sonic atmospheres he identifies as signatures of specific environments.
Janet Cardiff *The Missing Voice (Case Study B)*	Mobility of listener in relation to the site examined in the work. Based on perceptually coherent material from recording environment through binaural techniques.	Functions by both constructing and disrupting invariant sonic elements. Perceptual play by shifting between the three sonic environments.	Enhanced engagement with historical and social aspects of chosen locale and the semantic/structuring function of the voice in creation of meaning.	Recorded environmental sound as formed by movement through local environment and the shifting activities within it.	Selected sounds from environmental recordings edited with narrative elements delivered vocally. This supported by additional sound effects and music.	General atmosphere of unease, which shifts in relation to narrative and environment travelled through.
Florian Hecker *Installations*	Organises and encourages mobile perception through creation of sonic zones in the space of exhibition	Disrupts invariant perception through creation of 'audio hallucinations'.	Stimulates an awareness of perceptual processes.	Sets up dynamic between listeners, the space and the technologically formed sonic zones.	Precise forming and selection of material to create specific effects.	Atmosphere of technically induced aridity, which induces attention to affective and perceptual process.
Susan Phillipz *SURROUND ME*	Mix of diffusion strategies. Some work creates a 'sweet spot' and others are more open in relation to listener motility.	Does not in general disrupt invariants, apart from *Flow My Tears*, John Dowland, 1600, which creates a challenging sound effect.	Functions to explore urban space in consideration of historical episodes and social developments in the city.	Most pieces establish dynamic between space, sound source and listener, although sound sources are static.	Vocal rendition of songs from specific period of English composition (late 16c / early 17c) and one instrumental from same period.	General atmosphere of loss and lament generated by nature of the songs and historical inferences of chosen sites.

Figure 36. **Mapping of Case Studies Against Key Concepts**

	Mobile Perceiving Body	**Invariants**	**Affordances / Concepts**	**Sonic Effect**	**Synecdoche / Selection**	**Atmospheres**
Octo: Sotto Voce	Speakers arranged to prevent sweet spot and encourage exploration of exhibition space and sonic material.	Works on disrupting the invariants of language by removing semantic content from voices. Thus, enhancing the sonic basis of language.	Functions to reconfigure sense of architectural and religious space through activating acoustic properties.	Exploits the particular and extreme reverberation of the exhibition space: Chapter House, York Minster.	Vocal sounds produced by performance of prepared texts.	Sense of the uncanny and incongruity of the 'loud whisper'.
Cascading	Speakers and sound material arranged to encourage perambulation around the installation and the creation of dynamic spatial effects in the space of exhibition.	Invariant frequencies identified in cascades translated through voice and sine waves. Makes apparent sonic materiality of human voice through vocalization of low-frequencies.	Forms awareness of local sonic environment and social / cultural forces that forming landscape.	Explores the shifting sonics of the cascades as part of a designed landscape.	Conventional and hydrophone recordings mixed with sung voices and sine waves based on dominant frequencies identified from recordings.	Discordant harmonies of voice and sine waves, creating a dark edge to counter the material well being represented by house and gardens.
Falkland Audiowalk	Interaction of 'walker' with perceptually coherent audio material presented in the work.	Varies from piece to piece but works mainly with the replication with invariant properties of the environments encountered. This is enhanced by binaural recording and virtual acoustic techniques.	Opens through sound and personal testimony the numerous ways Falkland Estate is both understood and engaged with by different inhabitants / users.	Various effects created by the action of sounds occurring and interacting in the natural and built environments and various human activities.	The various pieces are a mix of interviews and other vocal based material, environmental recordings, binaural and virtual acoustic techniques.	Atmosphere varies from piece to piece and the particular location designated for listening.

Figure 36. **Mapping of Case Studies Against Key Concepts**

	Mobile Perceiving Body	**Invariants**	**Affordances / Concepts**	**Sonic Effect**	**Synecdoche / Selection**	**Atmospheres**
Temple of Decision	Calls on broader perceptual engagement through sound and image. Plays on the shifting perception of the spaces of recording and post-production via virtual acoustics.	Maintains invariant properties of the voice, although treated by shifting virtual acoustics. Facilitates active exploration of perceptually coherent sonic space created through virtual acoustic techniques.	Recreates the sonic experience of a building that has fallen into ruin. Also, raises consideration of the past and present of a little known structure that is difficult to access.	Indication of action of sounds as coloured by building acoustics.	Voice-over, environmental recordings and sonic material gathered by contact microphone recordings of interaction with the ruined building.	Sonic atmosphere one of lament and sense of isolation, enhanced by visual material.
Arcadia	Arrangement of speakers and sound material invites perambulation within the exhibition space. No idealised listening position. Also, calls on perceptual system to build connectivity between sound and visual representations.	Perceptual coherence of material challenged by incongruous nature of the sound in this context.	Affords sample of rich local sound environment and awareness of perceptual processes in forming links between audio and visual elements	Shifting balance of sound material from the various speakers in relation to movement through the exhibition space.	Bio-acoustic and environmental recordings made in the locality of the site, singing voice and archive recordings of deer and hunting horns.	Atmosphere of sonic exoticism and plenitude that promotes a sense of active audition and an incongruity in relation to the quiet that normally pertains in the exhibition site.
Chase a Yard Worse than Last	Encourages perceptual exploration by enhancing acoustics of a unique architectural space.	Disrupts invariants by enhancing acoustic effects of the tennis game.	Creates greater awareness of the acoustics of the space and chance to see the building used for its intended purpose.	Dynamic interaction between movement of the players and acoustic activation of the space by the ball and technological enhancement.	Sounds of the game enhanced by some actions being played through reverb gathered in space.	Playful event that subtly disrupts acoustic space.

Conclusion

The dissertation explores the productive linkages between and the development of different theoretical frameworks to arrive at a methodology that might enable us to discuss with greater rigour the multiple dimensions of sound art. My methodology explores the potential of the ecological model of perception, and other compatible perspectives, in order to move the analysis of sound art beyond the prevailing modes, which are based on musicological concerns, on conceptualism in the visual arts or in phenomenological responses to sound art as 'text'. While the approach provided here has the potential for broader theoretical application, it is my specific aim to ground this methodology in the possibilities sound art *affords* in relation to the engagement with experience and understanding of 'place'.

In his consideration of what constitutes a sense of place, the geographer Yi-Fu Tuan (2003) asserts that

> deeply-loved places are not necessarily visible, either to ourselves or to others. Places can be made visible by a number of means: rivalry or conflict with other places, visual prominence, and the evocative power of art, architecture, ceremonials and rites. Human places become vividly real through dramatization. Identity of place is achieved by dramatizing the aspirations, needs, and functional rhythms of personal and group life. (Tuan 2003, p.178)

Tuan's assessment of place relates closely to cultural production – buildings, narratives, performances, rituals – yet the 'invisible' can be linked to a more perceptual / experiential understanding of place, as indicated by Böhme's (2000) concept of *atmospheres* and Ecology Nature Aesthetics. And if we are discussing cultural forms then sound based art can also clearly explore the 'non-visible' aspects of place because sound, by definition, works on a non-visual level, even if sound may be causally linked and interact with visually perceived features, events and structures. The 'soundscape' of R. Murray Schafer (1977) and the 'acoustemology' of Steven Feld (2005), though in different respects, delineate the operation of sound within human communities and its centrality for knowing and navigating the complexities of 'place' in its broadest sense. As Christopher Tilley (1994) has shown through a survey

of the various literature on the subject, notions of place can be understood or examined through five typologies of space: somatic, perceptual, existential, architectural and cognitive. How sound functions in relation to these 'spaces' can be accommodated by my methodology. In brief, this can be realised by taking Gibson's ecological model of perception as a foundation for other compatible approaches: perspectives on a humanised sonic environment (Augoyard & Torgue), sound and human sensibilities (Böhme), and sound in relation to epistemological and cognitive systems (James). My attention to site-specific sound based practice is a way of making manifest the 'invisible' aspects of place as well as of making apparent the process by which the perceptual system operates. At best an attention to both these aspects in site-specific sound art opens up not just the particularities of place but also the particularity of a way of knowing. In other words, a work can consciously excite and stretch the perceptual apparatus as source of pleasure and function as *information* that precedes, but is fundamental to, a cognitive appraisal of the material presented to mark or explore the particularities of place.

As the basis for my analysis the ecological model opens up some of the territory covered by a new realist approach to sound art. It engages with work that starts from a perceptual encounter with sound material as it operates within actual environments. From this perspective, sound artwork is understood, in the words of Christoph Cox (2011, p.157), 'not as complexes of signs or representations but complexes of forces materially inflected by other forces and force-complexes'. And while this is the basis of a more realist understanding of sound art, we might also 'ask of an image or a text not what it means or represents, but what it does, how it operates, what changes it effectuates' (Cox 2011, p.157). With this dissertation and the methodology it proposes, my objective has been to indicate a way of understanding the operation of sound-based practice along this trajectory, that is, less in terms of its representational functions or conceptual formulation or conceits, but as the generation and propagation of sonic material through different perceivable spaces, with sound modulating environment and activating and exciting the listener as a mobile perceiver. The focus here is what flows of sound material are being selected, processed and diffused into a space for perceptual 'pick- up'.

At this point, what remains to be addressed is how a broader level of meaning and understanding might be generated and how to account for that without falling

back to a semiotic-based analysis? How this model of perception might lead to more complex cultural and social knowledge can be given a philosophical basis with William James (1912) description of *percepts* and *concepts*, where these terms are to be understood as the two aspects of cognition, and where perception is, in actuality, a mode of knowing in its own right, rather than being a pre-cognitive stage. It must also be stressed that perception is direct; James' radical empiricism explicitly rejects the idea of mental representation standing between the object and the perceiver. The mind is 'independent' in terms of cognitive and imaginative processes but it does not operate counter to perception, for perception is the source of the 'material', the empirical evidence, on which these 'conceptual' processes are grounded. This understanding of perception might just enable us to develop a realist methodology that, founded on the ecological theory of perception, will produce less impressionistic and broader based readings of sound art than those so far afforded by semiotics and phenomenology. In this dissertation I have tried to demonstrate the potential of this line of enquiry. There is still, however, much work that remains to be done, both in relation to the process of knowledge acquisition through perception of sound based art, and with regard to how this might interact with the perceiver's evolving experience and memory.[69] This is the trajectory my work will pursue: to further establish a methodology which foregrounds perceptual processes and, through it, to go someway towards a more systematic understanding of the link between cultural practices and intellectual processes.

There remains the potential of testing my methodology through directed qualitative research conducted with the audiences of my sound-based practice.[70] This would perhaps allow me to flesh out the notion of the 'Mobile Perceiving Body', a description of 'audience' that was here a necessary contraction to focus on and develop my argument about ecological perception. While I have included in this dissertation a few anecdotal responses to my work, I would welcome the opportunity to develop a more systematic examination of audience response to key aspects of my methodology and my delineation of the three sound environments: the spaces of recording, post-production and exhibition. Because most sound artists working with environmental sound, will, to a greater or lesser degree of attention, record and / or organise sound in three stages in line with the three spaces, I find the delineation of the three sound environments clearly useful in the examination of the producer's side of sound art practice. That is to say, they record sounds in the natural / built

environment, they organise / modify sounds in post-production, and they diffuse sound through audio speakers and mix sound levels in relation to the acoustics and physical parameters of the exhibition space. Whether the undirected listener will actively discern these three spaces as distinct or, rather, consider the work as a unified experience remains a more open question. This does not mean that all work will engender a uniform response in line with either the concept of the three spaces or with any other key concepts I make use of in my methodology. As stated previously, different sound art works are open to these modes of analysis to a greater or lesser extent, dependent on their specific aesthetic strategies. Based on my own observations, the practical work that was created to explore aspects of my methodology more directly (i.e. *Octo: Sotto Voce*), clearly succeeded in encouraging greater audience mobility through speaker placement and utilisation of the acoustics of the exhibition space. Opening my work to a more robust and rigorous audience scrutiny would be of great interest and may hone the effectiveness and accuracy of my approach. This being said, I consider that through the elucidation of the various case studies above, my methodology does provide a coherent mode of analysis which offers specific and productive insights into sound art practice, which are not offered by other theoretical and analytical models.

The realist approach and the challenge it presents to an overly anthropocentric cultural criticism is reinforced by reference to the 'ecological', a term that links a number of the theories examined in this dissertation. While Gibson's use of the term refers to its more scientific definition (i.e. an examination of the relationships living organisms have with both the natural environment and other organisms), Böhme makes clear that his Ecological Nature Aesthetics goes beyond the notion of ecology as a branch of science or the idea (indeed the fact) of a planetary system in crisis. Böhme uses the ecological, instead, to draw the link between environment and humans in terms of what we might call 'sensibility'. Although also dealing with perception and sensibility, the Acoustic Ecology of Murray Schafer broadens out to a consideration of the particularities of the soundscape, human activities and technologies. And while each of these theorists' use of 'ecology' or the 'ecological' has a difference emphasis, one could say that any conceptualisation of humans as one among other organisms that are inextricably linked to the natural / material world, is likely to offer approaches

to culture that are less emphatically anthropocentric than exiting ones and to raise broader political and economic questions.

Indeed, the conception of Acoustic Ecology opens up a direct correlation between sound and wider socioeconomic currents. This is made apparent in Murray Schafer's conception of the soundscape as a form of 'social composition': an accumulation of natural and human / technologically produced sounds, albeit one that is largely unthinking and unplanned. Murray Schafer does highlight the pressure of economic and technological development on the soundscape. But this, current, phase of capitalist expansion places concurrently new and increased pressures on populations in relation to older understandings and connections to place – that is to say, pressures on the *genius loci* of topographical and architectural features, landmarks and soundmarks, cultures and practices. As Barry Lopez (1999), remarks:

> The feeling that a particular place is suffused with memories, the specific focus of sacred and profane stories, and that the whole landscape is a congeries of such places, is what is meant by a local sense of the land. The observation that it is merely space which requires definition before it has meaning – political demarcation, an assignment of its ownership, or industrial development – betrays a colonial sensibility (Lopez 1999, pp. 278-9).

All that was particular of place can be seen as starting to succumb to an international spread of homogenised spaces of capital accumulation and communication flows, what Marc Augé (1995) calls the 'non-place', which he defines in fairly straightforward terms: '[i]f a place can be defined as relational, historical and concerned with identity, then a space which cannot be defined as relational, or historical, or concerned with identity will be a non-place' (Augé 1995, p.92). While this is fairly clear, the question of what might be considered as 'relational, or historical, or concerned with identity', is an open question inviting both contestation and invention. As David Harvey (1989) observes, in the face of these increased flows and penetration of capital, the desire to be part of an 'authentic community' and to maintain a strong 'sense of place' becomes more pronounced in response. In the light of this, we can ask: how does site-specific art practice react to and / or accommodates these processes? Can today's 'non-place' be made 'relational' through new types of cultural / social activity? And does site-specific art in general have a role in creating

new relations and open forms of social activity? If there is potential here it is not straightforward. As Miwon Kwon (2004) suggests, site-specific art is often considered to have a 'built-in' progressiveness: by dint of being sited 'out in the world' it must be saying something useful about the part of the world it is sited in. As Kwon indicates through her various case studies, and my own case studies confirm, the issue of 'progressiveness' is fraught with a great deal of complexity as any artwork emerges through a dense matrix of relationships between the artist, the commissioners and the communities addressed, or confronted, by the work's placement and its form and content. As I discussed earlier, site-specific art can be used to temper the hard edge of economic expansion just as it can be part of land developers' strategic attempts at 'place making' – selling the various 'joys' of the 'non-place' by evoking *faux* historical memories and local particularities that have been all but eradicated by their own developments.

The politics of place are rife with tensions and a crucial site of contestation over social and economic control and meaning. As the flows of capital and concomitant social and cultural disruptions increase globally, the relation between people and places will change to be re-defined by measures that are exploratory and innovative as well as defensive and restorative. Yet, these processes will not be entirely one-way. As Tilley (1994) suggests, the human landscape has been formed through centuries-long overlaying of social, cultural and economic activity, where power relations have continually shifted, often below the surface. If this will continue to be the case, as it will no doubt be, then, in the face of these increasing pressures, a question remains: what traces of these historic shifts can be recovered and rendered sonically, either by reanimating the sonic traces / emissions of the landscapes or by the generation of imaginative / responsive material? Site-specific sonic art can function to reinforce an established notion of place, to investigate and challenge these notions or, indeed, to contribute to the creation of new sets of relations, histories and identities. My examination of sound art in this dissertation demonstrates that, by comprehending more precisely how sound within the environment operates in relation to perception, sensibilities and understanding, our abilities as producers are honed to explore place and create challenging audio experiences – experiences that can engage and excite the perceptual system but, also re-configure the flow of possible meanings and usages that constitute the multiplicity of 'place'. Through these experiences, sound art can engender a more developed sense and an understanding of place, of how

it may once have been, how it is currently constituted, and what it might one day become. The methodology that this dissertation has proposed and tested was devised better to theorise and understand the production and the functioning of such experiences.

Endnotes

Introduction

[2] Tim Souster 'Electonic Music Now' (12 March, 1983). As well as work by Tim Souster the programme also featured work by Denis Smalley and Jonty Harrison amongst other.

[3] The seminar 'Sound and the City: Interdisciplinary Perspectives', was held at the Centre for Researc in the Arts, Social Sciences and Humanities (CRASSH), University of Cambridge, February 22nd 2008.

[4] The instruction based Score and text for Alvin Lucier's *I am sitting in a room* (1969) for voice and electromagnetic tape.
Necessary Equipment:
1 microphone 2 tape recorders amplifier 1 loudspeaker
Choose a room the musical qualities of which you would like to evoke.
Attach the microphone to the input of tape recorder #1.
To the output of tape recorder #2 attach the amplifier and loudspeaker.
Use the following text or any other text of any length:

> "I am sitting in a room different from the one you are in now. I am recording the sound of my speaking voice and I am going to play it back into the room again and again until the resonant frequencies of the room reinforce themselves so that any sem- blance of my speech, with perhaps the exception of rhythm, is destroyed. What you will hear, then, are the natural resonant frequencies of the room articulated by speech. I regard this activity not so much as a demonstration of a physi- cal fact, but more as a way to smooth out any irregularities my speech might have."

Record your voice on tape through the microphone attached to tape re- corder #1.
Rewind the tape to its beginning, transfer it to tape recorder #2, play it back into the room through the loudspeaker and record a second genera- tion of the original recorded statement through the microphone attached to tape recorder #1.
Rewind the second generation to its beginning and splice it onto the end of the original recorded statement on tape recorder #2.
Play the second generation only back into the room through the loud speakerand record a third generation of the original recorded statement through the microphone attached to tape recorder #1.
Continue this process through many generations.
All the generations spliced together in chronological order make a composition the length of which is determined by the length of original statement and the number of generations recorded.
The versions in which one recorded statement is recycled through many rooms.
Make versions using one or more speakers of different languages and in different rooms.
Make versions in which, for each generation, the microphone is moved to different

parts of the room or rooms.
Make versions that can be performed in real time.

[5] Antecedents to Cage's work can be seen in the rapid shifts in musical practice during the 20th Century. Developments such as atonalism and the serialism of the Second Viennese school, explorations of the noise of the modernist urban experience in the intonarumori of futurist Luigi Russolo, to investigation of 'noise' within the orchestra by composers such as Igor Stravinsky, Henry Cowell, Edgard Varèse (Khan 2001). The sound poetry of Dadaists such as Hugo Ball and Kurt Schwitters might also be added to this mix of elements.

[6] John Cage's experimental composition classes at the New School for Social Research in New York City ran from 1957 to 1959. Here, he discussed ideas of 'indeterminacy' as a compositional tool. A number of significant individuals from creative practices other than music also attended. Notable students were Alan Kaprow, a central force in developing the art happening, and George Brecht and Dick Higgins, early members of the Fluxus art movement. Both the multi-media nature of art 'happenings' and the wide ranging use of media and the wide range of disciplines represented in Fluxus, were highly influential in widening the range of media and practices brought within the orbit of fine/visual arts. This influence across disciplines also featured in Cage's activities, in the years 1942-53, with the radical art education school, Black Mountain College. It was here that in1952 Cage organised a seminal multi-disciplinary performance work (sometime referred to as *Theatre Piece no.1)*, which is regarded as the birth of the art 'happening'.

[7] Alongside the development of numerous experimental compositional or anti-compositional procedures stemming from classical music beginnings, are the experiments in the sonic found in free jazz and improv, experimental rock's exploration of electronic technologies and researches into world music practices which occurred concurrently. The Japanese performance ensemble Group Ongaku have also been cited as an important marker in sound arts development, in relation to broadeing sound based performance and experiments in microphony: utilising found objects as sound sources (Labelle 2006). From Walter Ruttmann's audio collage *Weekend* (1928) to more contemporary developments in use of radio (and more recently internet) transmissions are another strand brought under the broader category of sound art. Finally, 'sound toys' and other sound generating software represent strands of sound art practice predicated on digital technology. If the practices loosely categorised as sound or sonic art are diverse, those engaged in its production often traverse these disciplines. Individual practices and work move between gallery, concert hall, radio station and site-specific installation.

[8] The first major exhibition of sound art in Britain, 'Sonic Boom - The Art of Sound' (Hayward Gallery, South Bank Centre London 27. April -18. June 2000) clearly indicates how a large number of what might be considered 'sound' works also involve two or three dimensional media as components of the work.

[9] Cox makes particularly reference in this context to the writings of Seth Kim-Cohen (2009). I discuss Kim-Cohen's work in more detail in Chapter 2.3.

[10] This aspect is covered by Gibson's important concept of 'affordances', which I discuss in more detail in Chapters 1 and 2. While it recognises the model for all animal organisms, it is assumed that different perceptual faculties are in operation in different species.

[11] Microsound concerns itself with sound 'particles' of shorter duration than the musical note and longer than the sample time scale. In practice this covers sounds shorter than one tenth of a second and longer than 10 milliseconds and works with the audio frequency range (20 Hz to 20 kHz) and the infrasonic frequency range (below 20 H). Recent developments in digital processes and software allow composers to work more easily at this level to create new sounds and musical practices. Granular synthesis is the most well know of these. It works on a similar process to sampling and manipulates sound objects on a microsonic level (i.e. duration, frequency, spatial arrangement etc.) to create new sound objects (Roads 2001).

[12] Sterne acknowledges that the quality difference between mp3 and higher quality sound media, such as CD recordings, is discernable. However, since most mp3 music is consumed in less than ideal listening conditions, this is not such an issue for the average listener. Even so, the majority of sound engineers and artists still make a premium of full frequency recording, and most sound recording equipment and software now offer sampling frequencies and bit rates of even higher specifications than the 44khz and 16 bit settings that are standard for the audio CD. The listener's expectations of audio fidelity are also likely to be very different depending on whether they are listening to the latest pop tune on an iPod on their way to work or engaging with a sound art installation in a gallery space.

Chapter 1

[13] Notable early members of The World Soundscape Project (WSP) were Howard Broomfield, Bruce Davis, Peter Huse, Barry Truax and Hildegard Westerkamp. The WSP led in turn to the creation of the World Forum for Acoustic Ecology (WFAE) in 1993, which is currently the focus for much academic and practical audio work in this field on an international basis.

[14] Tilley cites writers such as Y-F Taun (1974,1975,1977/2003), J. Pickles (1985); E. Relph (1976), A. Buttimer and D. Seamon (1980) and D. Seamon and R. Mugerauer (1989).

[15] These temporary installations in the Dark Arches included Bill Fontana's *Soundlines* (2005) and Mark Fell and Joe Gilmore's *Manifold* (2006).

[16] For Foster, this relationship between art and anthropology is built on an older envy by the anthropologist of the artist as a 'paragon of formal reflexivity, a self aware reader of *culture understood as text*….the anthropologist as collagist, semiologist, avant-gardist' (Foster 1999, p.180 original emphasis).

Chapter 2

[17] The 'black box' model is used in both engineering and psychology as a way to consider the workings of a device, system or the human mind, in terms of its inputs and outputs, without prior knowledge of internal operations.

[18] The first phase of cybernetics is linked to the famous discussions at what are now known as the Macy Conferences on Cybernetics, which ran from 1945 to 1953. At the Macy Conferences experts from the sciences, social sciences and engineering met for a range of open-ended discussions. The major contributors included mathematician and cybernetics pioneer Norbert Wiener, biophysicist Heinz von Foerster, neurophysiologist Warren McCulloch, computer pioneer Julian Bigelow, mathematicians Walter Pitts and Claude Shannon and social psychologist Kurt Lewin (whose work Gibson is initially influenced by, but eventually rejects). The aim was to work towards a 'theory of communication and control applying equally to animals, humans and machines' (Hayles 1999:7). The second phase, or second-order relates primarily to the issue of reflexivity to cybernetics systems and the development of theories of autopoesis. It also relates to the work by Heinz von Foerster and anthropologists Gregory Bateson and Margaret Mead in the 1960s (who had been part of the 'core group' at the Macy Conferences) and biologists Humberto Maturana and Francisco Varela. The third wave of cybernetics, which Hayles links to the work of Hans Moravec and Rodney Brooks is predicated on digital technologies and networks and is concerned with issues of virtuality, artificial life and emergence.

[19] Von Foerster provides mathematical formula and diagrams to illustrate these processes, which I will not reproduce here.

[20] Please refer the description of Gibson's concept of invariance as part of my assessment of Eric Clark's (2005) work in Chapter 1.3.

[21] The research group included Maturana, alongside Macy stalwarts McCulloch, Pitts and Jerry Lettvin. The work conducted was based initially on laboratory work where microelectrodes were implanted in the frog's visual cortex. The frog, now hooked-up to a cybernetic circuit, indicated intense interest in the fast moving flies put before it, but showed scant regard for bigger or larger, slower moving objects. From these observances it was interpreted that the frog's eyes, 'speak to the brain in a language already highly organised and interpreted instead of transmitting some more or less accurate copy of the distribution of light upon the receptors' (Lettvin et al in Hayles 1999, p.135). That is to say the 'frog's perceptual system does not so much register reality but *construct* it' (Hayles 1999, p.135, original emphasis).

[22] The difference might also be related to issues of methodology. It is perhaps of interest that the laboratory work that lead to theories of autopoesis contrasts with Gibson's own approach. His formulation of the ecological model was formed partly in response to the inadequacies of much existing laboratory-based work on perception, due to their findings being based on artificial environmental situations (Gibson 1979). Gibson's emphasis on the perception in a *mobile* body in relation to the environment, while having a theoretical basis, was partly an outcome of having to reconfigure

laboratory-based theories when faced with the practical wartime work of pilot training.

[23] Before looking at William James' radical empiricism it may be useful to clarify some terminology. My use of the term materialism in Chapter 2.2 was in order to distinguish positions on sonic art that engage more clearly with sound as a material element that acts within an environment independently of the listener. This was to distinguish these positions from more phenomenological and linguistic approaches. I was not intending to put forward materialism as a coherent ontological position adopted by the theorists I call on in this dissertation – a standpoint that may be at odds in some respects with the radical empiricism of James to be discussed in this section.

[24] As Heft notes these issues were not just of concern to James. John Dewey also raised the fact that even the stimulus-response formulation, which was a central tenant of much psychological work in the 20th century, was also beset by a Cartesian distinction between environment and the organism. If the response side was considered in non-physical terms there was a problem with explaining the interface between the physical processes in the environment and the mental processes of the person. Alternatively, if the mental processes are considered in physical terms then the interrelations of environment and organism are rendered in too mechanistic a manner, at which point the questions of meaning and purpose, important facets of human experience, may be lost (a pre-echo here perhaps of Mckay's objection to the overly mechanistic formulation of early cybernetics).

[25] Although the Andersens do not really discuss sound in any depth, it is pertinent to acknowledge this oscillation from 'screen to surface' in relation to other theorisations of how an audience finds coherence in the audio-visual experience. The most prominent of these theories comes from Michel Chion (1994) and his concepts of the 'audio-visual contract', the 'symbolic pact' the audience makes to accept that sound and image are part of the same representational 'world'. Alongside this is the concept of synchresis, the psychological process by which one forges an 'immediate and necessary relationship' between what is seen and heard simultaneously.

[26] The work flow of sound artists working with environmental sound would usually involve the recording of sounds onto portable audio recorders in the field, importing these sounds into sound editing software in the computer for processing and arrangement, and then running the final material from a computer or other digital media player to the speaker array. So there are three separate, if integrated stages. Music production follows a wider variety of different working procedures, although it is worth noting that with 'live' instrumental / vocal-based music there is also usually a separation between recording, mixing and diffusion, and while spatialisation effects might be added during recording (i.e. reverb, microphone placement and selection), the majority of the spatialisation effects would occur during mixing and mastering. Recorded music would also have a wider variety of diffusion possibilities, via domestic hi-fi systems, ipods, radio, club sound systems and so on, while sound art works would normally have more particular and site-specific diffusion set-ups.

[27] The term 'synecdoche' is more commonly used as a rhetorical or literary term, a figure of speech where a part stands for the whole. Augoyard and Torque make no

direct reference to this literary usage but use it to denote selection or valorisation of specific sounds above others. That is to say, in their use of synecdoche, the sonic 'part' is *selected* from the 'whole' sonic environment, and in turn the whole, in terms of individual auditory experience, is formed by the agglomeration of the selected parts.

Chapter 4

[28] Greyworld's *Playground* (1999), is sited on the edge of the old playing fields in the Yorkshire Sculpture Park. Pressure sensitive pads set in the seating and wooden decking trigger recordings of various sporting events played back through speakers hidden in the undergrowth.

[29] The audiowalk using pre-recorded material and portable playback devices should not be confused with non-technology driven audio or sound walks. These forms of walks are associated initially with pioneer sound artist Max Neuhuas's *Listen* (1966/76, 15 sound walks, various locations in USA and Canada) or with the 'ear cleaning' exercises and sound walks of Murray Schafer and acoustic ecologists, which are predicated on a close listening to the environment without technological mediation.

[30] Chris Watson was a founder member of the experimental music groups Cabaret Voltaire and The Hafler Trio. He followed this music career to become one of the leading sound recordist for BBC television and radio, specialising in natural history and environmental recordings. Watson also uses his natural history recordings as the basis for installations, CDs and 'live' audio presentations.

[31] Watson's descriptions of these techniques have been gleaned from attending various talks given by Watson rather than from published sources.

[32] This correspondence with David Toop was initially a discussion of Watson's work on a number of BBC Radio 4 programmes about quiet and tranquillity and were later incorporated into Toop's book *Haunted Weather* (2004).

[33] Janet Cardiff: *The Missing Voice (Case Study B),* From 19 June 1999. An audio walk, beginning in Whitechapel. Binuaral Audio and Discman. Duration 39 minutes. Produced by Artangel.

[34] In 2010 the Glasgow International Festival commissioned Philipsz to produce work for the festival. Her piece, 'Lowlands', was comprised of three versions of a 16th-century Scottish lament, *Lowlands Away,* played under three bridges spanning the River Clyde in Glasgow. The piece was later installed in Tate Britain as her exhibit for the 2010 Turner Prize. Although a former sculptor, Philipsz has been working with sound in the form of installations based on song since the late 1990s. She has exhibited internationally and, before her turner Prize win in 2010 had been nominated in 2004 for the prestigious Beck's Futures award. Although not a well known name in sound art circles (her career being covered mainly in the fine art press), her work was reviewed by Anne Hilde Neset (2004) in *The Wire*.

[35] Susan Philipsz: *SURROUND ME: A Song Cycle for the City of London*
Six sound installations exhibited on Saturdays and Sundays, 9 October 2010 - 2 January 2011. Commissioned by Artangel.

[36] Moorfields Highwalk *Weep, O Mine Eyes*, (John Bennet, 1599) 1 minute 58 seconds, every 5 minutes, four channel sound installation.

[37] Mark Lane, *Oh My Love*, (Thomas Ravenscroft, 1609) 21 seconds, every 5 minutes, four channel sound installation.

[38] Change Alley, *New Oysters*, (Thomas Ravenscroft, 1609), 56 seconds, two repetitions every 5 minutes, three channel sound installation.

[39] Cut-out refers to a sudden change in intensity or quality of a sound. This effect is an important process of articulation between spaces and locations; it punctuates movement from one ambience to another. (Augoyard and Torgue 2005, p.29).

[40] Tokenhouse Yard *The Silver Swan*, (Orlando Gibbons, 1612). 1 minute 20 seconds, single channel installation.

[41] London Bridge *Flow My Tears*, (John Dowland, 1600). 3 minutes 35 seconds, every 10 minutes, single channel sound installation.

[42] Milk Street, *Lachrimae* or *Seaven Teares*, (John Dowland, 1604). 36 minutes, continuous loop, seven channel installation.

[43] This discussion of Philipsz's voice raises thoughts of Roland Barthes (1979) essay 'The Grian of the Voice', and his concept of the *pheno-song* and *geno-song.* While this approach is of interest I will not pursue it here as it is outside the specific focus of this dissertation.

[44] Auditory Scene Analysis (ASA) explores the 'process in which the auditory system takes the mixture of sound that it derives from a complex natural environment and sorts it into packages of acoustic evidence in which each package probably has arisen from a single source of sound. This grouping helps pattern recognition not to mix information from different sources' (Bregman 2008, p1). Although outside the confines of this dissertation, Bregman's laboratory-based work on psychoacoustics could be seen to complement aspects of the ecological model of perception and further work on this comparison could prove to be productive.

[45] The works under discussion were shown at the Chisenhale Gallery, London (12 February – 28 March 2010) and at the Ikon Gallery, Birmingham (27 May – 20 June 2010).

[46] *Untitled* (2010) 1 x channel computer generated sound, ceramic tiles, directional speaker system, powdercoated steel ceiling mount. Duration 5minutes 48 seconds.

[47] *2 x 3 Kanal (2x3 Channel, 2009)* 3 x channel electroacoustic sound, loudspeaker system. Duration 19 minutes 10 seconds.

[48] Acoustician Diane Deutsch first described the 'tritone paradox' in 1986. It is an auditory illusion created by two computer-produced tones that are related by a half-octave (a tritone interval). When the first tone is played, followed by the second, some people hear an ascending pattern, while others hear a descending one.

[49] *Auditory Scene* (5 fold) (2010) 5 x channel computer generated sound, loudspeaker system, powder-coated steel ceiling mounts. Duration 4minutes 30 seconds.

[50] *Magnitude Estimation* (2010) 2 channel electroacoustic sound, loudspeakers system. Duration 6 min 29sec.

[51] To give a brief description of the nature of the collaboration between Louise K Wilson and myself, I can state that the conceptualisation, research, planning and installation of the various pieces were shared and agreement achieved through discussion and consensus. We also shared the duties of sound and image recording. I took the main responsibility for sound and video post-production, although the final form of the works was agreed through discussion. Due to the consensual nature of the collaboration, I will refer to the works produced for the *Re-sounding Falkland* project in the first person plural. However, this is while acknowledging that both our individual and shared research interests and individual practice histories informed the works, I will use the first person singular when applying my own specific analysis to the collaborative works. We have also written about the project in two journals and edited a catalogue of essays by other writers discussing the project (Chapman and Wilson 2010, 2011a and 2011b). Some of the basic descriptions of the works conception, research and formal strategies have been covered in these writings and have been re-written here. Apart from a very brief mention of ecological theory in Chapman and Wilson (2010), my methodology has not been applied to the *Re-sounding Falkland* work in these other joint writings,

[52] To provide some historical background and the contemporary context, the Falkland estate was originally established as a Royal Hunting Park in 1458 and Falkland Palace was the country residence and hunting lodge of the Stuart kings from the early sixteenth to the seventeenth century. After the Union of the Crowns, the Falkland Estate dwindled until Professor John Bruce, having purchased and assembled the estate lands between 1821 and 1826, began a series of improvements to the Palace, the farms and the grounds. His niece, Margaret, inherited the Estate and commissioned William Burn to build the Tudor-style House of Falkland. Extensive developments to enhance the grounds were also made and a number of temples and monuments were constructed during this period. John Patrick Crichton Stuart, the 3rd Marquess of Bute, bought the Estate and the Keepership of the Palace in 1887 and set about the extensive restoration of the Palace. The Marquess was a key figure in the development of architectural restoration and an important patron to the Arts and Crafts movement. Many of these improvements are made in this style. Today, the Falkland Centre for Stewardship (FCS) manages the estate and oversees some 120 acres of mixed woodland, moorland and agricultural land as well as the House of Falkland and surroundings grounds. Amongst its other responsibilities, the FCS is interested in exploring and adding new layers of artistic practice to the historic 'sublime' landscaping. It is intended that such additions will help reveal and deepen

understanding of the special qualities of this place and of those who have left their marks upon it.

[53] *Arcadia* (2008): 8–channel sound piece installed in the Tapestry Gallery of Falkland Palace, Falkland. Originally produced for the event 'Sound of the Deer' (March 2008), celebrate the Palace's history as a Stuart hunting lodge. The work was re-installed in March 2010 for the 'Snow Drop Festival' and in May 2010 for 'Resounding Falkland' (David Chapman and Louise K Wilson). Funded by Falkland Centre for Stewardship.

[54] I adopted a similar approach in two of my earlier works *Hark* (2005) and *Hark 2* (2007*)*, which used animated photographic material as a 'graphic' score for a composition produced from field-recordings. I produced these works in collaboration with photographer David Cottridge.

[55] As *Arcadia* was the first in the series of works related to my PhD, my comments here should be viewed more as a retrospective analysis than as a methodology or strategy of practice. The work was not directly shaped by the methodology developed in this dissertation.

[56] For example, the Falkland Centre for Stewardship focuses on sustainable agriculture and land management. One employee of FCS developed the idea of the 'Fife diet' experiment - where people attempt to subsist entirely on food sourced locally in the Kingdom of Fife.

[57] Some of these venues and the sounds sourced included a local menagerie (for sounds of parrots, parakeets and goats), an archery club (for close recordings of 'loosed' arrows), a falconry centre (for owls and raptors), a riding stables (trotting horses) and some re-cycled sounds from an old A-V presentation created in the 1960s for the nearby Scottish Deer Centre (rutting deer and hunting horns).

[58] Track Listing and instructions for *Falkland Audiowalk*: (distances in minutes and kilometres from previous location).

Instruction: play first track at the tree bench
(2) *Mausoleum (Memorial Chapel): Dr David Jones*
(3 minutes, 0.22 km)
(3) *Cascades: Dr David Jones*
(3.50 mins, 0.35 km) Instruction: play at wee bridge over the cascades
(4) *House of Falkland*: Pam McIlroy, historian
(1.30 mins, 0.12 km) Instruction: play near the bench amongst the trees overlooking the House
(5) *New Bridge: Professor Stuart Haszeldine, geologist and Gerry Loose, poet*
(10 minutes, 0.92 km)
(6) Stone Bridge: Professor Stuart Haszeldine and Gerry Loose
(3 minutes, 0.26 km)
(7) *Little Yad: Professor Stuart Haszeldine*
(2 minutes, 0.15 km) Instruction: press play by the small waterfall
(8) *Big Yad: Gerry Loose, Professor Stuart Haszeldine*

(6 minutes, 0.44 km) Instruction: press play by the overhanging waterfall
(9) *Temple: Giuseppe Bucca as Alexander Roos, Ninian Stuart, Steward of Falkland Estate*
(2.30 minutes, 0.22 km) Instruction: Looking from the gate across the field to the ruin
(10) *Trees: Adam Riedi, tree surgeon*
(3.40 minutes, 0.32 km) Instruction: press play in the vicinity of the bench under the trees
(11) *Tunnel: Dot Clark and Drew McCanney*
(7 minutes, 0.62 km) Instruction: press play and walk into the tunnel
(12) *Tyndall Bruce Monument: Dot Clark*
(4.30 minutes, 0.42 km) Instruction: standing at the gate, looking up to the Monument on Black Hill
(13) *Farm* (1.13 minutes, 0.12 km)
(14) Deer Park: Dr John Fletcher, deer farmer, historian and Veterinary
(6 minutes, 0.48 km) Instruction: listen while walking back towards Falkland

This Audiowalk is composed from interviews conducted on site and ambient field recordings. The recording made in (4) *House of Falkland* are treated using 'impulse response' acoustic measurement while in (12) *Tyndall Bruce Monument* are treated by measurements made by using 360˚ sine sweep measurement.

[59] As part of *Re-sounding Falkland* we also produced a short, headphone-based piece entitled *Bottle Dungeon* (2010). This piece was produced by taking an 'impulse response' recording of the un-accessible bottle dungeon in Falkland Palace. We then 'convolved' the reverb from this recording with a recorded reading, by palace guide Tom Playfair, of a short account of the last man to be held in the dungeon. The resulting piece featured the voice, coloured by the reverb so as to replicate the sound of the voice as if he was recorded in the dungeon itself.

[60] Dr Damian Murphy (AudioLab, University of York) also assisted us with measuring work on a number of sites and buildings in Falkland. This work was directed at isolating specific reverberations from these sites. These 'reverbs' were then utilised in the production of a number of the works that comprised the *Resounding Falkland* project.

[61] *Cascading* (2010): 6–channel sound installation installed in the House of Falkland. Produced for the exhibition 'Re-Sounding Falkland'. Production and installation funded by Creative Scotland.

[62] Although the hydrophone recordings are of natural phenomena they are beyond the standard human experience of hearing.

[63] See Appendix 2 for the complete script of the voice-over narration.

[64] The archives searched for the plans included the National Archives and Royal Commission on the Ancient and Historical Monuments of Scotland in Edinburgh, the British Library and the Royal Institute of British Architects in London.

[65] Extracts from this correspondence can be heard on Track 9 (*Temple*) of the *Falkland Audiowalk*.

[66] Aglaia Foteinou developed the virtual acoustic modelling under the supervision of Dr Damian Murphy (AudioLab, University of York). The work was conducted as part of her PhD research into Virtual Acoustics.

[67] The 'Stone Tape Theory' was a paranormal hypothesis that received some notoriety in the 1970s and which suggested that emanations of energy from living beings at times of high stress might be stored in inanimate material. The theory posited that these emanations might be released spontaneously, and could therefore be the cause of supposed hauntings, and be 'played back' if the appropriate equipment could be developed. The theory was central to the plot of the cult paranormal drama *The Stone Tape* (1972, Dir. Peter Sasdy, BBC TV).

[6868] *Octo: Sotto Voce* (2009): 8–channel sound installation initially commissioned for and installed in the Chapter House, York Minister as part of the Group Show 'I hear Too: Live', October 7th, 2009 (curated by Damian Murphy and Jude Bereton). It was also installed, in a different configuration, in the Lady Chapel of York Minster as part of the 'Minster Nights' event, January 6th 2010.

Conclusion

[69] Eleanor Gibson (1969, 2000), James J. Gibson's wife and sometime collaborator, has produced pioneering work on the ecological theory of perception and childhood learning. Her work offers a starting point to develop further the links between ecological perception, learning processes and cognitive and imaginative interactions with cultural forms.

[70] Most of my installation works considered in this dissertation were part of short-term events. This did not allow sufficient time to do focussed audience research around the key themes in this dissertation.

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Appendix 1 – Notes on Practice work Documentation

Audio Work CD

N.B. As many of these works use binaural stereo recording, please play using headphones for best reproduction.

This CD holds audio recording of the following Projects:

Falkland Audiowalk (2010)
Headphone-based work with instructions to play tracks at certain points on walk through Falkland Estate.
Track Listing:
(1) *Duck Pond: David Jones, art historian.* 1.05
(2) *Mausoleum (Memorial Chapel): David Jones.* 2.29
(3) *Cascades: David Jones.* 2.38
(4) *House of Falkland: Pam McIlroy, historian.* 2.20
(5) *New Bridge: Professor Stuart Haszeldine, geologist and Gerry Loose, poet.* 2.22
(6) Stone Bridge: *Professor Stuart Haszeldine and Gerry Loose.* 2.29
(7) *Little Yad: Professor Stuart Haszeldine.* 1.49
(8) *Big Yad: Gerry Loose, Professor Stuart Haszeldine.* 4.10
(9) *Temple: Giuseppe Bucca as Alexander Roos, Ninian Stuart, Steward of Falkland Estate.* 5.58
(10) *Trees: Adam Riedi, tree surgeon.* 3.38
(11) *Tunnel: Dot Clark and Drew McCanney.* 1.18
(12) *Tyndall Bruce Monument: Dot Clark.* 3.41
(13) *Farm*. 2.53
(14) *Deer Park: Dr. John Fletcher, deer farmer, historian and veterinary*. 4.28

(15) *Cascading* (2010)
Stereo version of 6-channel work. 13.21
Originally installed in the House of Falkland as part of the *Re-sounding Falkland* exhibition. The work combines field and hydrophone recordings of the cascades with sine waves of the cascades' dominant frequencies and male and female singers vocalizing these same tones.

(16) *Arcadia* (2008) 4.26 (extract)
A binaural stereo recording documenting an 8-channel sound installation. Recorded in the Tapestry Gallery, Falkland Palace. *Arcadia* was composed from field recordings made in the area of Falkland and a special recording of Sheena Wellington singing the ballad John O' Braidslie.

(17) *Octo: Sotto Voce* (2009) 11.14
A binaural stereo recording documenting an 8-Channel sound installation. Recorded in the Chapter, House, York Minster, October 7th, 2009. The work was commissioned for the AHRC / EPSRC funded research project ' I Hear Too - Improving Heritage

Experience through Acoustic Reality and Audio Research'. You can access information about the project at: http://iheartoo.blogspot.co.uk/

DVD

The Temple of Decision (2010). Duration 8'mins.17secs. Original Format HD video, stereo sound.

Catalogue: *Re-sounding Falkland*

Chapman, D. & Wilson L.K (eds.) (2011) *Re-sounding Falkland.* Falkland, Scotland: Falkland Centre for Stewardship Project

The catalogue contains critical and contextual essays by:
David Chapman and Louise K Wilson (University of Lincoln)
Christopher Woodward (Director of the Garden Museum, London, and author)
David Jones (St. Andrews University)
Dr. Damian Murphy (Audiolab, University of York)
Dr. Eric Laurier (Senior Research Fellow, School of Geosciences, University of Edinburgh).

There is also an accompanying website for *Re-sounding Falkland* project, which also holds the above documentation: www.resoundingfalkland.com

Appendix 2

Temple of Decision (2010)

Voice over script. Dual narration by David Chapman and Louise K Wilson

Wilson: The first time I visited the Temple was in early spring. We climbed up behind the ruin where variegated stones perched perilously on top of the extant back wall. And looked down Green Hill. From this vantage point the ruin appears monumental in scale. As we walked back down through the field directly in front of the temple, we encountered two sheep, newly dead, invisible from the observatory moments before.

Chapman: I last walked to the temple on a cold icy morning in January. Icicles hung under the banks along the Maspie Den and the Big Yad. The snow had fallen on the hills to the north but had left Falkland clear. You could see the mountains blanketed on the horizon. On the field below the temple I found a sheep's skull, picked clean by the crows. As animals decay the soft exterior rots to reveal the hard structure below. For a building the soft interiors go first. Removed as the inhabitants leave, or left to damp and decay, consumed by mould and animal. But both hard structures will gradual fall. Weathered down to dust.

Chapman: If I was in this room, this Temple, what would I be doing here? Would I be alone? Would there be people here with me, sat around the table? Drinking Tea or something stronger maybe? Would it be summer with sunlight burning through the red glass in the roof? Would it be winter with a fire laid in the hearth? With my back warmed by the hot coals, I stare down at the smoke from the farms and cottages below, edging slowly across the valley.

Wilson: Was it a place of quiet contemplation or of social gathering, or of shelter? We heard that it had been used as hide-away for deserters in the First World War. Their presence betrayed by a plume of smoke from the chimney. In the absence of clear echoes, how can we know this place?

Chapman: Sometimes one must make a decision - even a bad one. The mountaineer Joe Simpson said that but he was lying in a crevasse with a mass of broken bones at the time. Perhaps the lure of mountaineering is the right to make decisions that actually have an instant impact on your life: to either preserve it or end it. Joe was in the Andes but you can make bad decisions on any mountain, even the ones visible from the temple. You don't have to be up a mountain to make a bad decision.

Wilson: It's been said that stonework absorbs and holds energy, that a powerful emotional event may be captured within the stone and played back like a tape recording. The building listens and the ruin plays back.

Chapman: In the photographs of the Temple the forest ebbs and flows. In one image the Temple sits elegantly flanked by pines. In another it stands exposed on a bare hillside. In yet another it is completely immersed, slipping into the forest, hidden away from human view and consideration - a distressed residence for an obsolete priesthood, long past caring about appearances.

Wilson: The entrance is now partially blocked by the collapsed, fallen pillars and other detritus, as if flung out from the interior. It reminds me of Lee Miller's photographs of London buildings after the blitz. The bombed chapel that had effectively self-sealed, its innards leaking out onto the pavement. This devastaion though was not created by the brute force of a projectile; a violent unleashing of energy from a crafted and deliberate chain reaction. But a slow, oozing decay into the soft ground.

Chapman: The moss on the ruins points north, to the source of the weather that cracked its stones and mortar. A Late sketch of Rome's glory, now hawk roost, hare house, sheep shelter.