Mapping perception[1] across the communicative continuum as a prelude to analysis[2]

Abstract

In this paper I discuss what I see as some of the key issues concerning the role of analysis in electroacoustic (E/A) music[3]. This is followed by an explanation of the role that the Intention/Reception (I/R) method can play in the analysis of E/A music - the I/R method involves collecting, analysing and evaluating composer intention and listener response data, it was developed as part of my doctoral research (see Weale, 2005). Finally, I offer a brief overview of the initial stages of the latest phase of development of the I/R project.

Introduction

My point of departure, and the principal context through which my paper is couched, is the notion that analysis of E/A music is to a great extent about revealing and understanding the process of communication from composer inspiration through the production of the work to the listeners reception of the work and their responses to it; and that its purpose is tripartite:

1) to assist the composer in making contact with her/his audience in terms of their perceptual capabilities

2) to assist the audience in establishing an adequate mode of listening in order to be able to appreciate the work

3) to educate in terms of composition, the use of technology, understanding the technical means by which one can manipulate and organise sound most effectively in order to provide an engaging listening experience.

Based on this utilitarian and functional notion my argument is that for analysis to be useful in terms of fulfilling this tripartite purpose, requires that it be relative to our perceptual capabilities - that is, our sound identification capabilities and strategies, and our sound organisation capabilities and strategies - i.e. what we are capable of perceiving as we compose and listen to E/A works. To this end, the I/R method has proven to be a valuable means of mapping some of the perceptual possibilities at work within particular E/A works from the perspective of both composer and listener. Of particular interest in terms of perception mapping are the following three data sets (these were based on analysis of composer intention and listener response data gathered in the first phase of the I/R project[4]):

a) the sound identification schema - a list of elements that listeners were able to perceive in the work, irrespective of whether or not these elements were incorporated into their interpretations of the work.

b) the something to hold on to factors (SHF) - a list of elements through which the listeners arrived at meaningful interpretations of the work. Note that this is a revised list based on the original established by Leigh Landy (see Landy, 1994).

c) composer intention information - a verbal explanation as to what the composer is hoping to communicate through the work, including elements of the production process where

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[1] "Perception, the conscious experience that results from stimulation of the senses... " (Goldstein, 2005: 55).
[2] This is a slight change to the original title. However, the paper itself remains as originally intended.
[3] This paper concerns fixed medium E/A works only.
[4] See (Weale, 2005 & 2006).

appropriate to the communicative intent; hence an explanation of how the composer applies her/his perception to the work in progress in terms of organising the sound material in a meaningful way.

Although not concerned with analysis of the E/A work in the first instance, the way in which the I/R method reveals how certain aspects of perception are functioning in both the creation and reception of the E/A work, can provide valuable information in terms of analysis that satisfies the tripartite purpose outlined previously.

It is important at this point to note that the I/R method does not capture perception data from the first moments of the perception process, but begins capturing data from the point at which interpretation is first applied to the aural stimulus; i.e. when the listener consciously recognises or attempts to identify the aural stimulus. The I/R method forms only one part of a perception mapping methodology, it is not being presented here as a means through which to map the entire process.

1. Mapping perceptual capabilities

In François Delalande's paper – 'Music Analysis and Reception Behaviours: *Sommeil* by Pierre Henry', the author poses some fundamental questions, "What is the aim of music analysis? What would one like to demonstrate, to know about a piece of music?" (Delalande, 1998: 18). His response is both epistemological and utilitarian arguing that the purpose of analysis is to contribute usable, meaningful knowledge to the greater body of E/A music research. To this end he maintains that analysis must be pertinent to the methods of production of the work (poiesis) and/or reception of the work (aesthesics[5]), suggesting that it is through the mapping of what he terms 'pertinences' in the poietic and aesthesic domains that an understanding of what is analytically relevant and what is not can be revealed; in short, the mapping of pertinences is a means through which to "deduce what the analysis must account for" (Ibid.: 22).

  Delalande conducted an empirical investigation to "differentiate and describe reception behaviours" (Ibid.: 13), to identify perceptual consistencies in the aesthesic domain. He illustrates his pertinence led approach to analysis, using Leonardo da Vinci's Mona Lisa.

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[5] Throughout this paper the term, 'esthesic' will be presented with a British spelling 'aesthesic'.

Mona Lisa. Wikipedia
(http://en.wikipedia.org/wiki/Image%3AMona_Lisa.jpg) - consulted August 2007

For example, analysis of viewer responses to the Mona Lisa reveals that there is a consistent viewer fascination with the faraway look in the eye. The analyst may then take this pertinent information and through it, engage in a morphological analysis of the work, e.g. the way the dark patch of the pupil is displaced in relation to the axis of the eye is how the faraway look has been created (Ibid.: 22). This analysis has also, by default demonstrated the possible production strategy, the painter intentionally created this faraway look using a particular compositional approach, painting the eye in a particular way. But what is most important here is that one may never have sought out this characteristic (the faraway look) as an important factor in terms of analysing the work if one had not been guided by a search for pertinences (in this case) in the viewer responses to the work (Ibid.).

2. The I/R Method

The I/R method, which formed the basis of my doctoral thesis (Weale, 2005) involved, in significant part the mapping of pertinences, identifying these across what I term the communicative continuum. This includes:

- elements that have influenced the creation of a given work - a composer's ideas, motivations, inspirations and aspirations, and the development of these elements during the composition of the work. This also includes production techniques, albeit limited to those that are pertinent to the composer's communicative intent.

- the listening experience - sounding characteristics that listeners are able to identify in the work, how these are organised in terms of interpreting a communicative context, and the ways in which listeners perceptual capabilities and interpretation strategies are relative to the appreciation of a work.

The methodology involved introducing E/A works that were unknown to the listening subjects and evaluating their listening experience. Obviously, what is pertinent for one listener is not necessarily pertinent for another, therefore the I/R method sought to establish a generalised (as is possible) mapping of pertinences - individual nuances of perception were not included in the final data unless specifically significant.

In the first phase of the research, three works were utilised as testing material: ABZ/A by Pete Stollery, Deep Pockets by Larisa Montanaro and Nocturne by Simon Atkinson. I describe all three works as real-world electroacoustic music, these are fixed medium works where the composer's communicative intent is based wholly or in part on the real-world referential characteristics of the sounding content. (Weale, 2006: 189) Verbal explanations that encompassed the elements that had influenced the creation of the work relative to the communicative intentions of the composer were also solicited; this *dramaturgic*[6] information was then offered to the listeners as part of the listener testing procedure.

Analysis of listener response data gathered in the first phase of the I/R project resulted in the creation of two listener response schemas: the sound identification schema and the SHF; these schemas represent the current state of affairs concerning the mapping of pertinences and the perceptual capabilities of listeners through the I/R method.

2.1 Sound identification schema

The following schema presents sound identification strategies, and a list of elements that listeners were able to perceive in the three test works (in terms of recognising or identifying the aural stimulus) irrespective of whether or not this was an accurate identification and whether or not these elements were incorporated into their interpretations of the works. Listener response quotations have been used as examples in each category.

Real world sounds – (source recordings of real-world sounds that are identified as such)

Source – e.g., "crickets".

Cause – e.g., "someone walking on a wooden pier".

Location – e.g., "in a pool hall".

A location identification does not always require the presence of a real-world sound. A location can be established through the listener's identification and interpretation of the reverberative characteristics of abstract sound. This is related to category iii below.

The identification of a location can be established in three ways:

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[6] "Dramaturgy, as it is used in the I/R project, encompasses all of the elements that have influenced the creation of a given work. The dramaturgy of an E/A art work may therefore concern a composer's ideas, motivations, inspirations and aspirations as well as the development of these during the composition of the work. It includes, but is not limited to what a composer intends to communicate through the work" (Weale, 2006: 211-212). Note that 'dramaturgy' was introduced as a term applicable to the study of E/A music by Leigh Landy (see Landy, 1990: 371).

i) *Soundscape* – The encompassing soundscape is identified as that of a particular real-world location – e.g., "a busy city street".

ii) *Gestalt* – A series of sounds are interpreted as indicating a particular location – e.g., "sounds of creatures crawling through the undergrowth, rain, water trickling, crickets, stepping on twigs", interpreted as "a rainforest" location.

iii) *Reverberation* – The listener identifies reverberative characteristics (real or artificially produced) and interprets these as indicating a particular location – e.g., "the sounds of torture devices in a damp, stone dungeon" or "a closed, claustrophobic space, like I'm inside the pool table".

Abstract (composer created) sounds – (note that abstract sounds in all three works were predominantly transformed environmental sound recordings)

Representation[7] (listeners identify the abstract sound as sounding like a real-world sound, not as a case of mistaken identity [which does occur], the listener is aware that the sounds only sound *like* something real) – e.g., "distorted noises sound like an aircraft or a spaceship".

Creative description (listeners identify a sound using a creative description) – e.g., "rhythm rats", "electrostatic noise".

Onomatopoeic description (listeners identify sounds using words that imitate the sounds they represent) – e.g., "jingles", "crackles". This category is related to the *timbral quality* category (see parameters of sound below).

Technical description (sounds are identified by way of the technical means through which they were thought to be created/manipulated/transformed) – e.g., "comb filtered chord", "time-stretched", "pitch-shifted".

Parameters of sound – (these parameters can apply to the identification of both real-world and abstract sounds)

Timbral quality (listeners identify a sound through its timbral quality) – e.g., "metallic".

Spatial quality (listeners identify the spatial characteristics of the sounds). A pertinent sub-category is:

Directionality[8] (listeners identify sounds as coming from particular directions around the sound field - 360°) – e.g., "pool ball sounds come from different directions".

Dynamics (listeners identify sounds as being loud or soft.) – e.g., "loud bangs followed

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[7] This term is not to be confused with that of '*re-presentation*' which when used in an E/A music context is defined as "sound materials which have retained their source credibility and can be considered literally as a presentation of an original" (ten Hoopen, 1994: 69). The term 'mimesis' is also apropos, defined as an imitative representation "which refers to some literal resemblance of the sounding object" (Ibid.); it is therefore related to the *representation* category of abstract sound identification.

[8] In previous publications concerning the I/R project the *directionality* category was labelled *panning*. This change has been made to reflect the possibilities of a surround sound listening situation. In the first phase of I/R testing only two-channel stereo playback was used, hence listeners only identified sounds as coming from particular areas across the frontal projected axis of the stereo field.

by a quiet sound". Dynamic identification is often combined with *parameter of sound* identification processes, e.g., "loud, shimmering high-pitched sound", "a soft, hissing sound".

Movement (listeners identify sound movements in two sub-categories):

i) *Dynamic directionality* – e.g., "the clicking sound moves from side to side", "sounds like cars going by".

ii) *Proximity shifts* – e.g., "close objects gradually fade into the distance".

Morphology (listeners identify the shape of a sound) – e.g., "a rising and falling sound, it's like a wave but doesn't sound like a wave".

Pitch (listeners identify pitched sounds) – e.g., "there is a high pitched sound all the way through", "sounds like a high pitch [sic] sound and a low pitch sound playing at the same time".

Rhythm (listeners identify rhythmic elements) – e.g., "there is a rhythm to the metallic sound", "rhythmic loops are made with some of the sounds".

Structure

Repeated elements (listeners identify repeated sounds/soundscapes) e.g., "the accordion sound comes back in again, but now its playing by the sea", "returned to the same scene using exactly the same sounds".

Layers of sound (listeners identify layers of sounds) – e.g., "there are three kinds of sound all going on at once, a crackling sound, a ringing sound and a humming sound".

Transformation

Static transformation – (listeners identify sounds as being transformed versions of real-world sounds) – e.g., "unnatural sounds were those created from original sources – pool playing sounds".

Dynamic transformation – (listeners identify sounds that dynamically transform in real-time) – e.g., "the sound of thunder turns into the sound of a car", "a sound image that changes organically and slowly".

It is important to note that some responses incorporate several categories, for example, the *source/cause* response ("footsteps on a wooden pier") may also have incorporated *movement* and *proximity* identification (the sound of footsteps may move across or through the sound field, or may move from the foreground to the background, or vice versa). The *source/cause* description "water dripping in a tunnel" combines the recognised sound of "water dripping" with the *reverberative characteristics* of the sounding environment resulting in a *location-*based interpretation "in a tunnel".

2.2 The something to hold on to factors

Having identified and described sounds in the work, listeners are then able to interpret these sounds in terms of establishing a theme, meanings or communicative function for the work as

a whole. The elements through which the listener arrives at this meaningful interpretation are the SHF. Sound identification categories that involve an overt subjective interpretation have not been included in this SHF list, as such subjectivity presents difficulties when establishing a generalised SHF framework.

(Note: SHF categories that have not been described in the *sound identification schema* above will be described in the following list).

Real world sounds

    i) Source/cause.
    ii) Voice.
    iii) Location.

Parameters of sound

    i) Timbral quality.
    ii) Spatiality.
    iii) Dynamics.
    iv) Movement.
    v) Morphology.
    vi) Pitch.
    vii) Rhythm.

Structure

    i) Narrative (real-world).
Listeners hold on to their identification of a narrative structure in the work based on real-world sounds.

    ii) Narrative (acoustic).
Listeners hold on to their identification of narrative structures in the work based on the acoustic relationships and evolution of sounds. *Acoustic narrative* may therefore involve aspects within the **parameters of sound** category.

    iii) Layers of sound.

    iv) Juxtaposition of sound (real-world).
Listeners identify and hold on to the juxtaposed relationship between real-world sounds – e.g., "there is a city/beach juxtaposition"

    v) Juxtaposition of sound (acoustic).
Listeners identify and hold on to the juxtaposed relationship between the acoustic parameters of sounds – e.g., "there are two main juxtaposed layers, one rhythmical, textural and granular, and a comb filtered tonal pad with harmonic shifts".

Juxtaposition is similar to both *layers of sound* and *homogeneity of sound (see below)* categories. However, in *juxtaposition* it is the contrasting relationship between the sounds that is identified rather than the identification that there are simply several layers of sound.

Juxtaposition also groups sounds, but in contrasting rather than homogenous relationships. Both *layers of sound* and *juxtaposition* categories may include SHFs from the following

categories: *real-world sound, abstract sound, parameters of sound* and *transformation.*

Transformation

    i) Static transformation.
    ii) Dynamic transformation.

Homogeneity of sounds

    i) Real world sounds.
    ii) Parameters of sounds.

Homogeneity of sounds is a very broad category where listeners group sounds, both real and abstract that appear to be related, through a particular parameter or parameters. Establishing an homogeneity of sounds has been demonstrated to be integral in establishing meaning-based interpretations of the work. All listeners who participated in the I/R project tended to homogenise elements of the sounding content during the listening experience.

Extrinsic information

    i) Title.
    Listeners hold on to the title and its meaning, e.g., "the title (*Deep Pockets*) provided ideas as to what the sounds were – pool game sounds and the journey of the balls down the deep pockets inside the pool table".

    ii) Dramaturgy.
    Listeners hold on to the dramaturgic information offered by the composer, e.g., [*Nocturne*] "I like the idea of *small sounds coming to life*"[9]. I can now hear how the different small details in the sounds move to the foreground and then back into background. A screen on to which I can project my own dreams and reveries[10] – yes, there is no definite sound world, only the one that you create yourself".

It is important to point out that these two schemas (*sound identification* and *SHF*) are not being presented as complete and definitive. The aim of the I/R project is not to establish a closed ended thesis, but to open a door on the potential for further research in the field. Indeed, it is my hope that as more research is conducted, existing categories will be expanded, new categories added, sub-categories established and nuances of perceptual experience teased out from within these categories. For example, at the EMS07[11] conference Denis Smalley in his keynote address, presented his recent theories concerning 'space-form and the acousmatic image' (Smalley, 2007). This approach, which places space and the spatial experience as aesthetically central to acousmatic music, has resulted in the creation of a significant glossary of new terms, many of which may well be useful in terms of expanding the *spatiality* and *spatial quality* categories in the listener response schemas. To this end, what is required is further listener testing utilising the I/R method to investigate: a) the extent to which these various nuances of space and spatiality are being perceived by listeners; b) the extent to which the composer's communicative intentions concerning these elements are being received by the listeners; and c) in what ways these factors are relative to the interpretation and appreciation

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[9] Note that in the Composer Intention Questionnaire the composer of nocturne uses the phrase "...the coming to life of the 'small sounds'" (see Weale, 2005: 196).

[10] As above, the composer uses the phrase "...upon which the perceiver may then project their own impressions, reveries, daydreams" (Ibid.).

[11] Electroacoustic Music Studies Conference. The 'languages' of electroacoustic music. 12-15 June, 2007 - De Montfort University, Leicester, UK

of the work in which they are perceived. Similarly, Andreas Bergsland who is currently engaged in research looking towards "understanding perceptual issues related to different types of transformed voices in electroacoustic music and developing tools for description"[12] may well reveal data that is useful in terms of expanding the *transformation* category.

2.3 Investigating the function of the E/A work

The I/R method reveals pertinent knowledge that can assist in laying bare (as it were) E/A music in terms of a communicative process - from inspiration to reception - looking towards "understanding...[E/A] compositions as the result of explicable mental processes" (Chadabe, 1999: 73). The I/R method searches for these explicable mental processes in some of the perceptual experiences of the composer and listener as they function within a communicative continuum. Indeed, the I/R method operates from a somewhat functionalist perspective in that the approach seeks to reveal pertinent characteristics that are relevant to the *function* of the work, not only in terms of its communicative function, but in terms of its broader, and perhaps more fundamental functional context.

This functionalist approach assumes that:

- there are E/A works that have a function.

- one of the functions is to offer the listener an engaging and enjoyable experience.

- there is an intent on the part of the composer to create an art work that has the potential to communicate something.

- there is an intent on the part of the listener to interpret the art work as that which has the potential to communicate something.

The function of the E/A work is not singular, it can be considered from the perspective of the maker (composer) and the taker (listener). I.e. it serves a different function for the composer and the listener. The function of the E/A work also concerns the socio-cultural context in which the art form takes place. Indeed, it is the socio-cultural context that I feel deserves renewed attention, particularly in terms of its influence on perceptual experiences. The socio-cultural context exists in both (for want of better words at present) macro and micro domains. For example, E/A music has both similar and different functions in the academic and popular music communities - these are macro domains. It also functions relative to the socio-cultural background of the particular maker and taker - these are micro domains. Indeed there are, in my belief some fundamental functions of E/A music in terms of the socio-cultural context that are in need of being addressed. Such as, why *do* we make it? And why *do* we choose to listen to it? Obviously, there are many different answers to each of these *why dos?* However, soliciting information relative to these questions may very well reveal some of the deeper, humanistic traits that are at work in the communicative continuum of the E/A work. We may well be able to identify commonalties between maker and taker and hence reveal pertinences at this fundamental level which may be relevant in terms of focussing analytical approaches towards teasing out a deeper understanding of the function of E/A music as something rooted in some of the fundamental aspects of human communication.

3. I/R Phase two

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[12] See (http://www.music.mcgill.ca/musictech/spcl/andreas_bergsland#research_project) - consulted August 2007.

The first phase of the I/R project only concerned perception mapping for three works that were of a similar type. Listener testing was only conducted on 'local' groups of listeners (most participants were from the UK and were from a relatively localised region in the UK). All listeners were more or less adults (the youngest participant was 18 years of age). To this end, systematic expansion of the research is now required. Hence, phase two of the I/R project is currently under construction; some of its aims are to:

- systematically map perceptual experiences across the major genres of E/A music.

- broaden the socio-cultural scope of the study - from local to international.

- engage with adolescent listeners and composers.

The approach receiving the most attention in terms of development at present, is that of engaging with adolescent listeners and composers. Having demonstrated that the I/R method is an effective way of introducing E/A works to inexperienced listeners[13], phase two of the project is seeking to map the listening experiences of adolescents (11-18 years of age). What appears to be the case (in my experience) with E/A music (in the UK) is that it is not presented (to any significant degree) to adolescents as a potential art form that they may wish to engage with (in this instance I am referring to E/A music genres that do not feature to any great extent in the popular music corpus). Students of music and music technology, in the UK do not come into contact in any rigorous way with many genres of E/A music until they enter further and most predominantly (in my experience) higher education. The result of this being that a great deal of E/A music is 'adult-centric' - research, scholarship, participation in the E/A music culture whether as composer or listener or both, begins and is propagated for the most part in an adult world. There is little E/A music (of what I term the 'non-pop' variety) being created and disseminated by and for adolescents.

In investigating the listening experiences of adolescents, I/R phase two hopes to discover the extent to which the age of a listener has an effect on the listening experience and perceptual capabilities, and to reveal if there are certain genres of E/A music that are more or less accessible to particular age groups. And why? If research does demonstrate that adolescent listeners are able to make sense of, appreciate, and indeed enjoy E/A music of the 'marginalised' genres. The question then becomes, how do we, as composers set about reaching this audience with our work?[14] And how do we encourage adolescents to begin composing in this medium?

It is my belief that formal education can play a large part in bringing younger E/A composers into the E/A community. Hence, phase two of the I/R project also includes developing an educational thread in which the I/R method is introduced into the classroom as a listening exercise and as a means of introducing students to E/A music. Obviously, the I/R method cannot exist in isolation and so will be developed as an intergral part a broader didactic/pedagogic system that includes: listening exercises, contextual study, and composition practice. Phase two of the I/R project is also looking towards investigating the *compositional* process of adolescent composers, the *creative* process in E/A music composition; revealing what techniques and methods adolescent composers use when presented with sound materials and the technology through which to organise these sound materials creatively.

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[13] "In post-testing discussions [inexperienced]...listeners were asked if they felt that in general, dramaturgic information was an unimportant or important aspect in terms of offering them a way in to such works; 88% stated that it was important" (Weale, 2005: 240).

[14] This assumes that there are composers who are interested in accessing new audiences with their work.

In closing...

Nicolas Donin in discussing IRCAMs 'Signed Listening' project[15], notes that "music analysis based on listening ...can only achieve its goal by confronting differentiated listenings - individual points of view, various perceptive scales" (Donin, 2004: 100). This is supported by Lelio Camilleri and Denis Smalley who have noted that it is important that analysts confront their own listening with the listenings of others (Camilleri & Smalley, 1998: 5).

It is my belief that the analysis of E/A music should be based in significant part on the revelation of perceptual pertinences:

- what we are capable of perceiving both as an audience and as a composer.

- how this perception is organised in a way that appeals to our sense of appreciation.

- the extent to which this organisation of material functions as part of a communicative continuum.

To this end, the I/R project in its continuing research seeks to reveal what it is about E/A music that holds a fascination for the composer in the act of composing and the listener in the act of appreciation, and how this fascination functions as part of the wider socio-cultural context in which the work is created and received.

And so to finally tie this paper in with respect to the theme of the EMS07 conference 'the languages of electroacoustic music'. The communicative continuum is where the languages of electroacoustic music are being forged, the way in which we apply our perception to the art form is from whence emerge the languages. The do not emerge from the music, but are constructed through our perception, they are beholden to our perceptual capabilities. The way in which the I/R method reveals some of the perceptual pertinences operating within the communicative continuum, offers grist for the analyst, who through seizing upon these pertinences can then delve deeper into the continuum in order to further reveal the ways in which these languages are functioning relative to the E/A work in terms of providing relevant knowledge to:

- assist the composer in making contact with her/his audience in terms of their perceptual capabilities.

- assist the audience in establishing an adequate mode of listening in order to be able to appreciate the work.

- educate, in terms of composition, the use of technology, and understanding the technical means by which one can manipulate and organise sound most effectively in order to provide an engaging listening experience.

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[15] The 'Signed Listening' project seeks to model listening as an activity based on representations, ideas and objects of the world. To do this, the project utilises a hypermedia system to capture personal and original ways of listening and make them transmissible. This is done by way of graphic and acoustic representations that are produced by individual listeners. See (http://www.ircam.fr/302.html?L=1) - consulted August 2007

References

Camilleri, Lelio & Smalley, Denis. 1998. The Analysis of Electroacoustic Music: Introduction. *Journal of New Music Research* 27(1-2): 3-12.

Chadabe, Joel. 1999. A Brief Overview of Otto Laske's Work. In Tabor, Jerry (Ed.) 1999. *Otto Laske: Navigating New Musical Horizons*. London: Greenwood: 73-79.

Delalande, François. 1998. Music Analysis and Reception Behaviours: *Sommeil* by Pierre Henry. *Journal of New Music Research* 27(1–2): 13–66.

Donin, Nicolas. 2004. Towards organised listening: some aspects of the 'Signed Listening' project. *Organised Sound* 9(1): 99-108.

Goldstein, E. Bruce. 2005. *Cognitive Psychology: Connecting Mind, Research and Everyday Experience*. Belmont, CA: Thomson Wadsworth.

Hoopen, C. ten, 1994. Issues in Timbre and Perception. *Contemporary Music Review*. Vol. 10, No. 2, 61-71.

Landy, L. 1990. Is more than three decades of computer music reaching the public it deserves*?. Proceedings: International Computer Music Conference, Glasgow.* 369-372.

Landy, L. 1994. The 'something to hold on to factor' in timbral composition. *Contemporary Music Review* 10(2): 49-60.

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

Weale, Rob. 2005. The Intention/Reception Project: Investigating the Relationship Between Composer Intention and Listener Response in Electroacoustic Compositions. PhD Thesis. De Montfort University, Leicester.
http://www.aural-initiative.com/thesis.pdf - consulted August 07.

Weale, Rob. 2006. Discovering How Accessible Electroacoustic Music Can Be: the Intention/Reception project. *Organised Sound* 11(2): 189-200. Also published online at http://www.ears.dmu.ac.uk/IMG/pdf/OSWeale.pdf - consulted August 07.