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Story-time

Physicalising Sound Objects for Sonic Narratives

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ABSTRACT

This thesis describes a compositional process that is homogeneous to LaMothe's four modes of organising experience: corporeal-contiguous, taxonomic-object, symbolic-subjective and narrative-communal. It begins with the composer's subjective experience of hearing, rooted in the relationship of a particular human body to its physical neighbourhood (LaMothe's corporeal-contiguous modes). The human body is used as a benchmark for measuring and apprehending the world (Benthall and Polhemus 1975). The *thinking body* conceptualises the claim that sensation, motor functions and cognition are distributed functions of the body, in a complex interrelationship with the mind (Baily 2006). Our embodied knowledge of proprioceptive and motor activities act as constraints on interpreting music.

Sonic objects (LaMothe's taxonomic-object modes) are interpreted as *gestural sonic tokens*, these being the smallest meaningful units of gestural information in a sound sequence. These act as signs from which metaphor can be derived, based on the composers interpretations of the meaning of the *gestural sonic tokens* in the context of the composition (LaMothe's symbolic-subjective modes). This process creates a *sonic signscape*, a sign system in which the signifier is the gestural sonic token and the signified is the imagined sound source. When used by the composer as *foretokens*, such signifiers build sequential structured relationships that form a sonic narrative. In this thesis the term *sonarrative* is used to describe such a sonic account of contiguous and contrapuntal events that create a coherent whole – a composition. The creative process incorporates physicality, sign, metaphor and narrative to organise a meaningful sonic experience for the listener by way of sonarratives (LaMothe's narrative-communal modes).

In order to ground this theoretical framework in practice, the concepts are applied to a body of compositional work completed between 2009 and 2011.

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DECLARATION BY CANDIDATE

I hereby declare that this thesis is my own work and effort and that it has not been submitted anywhere for any award. Where other sources of information have been used, they have been acknowledged.

Signature:

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Anyone I have left out, my sincere apologies and big thanks.

APPENDIX 1: LIST OF WORKS

The following audio examples are included with this thesis.

Complete Sonic narratives:

Python in a Toy Box 9:30 (Stereo)

Urvogel 13:05 (Stereo)

Nexus Licentiosus 19:56 (Stereo)

Extracts: These are abstracted from the sonic narratives above and presented as individual objects outside of the works to assist the discussion in Chapter 4

SM1 (1:29)

SO1 (1:46)

SO1A (0:12)

SO1B (0:12)

SO1C (0:12)

SO4 (2:00)

PI1 (0:28)

1 Moth Raw (2:10)

2 Moth stretched (1:49)

3 Moth Reduced (0:27)

4 Moth Constructed A (0:43)

5 Moth Constructed B (1:34)

6 Figurative Listening 1 (4:00)

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INTRODUCTION

This thesis grows out of the author's practice as a composer of acousmatic music, a practice strongly grounded in the world of physicality by way of gestural forms. It will become clear that the author *composes through narratives*, and that this process is fundamental to his work. Composing through components that will be termed *sonic objects*, *sonic tokens* and *gestural sonic tokens* helps build a causal temporal structure, that is, a narrative which is then open for subjective interpretation by each listener. Narrative as defined by the Oxford English Dictionary is: a spoken or written account of connected events; a story. Narrative in this composers process is how interprets – potential meanings, associations, materials, use and synthesis of sound in the practice of composition. Narrative is therefore the inner voice that relays to himself potentials in his work. Therefore, it is important to make a clear distinction between narrative as it is normatively used and sonic narrative as it is intended by this thesis. For this the neologism *sonarrative* has been formed and introduced by combining the words *sonic* and *narrative*. Sonarrative is therefore defined as: a composition incorporating contiguous and contrapuntal events that creates, in both composer and listener, coherent sonic accounts. It is important to emphasise that the sonic account is not the same in each listener and is not the result of a direct programmatic transfer between composer and listener. In other words, the sonarratives that are created by the composer are a result of his process, a process based on the following modes: physicality, sign, metaphor and narrative. Due to the very abstract nature of the sound worlds created here, it would be unreasonable to assume the listener is be able to incorporate the same processes and hence perceive the same sonarrative. This is not a limitation of the process or definition, but rather allows for further expressive potential so long as the composer is aware of the dynamic of relinquishing control of the composition's perception to the imagination of the listener. Accordingly, the term sonarrative

will only be used when directly in relation to the authors own sonic development, therefore his process and his own completed works.

The composition modes used here are akin to Professor Ryan LaMothe's approach to organising experience, as defined in his book *Becoming Alive: Psychoanalysis and Vitality*. There he describes four successive and interactive modes of organising experience: corporeal-contiguous, taxonomic-object, symbolic-subjective and narrative-communal (LaMothe 2005, p.26). Though LaMothe derived these from considerations of psychoanalysis and vitality, the compositional process presented here follows a similar arc, beginning with a personal sensitivity to the embodied experience of hearing (corporeal-contiguous) and a relationship of the body to its perceived physical neighbourhood (understood as acoustics). This arc helps create and interpret sonic objects in a structured relationship, objects classified relative to one another (taxonomic-object). These act as signs from which metaphor can be derived, based on perceptions of the meaning of sonic objects in the context of the composition (symbolic-subjective). This leads to the introduction of the terms sonic token and gestural sonic tokens. Finally, the sonic tokens are manipulated to create sonarratives that have structural meaning for the composer, with the potential to engender a sonarrative by way of what will be termed a *sonic signscape* (narrative-communal) in the listener. As with LaMothe's modes of organising experience, this compositional process is both successive and recursive.

This thesis will demonstrate the importance of gesture, which existed as a primary form of communication prior to music or language, as being closely related to expression of emotions. Over time, gesture has evolved into a complex medium of communication, and is consequently a potent mechanism in many art-forms. The formulation of gesture used in this thesis is based on not one but several normative definitions, for example those given by David McNeill in his influential books on physical communication entitled *Hand and Mind*

and *Gesture and Thought*. An awareness of the multitude of gesture's possible definitions, along with the understanding of the interchangeability of these definitions, is a cornerstone of this thesis. Nonetheless, a tentative definition is proposed: gesture is sometimes defined as an action performed to convey one's feelings or intentions, or movement to express an idea or meaning. Feelings may be defined in terms of sensitivity, the responsiveness to slight changes, signals, or influences. Fear, love, happiness, hunger and curiosity are all feelings that can be recognised by way of gesture. To be more specific, in consideration of the current context, gesture is interpreted as a personal sensitivity to, and intuitive understanding of, physicality expressed through sound and in one's physical experience.

This thesis is based on a strong belief that music is above all an embodied human experience and can hence be understood in terms of proprioception, movement and gesture. Physicality underlies the entire compositional process as expressed through the other modalities; sign, metaphor and narrative. From the realities of the body, concepts are built in the mind that can subsequently inform perception of musical events as they happen. Physicality will be initially discussed, then developed from the terms of two important concepts: Pierre Schaeffer's *sound object* and Dennis Smalley's *source bonding*, therefore using these terms as basis or starting point.

Schaeffer through his school of *musique concrète* encouraged a form of reduced listening, which involves accepting sounds as objects in and of themselves, independent of their source. Schaeffer's sound object is related to phenomenology and how ideas of such could be applied to the acousmatic experience. As such, Schaeffer did not intend that the sound object be used as a compositional tool. The sound object, as Schaeffer defined it, is a sound that cannot be reduced any further; for example, it cannot be divided in two. This being the case, it is understood by this thesis that Schaeffer would have intended that all gestural information be removed from the sound object, as where there is gestural information in a

sound, there is notions of cause and source and the sound is therefore not completely reduced to its smallest percept. This thesis will discuss Godøy's extension of Schaeffer's sound object to re-incorporate gesture in what Godøy refers to as *gestural-sonorous objects*. To avoid any confusion, the term *sonic object* will be used when talking about sound objects that are for use in composition in this thesis. The definition of sonic object used here relies on imagination and perception. Such objects are imagined in a sonic space, just as one would imagine a visual object in physical space, with corresponding shape, mass, density, affordance, spatial potential, energy and so on. It is accepted in this thesis that sonic objects can therefore be designed, developed and moved in a sonic space just as one would design develop and move physical objects in dimensional space. The term sound object will therefore *only* be used when relating directly back to Schaeffer's phenomenology and philosophy. Accordingly, the terms of the sonic object will have the potential to develop throughout this work and the appropriate terminology will be applied to the area of the process in that fashion. For example; sonic objects can become sonic tokens when talking about sound as signs and sonic tokens develop into larger sound objects. They can also be perceived as *foretokens*; where sounds predict a certain future or discourse, or, where interpretations of gesture or gestural information is perceived in sonic tokens, in relation to driving narrative forward, gestural sonic tokens are discussed.

When listening to sounds created by traditional instruments, the timbres are readily associated with the physical instrument and the musician's method of playing it. The action of bowing a string or striking a skin is a conventional action that produces a readily-understood sound. As Smalley writes “from the viewpoint of both agent and watching listener, the musical gesture-process is tactile and visual as well as aural. Moreover, it is proprioceptive: that is, it is concerned with the tension and relaxation of muscles, with effort and resistance.

In this way sound-making is linked to more comprehensive sensorimotor and psychological experience” (Smalley 1997, p.111).

Imagining a source for sounds is important even in the domain of traditional instruments, but becomes an essential concept in acousmatic music, where sounds do not necessarily have physical antecedents within the experience of the listener. It is important to specify that the term *physical* is used in this context as relating the human body and the physical world through an ongoing process, 'the physical experience'. *Physicalism* understood by this thesis is the notion that all events, real and imaginary, supervene on us as embodied beings. This thesis will show that one cannot engage in the practice of making acousmatic music without some regard for the perceived causality of its components. Furthermore, understood through a synthesis of gesture, acousmatic music is a multimodal phenomenon that utilizes the somatosensory system and *interoception*; the sensitivity to stimuli originating inside the body.

Texture is as important as gesture when it comes to creating mental images of the physical basis of a sound; both are required to achieve source bonding. Smalley writes that “gesture can be more vividly dramatised through spatial displacement, just as texture can be ‘environmental’ through spatial distribution” (Smalley in Stavropoulos 2007 p.253). This idea plays an important role in the development of the sonarrative process in this thesis. Texture presents us with the perception of stasis through close attention to inward-looking detail. Just as gesture can be interpreted in terms of temporal qualities, action and narrative, texture is perceived as being non-narrative and non-temporal in this thesis. If narrative involves representation through the passage of time, non-narrative avoids such representation, thus presenting itself as texture. Thus textural qualities, though they may be secondary, are nonetheless, essential in supporting and framing the sonarrative as process.

Trevor Wishart also lends support to the hypothesis that physicalising sonic objects is a productive, beneficial, and even essential concept, one that is especially applicable to acousmatic composition. Wishart explains that “gesture as dynamic morphology in sound objects cannot be atomised in the same way that pitch-lattice components can be separated through their discrete notation.” (Wishart 1996 , p.112) In relation to this Wishart also notes that “this property of gesture is one reason why it can be applied to the analysis or control of sound-objects which are varying in a continuous manner in many dimensions of the continuum.” (Wishart 1996 , p.112)

Listening to a new piece of acousmatic music without knowing anything of the work, the listener uses a combination of the senses and the intellect to interpret and understand the sonic events. The initial perception of the movement (gestures) implicit in sonic objects establishes a basis for comprehending the piece. This is an example of where sonic objects become sonic tokens. The gestures and textures set the 'rules of engagement' for the listener. As narrative events unfold and further sonic objects, sonic tokens or gestural sonic tokens occur, these either reinforce or deny the gestural interpretations made so far. In the compositions under discussion in this thesis, special attention is paid to this evolving narrative in order to present a coherent gestural landscape – a sonarrative.

One method of building a sonarrative is to ensure the events and gestures occur at a pace consistent with that experienced in life. In this way, through insights and intuitions based on a sense of physicality, engaging in the creation of a sonarrative can provide structured cues to the listener. This sonarrative arises not so much from one sonic object or the other, but as a *gestalt effect*. Ole Kuhl suggests that musical form and narrative are a result of gestalt perception, motor movement and mental imagery along with, at a higher level of cognition, the grouping and sequencing of gestures (Kuhl 2008, p.166). It will be shown that, given the importance of source bonding in acousmatic music, the development of a

sonarrative relies heavily on crafting notions of physicality in sound. This craft is the sum total of the means used to draw the audience into deeper involvement with the composition, to hold that involvement, and ultimately to reward it with a moving and meaningful sonic experience (McKee 1999, p.22).

A sonarrative created through composition that is coherent for the composer is by necessity based on interpretations and personal physical experiences of sound. This sonarrative does not necessarily dictate a programmatic way of listening. The sonarrative is a process for the composer and only reveals itself as a potential signscape to the listener. Through impressions of physicality, the listener might be encouraged to engage in a narrative process of their own to interpret what is being heard. Therefore it is not required that the specific narrative intent is conveyed by the composer to the listener in any explicit or didactic manner. Rather, the narrative is created through the accumulation of signs and metaphors. Sound has the potential to signify physical, emotional and cognitive aspects of the human experience. The composer organises sounds in terms of an inherent lexicon of signification, selecting them for different sonarrative roles on the basis of *best candidacy*. A composition is complete when a particular semiotic system is also complete, ready for presentation to the listener. These ideas will be elaborated on with reference to Guerin Mazzola 1998, Ole Kuhl 2005, 2008 and Barry Truax 1994.

Following on Rolf Inge Godøy's suggestion that Schaeffer's sound object be extended to include gesture, this thesis will develop the concept of the *sonic token* in Chapter 1.4. By way of Marc Leman and Dennis Smalley, it will be seen that this unit is tightly coupled with developing ideas of gesture. Consideration of *foretokens*, that is, tokens signifying in a structured continuum, will then lead to the definition of a *sonic signscape*.

Young writes that “a crucial force in the aesthetics and practice of electroacoustic music is its fundamental ability to negotiate this synthesis of illusion and veracity, abstraction and reality, stemming inevitably from our propensity for fantasy, symbol-making and the finding of sheer enjoyment of the senses” (Young 2007, p.25). Accordingly, it will be shown that the creation of a sonarrative is based on the metaphoric imaging of factual and fictitious aspects of the physical experience. Metaphor is fundamental to the communication between composer and listener since this happens only in the imagination, something that is also the case for composer *as* listener. Metaphor is certainly essential in the acousmatic realm, where sonic objects often have no direct connection to sound sources. These ideas will be developed in connection with the underlying importance of gesture: “Metaphoric gestures permit thinking in terms of concrete objects and space when the meaning is abstract” (McNeill 1992, p.263).

The following is a *table of concepts* that are *termed* in this thesis. These termed concepts build on each other from the smallest precepts to form macro ideas and terms in the authors compositional process.

Sound Object	Relating to Schaeffer's philosophy <i>only</i> . All the following terms in this table stem and evolve from this terminology.
Sonic Object	Sonic objects as opposed to Schaeffer's sound object are considered potential compositional components. Sonic objects are sounds physicalised in the mind of the composer and can be developed in a sonic space – just as one would design develop and move physical objects in a dimensional space. They can also be the result of joining a number of sonic objects together to form one bigger sonic object.
Sonic Token	The smallest meaningful unit of semiotic information in a sound sequence. The term sonic tokens are brought about from perceiving sounds-as-signs.
Gestural Sonic Token	The smallest meaningful unit of semiotic information in a sound sequence that is interpreted gesturally (as understood by thesis) and has a distinct role in the creation of a <i>sonarrative</i> .
Foretoken	Signs that create anticipation by signifying possibilities in the future.
[Sonic] Signscape	A rich semantic environment built of components chosen for how well they function on the narrative and musical planes.
Sonarrative	A neologism of <i>sonic</i> and <i>narrative</i> that denotes a composition incorporating contiguous and contrapuntal events that creates, in both composer and listener, coherent sonic accounts.

Table 1. Table of termed concepts.

The concepts outlined in this table will be developed over four chapters. Here follows an outline of the structure of the thesis.

Chapter 1: 'Toward a Sonic Signscape' explores the signification of sounds beginning with Pierre Schaeffer's *sound object* and its relationship to reduced listening (Schaeffer, 1966). Dennis Smalley's source bonding is proposed as the primary process in the formation of meaning through listening (Smalley, 1997). Two important characteristics are emphasised. First, source bondings may be imaginary. Second, each listener has their own personalised source bondings. The signification of sound objects is then developed by way of Truax (1994) and Mazzola (1998) into the approach of *sound-as-sign*. Following this, the *sonic token* is developed from the sonic object and is defined as: the smallest meaningful unit of *semiotic* information in a sound sequence. This concept is to be considered in opposition to Schaeffer's 'reduced' sound object, in the sense that the author wishes to emphasise the signifying nature of the *sonic token* as a requirement for creating meaning in the *sonarrative*. A consideration of the diachronic nature of sound leads to the concept of *foretokens*; signs that create anticipation by signifying possibilities in the future. Foretokens build musical structure by linking together events sequentially, sustaining in the listener a continuing interest in the development of the *sonarrative*. In this way the *signscape*, a rich semantic environment, is built of components chosen for how well they function on the narrative and musical planes, in context with each other, thus toward a *sonarrative*.

This thesis interprets gesture from a personal sensitivity to movement as an integral part of the physical experience. Chapter 2: 'The Body, Gesture And Imagination' justifies this approach by establishing the importance of the human body as the benchmark of how one apprehends the world, using Hagan (2008), Maconie (1990) and Smalley (2007). The works of Bulwer (1644), Darwin (1872), Morris (1967-2002) and Rosenberg (1952) are briefly discussed in order to establish the importance of gesture across disciplines. The model of

gesture as simple communication is refuted based on the problem of the subject's intentionality. The 'surplus value' beyond communication is thus available for use by the composer, both as 'musical gesture', common in the performance of traditional instruments, and 'gesture that is musical', as illustrated by consideration of the score for Stockhausen's mixed piece *Kontakte* (1958–60). Here, the formation of the musical material, as opposed to the sound in itself, is gestural. This approach culminates in Kuhl's rich *gestalt* (2005), in which all possible gestural events supervene on the musical experience. Finally, Godøy (2006) is used to build a definition of musical imagery as a mental representation resulting from a perceptual process that connect sonic objects with embodied experiences. This is essential for a consideration of the issues in the following chapter.

Chapter 3: 'The Creation of Sonarratives' is discussed in terms of two closely interrelated processes. First, during the compositional process itself, sonarrative shapes the form of a piece through the choices the composer makes with regards to transforming sonic tokens. Second, sonarrative is engendered in the listener as a by-product of the metaphors created in their imagination, using Godøy's musical imagery, as previously discussed. The temporal structure of gesture in music and the sonic signscape so richly interpreted by the listening imagination has potential to inevitably construct a sonarrative. In contrast to gesture's generation of narrative, texture is introduced as a non-narrative element, leading to a discussion of contiguity, counterpoint and patterning, using (McNiell 1992), (Arnhiem 1997), (Parker 2007, p.1), (Andean 2010), (Benthall and Polhemus 1975) (Anderson, 2007) and (Breebaart, 2011).

Chapter 4: 'The Body of Work' discusses how the research presented in this thesis is manifested in the composer's body of work, using three sonarratives: *Python in a Toy Box* (2009), *Urvogel* (2010) and *Nexus Licentiosus* (2011). The groundwork is laid with an explanation of how sonic material is selected by way of the recorded context, timbre and

form, as well as in relationship to the processing methods used. The affordance of the sonic object, its facility to take on a given 'role' in a sonarrative, is continuously evaluated in respect to the signifying relationship of the sonic tokens and foretokens in context. The importance of the titles of the sonarratives as the first stage in establishing a semiotic engagement between the potential listener and the composition is explained by way of foretokening. Finally, each sonarrative is described in general terms and with particular attention to specifics that illustrate crucial aspects of this thesis.

CHAPTER 1: TOWARD A SONIC SIGNSCAPE

INTRODUCTION

This chapter will use the central concepts of Pierre Schaeffer's *sound object* and Dennis Smalley's *source bonding* to explain the primary processes underlying the compositions that accompany this thesis. The four sections in this chapter will provide the fundamental terminology necessary to understand how sonic objects can become *sonic tokens* in certain contexts and are transformed into sign systems, this development being necessary groundwork for a later consideration of signscapes and sonarratives.

Section 1.1 will define Schaeffer's sound object and its relationship to *reduced listening*, before raising a fundamental objection by way of Trevor Wishart (1996).

Section 1.2 defines source bonding and considers its importance to the formation of meaning through listening. Two important characteristics are emphasised and related to the authors compositional practice: a) source bondings may be imaginary, b) each listener has their own personalised source bondings. It will be explained how this process defines the signifier and signified of each sonic token and how this leads to the rich semantic environment termed a *sonic signscape*.

Section 1.3 begins with the understanding that sounds do in fact signify various aspects of the human experience, depending always on their context and the listener's application of imagination. Signification will be considered by way of Truax (1994) and Mazzola (1998), in order to develop an approach of *sound-as-sign*. The composer chooses sonic objects on the basis of best candidacy, that is, how well they function on the narrative and musical planes, always within a specific context of other such objects.

Section 1.4 defines the *sonic token* as the smallest meaningful unit of semiotic information in a sound sequence. Relating this back to the previous discussion of gesture and imagination, this thesis formulates the *gestural sonic token* as an element in the analysis necessary to create meaning from the sounds in the associated sonarratives. The diachronic nature of sound leads to a consideration of *foretokens*, signs that create anticipation by signifying the future. These foretokens build musical structure by linking together events sequentially, sustaining in the listener a continuing interest in the development of the sonarrative.

1.1 SCHAEFFER'S SOUND OBJECT

Pierre Schaeffer, through his school of *musique concrète*, encouraged a form of *reduced listening*, a process of inward-directed attention (looking *into* the sound) and study, which had as its aim accepting sounds as objects in and of themselves, independent of their source. From the earliest stages in the development of *musique concrète*, Schaeffer aspired to an idealistic notion of 'pure' or 'absolute' sound (Laaber 2002, p.7). Raw material derived from recordings of real world (or other) sound sources were investigated in order to reveal deeper less obvious qualities. The resulting *sound object* was considered in terms of its intrinsic acoustic characteristics, divorced from any real-world source and not for the purpose of composition.

Wishart draws attention to the fundamental problem to the practice of this philosophy: that in our common experience, one is generally more aware of the source of a sound than not (Wishart 1996, p.129), thus making this philosophy somewhat difficult to apply. This thesis takes Wishart's statement as a basic principle when it comes to the reality of listening. Rather than negating physicality, technology can embellish existing cues to the physical, or indeed create new physical referents where they did not previously exist. The

inevitable human failure to perceive sound free of associations can be used as a benefit. This thesis will champion a practice of composition and listening that engages fully with the physical nature of sound even though this may be only 'potential' in the case of sonic objects synthesised artificially. Distinctive terminology will be developed in this thesis in order to avoid evoking Schaeffer's reduced listening.

1.2 SOURCE BONDING AND SIGNIFICATION

Dennis Smalley coined the term "source bonding" to represent the link between the interior of a work and the acoustic world. Smalley defines this term as the natural tendency to relate sounds within a piece (intrinsic) to supposed sources and causes (extrinsic), and to relate sounds to each other due to their apparent associated origins (Smalley 1997, p.110). What Smalley calls source bonding, Trevor Wishart discusses under *sound landscape*, the landscape of a sound-image being the imagined source of the perceived sounds (Wishart, 1996, p.130). Michel Chion refers to a particular interpretation of source bonding as *causal listening*, a process of repeated listening to a sound in order to gather information on its cause or source (Chion 1994, p.25). It has further been claimed that source bonding instils a *relational magnetism*, the desire the listener has to know the source of a sound (Filimowicz and Stockholm 2010, p.10). The benefits of source bonding have also been considered in a cinematic context, since the listener must identify the objects that make the sounds in order to follow the plot of the film (Lopez and Pauletto 2009, p.2).

From the range of discussion and applications, it can be seen that the concept of source bonding is important to the acousmatic situation. Although there are slight variations in the above mentioned perceptions of source bonding, all relate to using the imagination to make a connection between sound and source. That said, it is the intention to use Smalley as

the primary source, as his definition of source bonding is the most useful to this thesis.

Quoting from him in greater detail:

The word ‘bonding’ seems particularly appropriate since it evokes a binding, inescapable engagement or kinship between listener and musical context. The bondings involve all types of sounding matter and sound-making, whether in nature or in culture, whether they arise as a result of human agency or not. Source bondings may be actual or imagined—in other words they can be constructs created by the listener; different listeners may share bondings when they listen to the same music, but they may equally have different, individual, personalised bondings; the bondings may never have been envisaged by the composer and can occur in what might be considered the most abstract of works; wide-ranging bondings are inevitable in musics which are not primarily weighted towards fixed pitches and intervals. Bonding play is an inherent perceptual activity.
(Smalley 1997, p.110)

Two important points raised here will be important throughout this thesis. First, *source bondings may be imaginary*. This is crucial to the development of metaphoric images, in that the fictitious may be more potent than the factual, and both may lead to the construction of narrative through imagination. Second, *listeners have personalised source bondings* that may be different from each other, since the process of forming these is inherently perceptual. Though what is created is a narrative through composition that is coherent for the composer, this is based on personal interpretations and personal physical experiences of sound. Therefore this narrative does not necessarily dictate a programmatic way of listening. With an ongoing awareness of this fact, it is possible to keep open various secondary possibilities throughout the composition, viewing it as entirely valid that each listener will interpret the resulting sounds through their own individual and personal source bondings.

Source bonding not only provides the acousmatic composer with an extensive creative palette, it also provides an engaging activity for the listener; the process of listening to an acousmatic piece is an active human experience. By encouraging the listener to engage

in bonding play by way of sounds and structures of sounds that invoke images of physicality, the listener is provided with opportunities to perceive in the work narratives of his or her own devising. An example of source bonding in Smalley's work is his piece *Empty Vessels* (1999), in which sounds exist on a continuum between recognisable and unrecognisable. Wishart writes that “control and composition of landscape [source bonding] can open up large areas of exploration and expression, and can also enter the listener’s perception of a work, regardless of the composer’s indifference to it” (Wishart 1996, p.136). Wishart's *Red Bird* (1978) is structured primarily by an elaborate, explicit sequence of symbols and metaphors. These symbols and metaphors would not be engendered if it was not for the relationship between the imagination and source bonding.

This thesis suggests that acousmatic music listeners (no matter how familiar they are with the form) might generally find it difficult to *not* engage in the process of source bonding. Hence they are compelled to create imaginary narratives in order to make sense of what they hear. Composers can thus engage bonding play as a compositional tool, juxtaposing the recognition of physical cause with the metaphorical, creating an intertwined duality of real and imaginary.

The process of source bonding is an attempt to match a heard sound to a potential source for that sound. This stems from a human need to know the origins of things. This tentative connection allows us to infer context and determine the significance of the sound. In other words, source bonding is a process that defines the signified, that is, the referent (real or imaginary) that belongs to the signifier, the sonic object itself. This will be important when examining the function and affordance of materials used in the composition of the particular sonarratives under discussion. All components in the sonic continuum will ideally have a role to play in the sonarrative as a whole whether fully predetermined or not. The coherence of the sonarrative depends on the inter-relationship of these signs in a sonic signscape.

When engaged in everyday functional listening one attempts, first and foremost, to make aural sense of the world, for reasons of survival, communication and so on. A common goal is to determine whether or not a sound signifies a threat or a benefit, predator or prey. This is no different in contemporary life, where a siren might signify the possibility of new dangers (car alarms or police sirens) but also new possibilities (ice-cream vans). To accomplish this, one investigates the cause, energy displacement and trajectories of the sound, along with how the sound relates to its surroundings, in other words its acoustic features. Making aural sense of what is heard determines a proximate reaction, different mental and physical responses depending on interpretations of the event. The semiotic relationship between the sound and the perceiver is what determines such a discourse.

Not all sounds get equal attention, or else one would be overwhelmed by the sonic barrage. Most sounds are encountered passively and a few others actively. Information is consciously extracted from everyday sounds only when there is a functional need for this to happen, a process referred to as *selective hearing*. From this it is possible to define any non-functional sound as noise, a counterpart to the definition of noise as any unwanted signal in a communication channel. However, it is important to bear in mind that a particular sonic object might be functional in one context and not functional in another. In a musical context this depends on how the composer places this sound within the signscape. Michel Chion writes of sounds which are connected to intellectual knowledge of context, to vision and to a general sensory experience, therefore suggesting that sound is ‘trans-sensorial’, and it would be a mistake ‘to think that all that is auditory is only auditory’ and a mistake to regard the senses as self-contained entities (Chion in Smalley, 2007 p.39).

The inherent need to source bond in everyday life sharpens the ability to listen and exercise facilities of imagination. The process of source bonding has diverged from its primary use as a survival tactic, and here applied creatively when listening to and composing

acousmatic compositions. Gibson suggests that when faced with inadequate information, our 'perceptual system hunts' (Gibson in Kim 2010, p.43-53) Kim claims that although this is true for everyday listening, it is different when listening to electroacoustic music. In this case the listener is engaged with the music for the pleasure of the process; this makes the listening process a creative and imaginative affair (Kim 2010, p.43-53). It is possible to agree with Kim were it not for impossibility of 'turning off' the most basic listening mechanisms, as discussed in the previous section, by way of Wishart. It is precisely due to its critical role in survival that *the temptation* to practice source bonding is sometimes difficult to ignore, especially when listening to sounds and sound structures one has never previously encountered. Though this becomes a series of constraints on the acousmatic composer, it is in no way detrimental. Rather, the knowledge of this mechanism and the possibilities it affords gives the composer of acousmatic works a powerful creative tool.

1.3 SOUND AS SIGN

Sounds signify physical, mental and emotional aspects of the human experience. For example, the sound of laughter might signify joy and the sound of crying might signify hunger. Humans habitually look for meaning in their experiences, analysing and classifying what is heard for its relative significance in the bigger scheme of things, in order to draw meaning from this process. Sign and signification keep the composer interested and engaged in their compositional work. This section begins with an analogy in order to explain a few key features of the sonic signscapes created in this thesis.

Consider a particular sound as a beautiful blossom on a plant, a short-lived aesthetic experience that is nonetheless tangible. Within this flower is a seed, the significance of the sound. It is this important element that will linger and affect the composition as it moves into the future. One can consider the function of the flower is to produce the seed just as the

function of the sound is to bear forth this significance. The moment a sonic object ceases to sound acoustically, what remains for the listener is a sign that resonates in the mind. This sign connects the acoustic past with future sonic events through acts of signification and imagination as will be discussed in Section 3.3. This is also an example of the sonic token.

Take for example two sounds used in the composition of *Urvogel*: a zipper being opened and a zipper being closed. Each signifies a different action, though related through material and action. To the composer, the zip opening signifies, in a concrete interpretation, loosening and, in an abstract interpretation, future potential. Similarly, the closing zip might signify restriction or closure of some kind. But more important than the solitary signification is the ongoing and lasting effect of the sound. Though a zipper movement is a short event, perhaps less than a second in duration, the sign and its signifiers remains in the composer's mind after the sonic object has finished. Again these are where certain sonic objects can be perceived as sonic tokens and gestural sonic tokens.

In the sonarratives presented here, the sound itself might well become redundant once the sign has been conveyed to the listener. Sonic tokens are carriers of signs, composed within a system of signs that become a sonarrative, as shall be demonstrated. In addition, the diachronic order of signs reflects fluency and bonding in those narrative structures. This is a form of musical syntax relating narratives of physicality and physical experience, in which the work of gesture plays a leading role.

In situations where sound is the conveyer of information, it functions in a quasi-linguistic sense as a “signifier” of that information. One identifies a particular sound as indicating the presence of an object or person, or as reflecting a specific state of the environment. But once that information has been received, the sound itself is “discarded,” in the sense that it is not important what sound brought the information.
(Truax 1994, p.147)

This forms part the philosophy of sonic tokens (sounds-as-signs) as understood in this thesis. However, it is important to appreciate which sound brings with it which information, especially in the context of a composition. This being the case, 'redundant' is used as a more appropriate word than Truax's 'discarded' since the latter implies getting rid of something permanently. The acoustic impression of a sound does not get discarded by a listener, even if it becomes redundant to memory. Further to this, consider Mazzola's interpretation of signification:

Signification is the most important instance for the realization of a sign. It is responsible for the transformation from the signifier to the significate. For musical signs, this semiotic process bears a highly differentiated structure which is sensitive to Saussure's dichotomy arbitraire/motive and to the dichotomy of lexemata and shifters. We should stress that shifters constitute an important and extended part of musical signs.
(Mazzola 1998, p.6)

Could it be that what Mazzola describes as 'shifters' equates to how the author perceives gesture as sensitivity to physical experience? If sonic objects are used as signs in compositions, is it a result of perceiving an inherent lexicon in the sounds one chooses to work with? The compositional process involves abstraction, physicalisation, signification, verbalisation, metaphor, narration, organisation and presentation, as can be visualised in Fig.1 on the next page, reading from top to bottom.

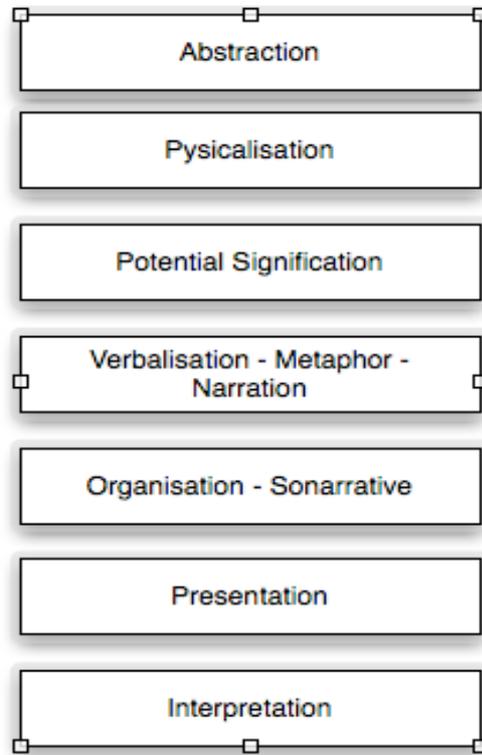


Fig 1. Process flow chart. Illustrating from top to bottom the compositional thought process from the abstraction of sound and steps taken through to the a completed sonarrative.

From the outset, the compositional process that frames this thesis, including pre-compositional thoughts, is steeped in semiotic development. The importance the titles of the sonarratives play as signs in the overall signscape of the composition will be discussed in Section 4.2.

Sound-as-sign forms a fundamental part of a narrative process, where, as discussed previously, choices are made on a the basis of best candidacy. Sounds that function strongly on both a narrative and musical plane have an advantage over sounds that might only function in one of these categories alone. Wishart posed the following question: Having established that landscape considerations enter our perception of sonic art, and that representational sound-images are potential working material, what implications does this have for the sonic artist? (Wishart 1996, p.163). An answer, given through the body of work discussed here, involves the factual and fictitious aspects of physical experience. The listener is given the opportunity to involve their thought process on the imaginative plane. In order to accomplish this, the composer must work towards building coherent relationships from the selected sonic objects. This requires an understanding of materials, their functions, potentials and restrictions. Best candidacy requires that the sounds work as precisely cut pieces of coloured glass that, due to careful workmanship and positioning, will fit a finished mosaic.

Perceiving sounds as signs is another level of engagement open to the willing listener, one that can open the work up to new interpretations and meanings, rewarding the listener through deeper involvement. Each work presents itself to the listener as an unfamiliar semiotic system, analogous to travelling abroad and not recognising road signs. One knows that they are signs, and one knows they are there for a reason (which gives them implied meaning), but a process of cognitive analysis is required to determine anything further. Active involvement is required in order for the process to be complete; the same is true on the part of the listener when apprehending an acousmatic composition.

Sound doesn't have the direct explanatory ability of language. Nor does it have the direct communicative clarity a photograph might have. Kuhl suggests that a musical sign has a low-level specification in relation to the linguistic sign, which has a high level of specification (Kuhl 2005, p.3). But this vagueness of the musical sign, the gaps in

signification and the incompleteness of the sign system as a totality are not problems for music. Rather they are musical opportunities the composer can take advantage of, in the formation of a narrative that is abstract rather than programmatic.

It is important to mention here that silence, like sound, has a signifying place in this composer's work. In other words, the silence is also functional. Silence that is not functional is termed *dead silence* and is avoided. Silence here instead reflects a sense of preparatory quietude in mind and body. Moments of sonic inactivity are used in order to allow the listener to consider the ideas previously presented. In these cases silence creates a reflective bonding between listener and the sonic space; this can be seen as a coherent and functional “event” in itself. Therefore an event in which no sound happens might well be an event. Additionally, these moments provide time for the listener to engage in the semiotic thought process of wondering what might come next.

1.4 SONIC TOKENS, GESTURAL SONIC TOKENS AND FORETOKENS

This section will now introduce the smallest meaningful unit of semiotic information in a sound sequence, and term this a *sonic token*, where 'token' is taken as both a tangible representation of something abstract and as an individual occurrence of a symbol. In the context of a given musical passage, this may be a self-contained sonic object or a component part of such a sound, but in either case it has consequences for its environment; sonic tokens are interpreted in combination, respecting their interrelationships. Use of this term avoids evoking Schaeffer's principle of reduced listening, for the reasons discussed in Section 1.1. The details will therefore be left aside until Section 2.6, when Godøy's concept of the gestural-sonorous object will be reconciled with reduced listening.

Marc Leman provides an example of hearing footsteps in the corridor. It is possible not to hear footsteps in terms of their acoustic properties but rather as the sound of moving feet, perhaps even the character of a person (Leman 2010, p.142). From this example it is clear that the listener is involved in some semiotic analysis in order to make sense or meaning of the sonic experience. The sonarratives that make up this body of work present a landscape of sonic objects, sonic tokens and gestural sonic tokens in order to provide the listener with interpretive choices, recalling Saussure's point about the arbitrary nature of the sign. Could gestures be signs that show you the way from A to B in this landscape? If so, composition through gesture could be looked at another way. Sonic objects, tokens and gestural tokens that make up a composition should be so well-mapped and so well-designed that, through fluency and counterpoint, the listener can take in the scenery instead of looking for signs. This is analogous to being a passenger on a tour bus, where the driver knows where the bus is going and how best to get there, leaving the passenger free to absorb the aesthetics of the journey and the stops along the way without having to keep an eye out for signs of how to get from A to B.

Sonic tokens are therefore closely linked to *protentions*, images of past, present and future. (Godøy, 2010 p.122) The currency of these sonic tokens relies on the value that can be abstracted from a sound's potential. Due to its linear diachronic nature, music signifies leaving something old and moving towards something new. These signifying temporal movements add value to sonic objects and tokens. But though there is immediately a past and a future, there is rarely a sense of *now*. Texture provides best a sense of the present, because texture gives the impression of stasis, time stopping. But it is the movement implicit in gesture that is most effective in transferring meaning from old to new.

Through this thesis the understanding of gesture has developed from the mere movement of the body to a more embracing and inter-connective role. Personal sensitivity to,

and interpretation of, the signs that permeate the sonarratives form the basis of musical thinking. According to Filimowicz and Stockholm “[t]he complexity of acoustic images, having both cognitive (biologically hardwired) and semiotic (culturally constructed) aspects, calls for a multi-parametric approach that is sensitive in general to that delicate zone where interpretation meets experience” (Filimowicz and Stockholm 2010, p.3).

This sensitivity lies in the navigation of a landscape of more gestural sonic tokens, creating gestures that in every component signify to the listener a sonic future (foretokening in the mind of the listener). The semiotic approach taken to sound plays first into the structural functioning of sonic tokens and subsequently into the manifestation and fashioning of meaning through their interrelationships. *Foretokens* are the signs of things to come. Helen Keller, a woman who was deaf, blind and consequently dumb, learned to communicate by touch. She learned to read and write by words spelled on her own hands and those of her interlocutors. She knew that having her hat put on signified leaving the house and felt a sense of joy in the anticipation of going outside. This was a foretoken in that certain signs created anticipation by signifying the future (LaMothe 2005, p.85).

For Smalley, gesture is concerned with action directed away from a previous goal or towards a new goal; it is concerned with the application of energy and its consequences; it is synonymous with intervention, growth and progress, and is married to causality (Smalley 1986, p.82). In this way gestures are directly involved in the process of foretokening. Smalley writes that “[s]tructural functions are concerned with expectation”. Thus music is formed of a consistent sequential foretokening of future sonic events (Smalley 1997, p.115). In this way the structure of the sonarrative as a whole is built one sonic object at a time.

Foretokening is also an attribute afforded by materials used in a work; certain sonic objects and tokens lend clarity to the musical structure while others are less appropriate. The

aspect of an sonic object which makes obvious how it may be used is termed by Gibson the *affordance* of the object. For example, a chair may afford sitting, but it may also afford use as a table or as a percussion instrument (Jensenius 2007, p16). In the same way, certain sounds, once learned, have an inherent ability to signify. Perceiving affordance in sounds makes it possible for a composer to work on a composition. From the listener's perspective, foretokening has a key role in sustaining a continuing interest in the development of the sonarrative. The need to supply these sonic foretokens keeps the composer interested in creating.

Smalley wrote of foretokening in terms of spectromorphology, the study of how sound spectra change over time. “During listening we attempt to provide the directionality implied in spectral change” (Smalley 1997, p.114). He went on to describe three “structural functions” that conform to the beginning, middle and end of sonic objects or musical phrases, depending on the scale of examination these are: *onsets*, *continuants* and *terminations* (Smalley 1997, p.114). Gestural Sonic tokens in compositions can work as double agents. They often mark both onset and termination and can further be active on different levels of interpretations. That is, a sound might be the termination of a micro-motif and the onset of a macro function. This interconnection between different musical scales helps creates the ebb and flow of the piece as a whole. “The opacity that denies direct reference makes music distinct from sound, but is also what enables discourse – that is, an understanding based on the interaction of all the elements in the whole work” (Bell 2006, p.12-13). It is this opacity that keeps a narrative abstract and helps blueprint imaginary sonic worlds.

Examples of the 'gestural sonic tokens' in the composers practice are found in his sonarrative *Urvogel*. From 9:16 to 9:39 the sonic object most prominent has gestural qualities of a flapping object. When this particular object moves within the stereo space it is not impossible to interpret this sonic object as a gestural sonic token, and with a stretch of the imagination; t

a winged creature. At 9:40 this flapping stops and at 12:00 sounds of pigeons and the sounds of outside become prominent. Therefore in the narrative mind of the composer, the flapping nature of sounds through out the piece, like that in 19:16 to 9:39 are foretokens to the pigeon sounds at the end. The compositional practice of sonic tokening chooses sonic objects on the basis of how well they function as signifiers on the narrative and musical planes. This is an example of where this is practised. Also in *Urvogel*, examples of sounds signifying various aspects of the human experience to the composer are presented. From 7:01 to 7:19 what is imagined by the composer is small objects, possibly rounded, falling on to a hard surface and bouncing. This gives the composer ideas of the sonic objects potential make up and density, if he was to physicalise the object in his imagination. It is also possible for the composer to imagine the extent of elevation between these perceived contiguous objects , for example the bouncing objects and the hard surface. It is because of the composers physical experience that the imagination is able to conjure up such imagery – round objects being randomly dropped in different numbers on a hard surface, something akin to a ping-pong table, again the composers imaginative interpretation.

Examples of where foretokening builds musical structure by linking events together sequentially, sustaining in the listener a continuing interest in the development of the piece can be found in *Urvogel*. The sustained shaking sounds against the drone undercurrent introduced at 9:41 along with the repetitive loop that sits on top which is slowly increasing in amplitude, builds tension and act as contiguous foretokening that is intended by the composer to sustain in the listener a continuing interest in the development and what the tension might be, building up to and how this passage might be resolved.

CONCLUSION

This chapter began by following Schaeffer's terminology, adopting “sound object” for a sound component that can, on some levels, for some listeners, be taken as a unitary whole. However this can be only used as a basis of the process here as Schaeffer's sound object was not intended for composition, therefore the sonic object is used to distinguish an object that can be used for composition. This thesis also maintains a critical stance to the idea that Schaeffer's reduced listening can ever divorce a sign from its original referent. The compelling and unavoidable process of source bonding continuously evokes possible causal events, creating chains of signification. Manipulating these in order to expand the potential of sonic narrative becomes a rich methodology for the acousmatic composer.

In the realm of acousmatic composition as opposed to the world of everyday listening, source bondings may be imaginary, since the listener cannot rely on experience to reference sounds that may be unlike any they have heard before. In addition, each listener has their own personalised source bondings, since this process relies on individual experience, memory and cognition. These variables create a rich semantic environment here termed a sonic signscape. The implication is that a given sonarrative can never be under the control of the composer, since interpretation of sonic objects and tokens and their signification will be varied and unpredictable. Nonetheless, careful control over the signscape can constrain the listener to a field of possibilities in line with the composer's intentions, even if it can never pin them down exactly and programmatically.

The chapter continued by sketching out some of the mechanisms needed in order for sounds to signify aspects of the human experience, noting that this depends always on their context and the listener's imagination. The 'gestural sonic token' was developed from the

sonic token; the smallest meaningful unit of semiotic information in a sound sequence. This is a necessary step for the formation of sonic narrative, as will be discussed further.

This new structural vocabulary allows the possibility of discussing signification in units that differ from the sonic object itself. In some cases, one sonic object might be composed of multiple gestural sonic tokens. In other words, it might signify different real or imaginary gestures. In other cases, multiple sonic objects might work in concert as a single gestural sonic token. Either way, what is most important is that these signs act as foretokens, linked one to the next diachronically. In this way, foretokens build sequential musical structure, leading to the sonarrative development that will be the subject of chapter 3.

The next chapter considers how gesture and texture are integral to this process. The goal will be to demonstrate how narrative is formed by invoking physicality in and through the constituent sounds and their inter-relationships.

CHAPTER 2: THE BODY, GESTURE AND IMAGINATION

INTRODUCTION

This section interprets gesture from a personal starting point that invokes a sensitivity to movement as an integral part of the physical experience, applying this as a relational logic to the perception of movement in the sonic experience. Any sonic 'movement' may be interpreted in terms of gesture through source bonding. This superimposition of sensory experience onto the sonic objects makes possible the construction of narrative in composition. When understood this way, gesture is the most important form of source bonding, essential to the narrative process. “Mental images always refer to the physical, as the imagery of the mind has a physical basis (Maconie 1990, p.28). This chapter contains six sections which lay the groundwork for the study of gesture in music by looking at physicality and gesture in a larger context.

Section 2.1 'The Body For Sonics' considers the importance of the human body as the benchmark of how one apprehends the world. The body “is always at the focal centre of perception – as utterer, initiator and gestural agent, peripatetic participant, observer and auditor” (Hagan 2008, p.4). Human-centered perception is therefore important as it means that musical perspective is always related to the human scale, what Smalley calls the “egocentric space” (Smalley 2007, p.48). Section 2.2 'Gestures As Communication' considers the model of gesture as communication, eventually refuting this claim based on the problem of the subject's intentionality. Gesture is a much richer domain than simple communication can explain; gesture must be abstracted from movement in both the performer and the observer before it becomes a symbolic form of use to the composer. Section 2.3 provides an overview of 'Gesture In Other Disciplines', in order to establish the importance of the subject

and to illustrate that its study is cross-disciplinary. The works of Bulwer (1644), Darwin (1872), Morris (1967-2002) and Rosenberg (1952) are discussed.

Section 2.4 narrows the focus to consider gesture more particularly in terms of music, with special consideration of the processes of an acousmatic composer. The general approach is to present how gesture is normatively considered, before discussing personal interpretations and working practices. The aim is to outline the rich inter-connective potential of the various formulations of gesture, rather than to reduce these possibilities to one specific meaning. Section 2.5 discusses the 'musical gesture' of playing a traditional instrument and discusses how some composers resort to more elaborate score markings as their gestural thinking evolves. An brief analysis of the performance score for Stockhausen's mixed piece *Kontakte* leads to a consideration of 'gesture that is musical', the formation of musical material itself as opposed to sound from gesture. The section concludes with a discussion of Kuhl's *rich gestalt* as it relates to this compositional practice, in which all possible gestural events supervene on the musical experience. Finally, Section 2.6 considers how the listener's imagination interprets sonic objects as musical imagery, by way of Godøy, thus making it possible to perceive the sonic objects as gestural sonic tokens. Musical imagery is here understood as a mental representation resulting from a perceptual process that connect sonic objects and tokens with embodied experiences, most particularly gesture.

2.1 THE BODY FOR SONICS

The human body has traditionally been used as a reference by which to measure those things external to it. For example, before lifting an object, its size, mass and other properties are sized up in relation to the human body. The sum of the bodily actions required to produce the necessary force is calculated. This first-order judgement is augmented by a sensory feedback mechanism. As one manipulates the object or inspects it from different sides, one gathers

additional data points on the object's materiality, dimensionality, stability, accessibility and so on, until a final determination is made of likely success or failure of the lifting endeavour.

Ideas of measure, of proportion, of due restraint come from the body as well as ideas of scale: we talk of 'human scale' in our environment and also in our social relations. Man, in more than the classic Greek sense, but also very much accord with that sense, really is the measure of all things if only because we have nothing and no one else through which to experience the world from inside outwards.
(Benthall and Polhemus 1975, p.65)

Protagoras's *man is the measure of all things* is an important element in my hypothesis, as this thesis posits that music can be traced back to human proprioception, movement and gesture, and that the concepts underlying composition arise from the physical experience. All physical gestures are derived from the body; musical gestures, even if they transcend the body, must do so in relation to known experiences on that human scale.

Furthermore, the body is the vehicle of the senses through which all concrete things are measured, all physicality is experienced and all objects are learned. Thus similar cognitive mechanisms are used when listening to and analysing the properties of a sonic objects as one does when actively analysing a physical object to be lifted. For example, density can be interpreted by association with the sound's source, its perceived texture and the physical gesture behind its excitation. A sound consisting of only a sharp attack might be interpreted in terms of a solid body being struck. One can further hypothesise about the composition of this body and the nature of the gesture from the dampening of the sound.

Measurement is essential to composition, from the measurement of time to the measuring out of meaning. The dimensionality of *size* carries through such processes. Sonic objects are obtained in given lengths or certain amplitudes. These are cropped to the desired length, so that the work as a whole achieves the requisite proportion and internal scale. As a second example consider the dimensionality of timbre, as approached in the final mixing

stages of composition. Here unnecessary frequencies are removed where they might be masked or otherwise incoherent. This reduction might well serve to give the finished work a greater 'energy', more 'space' and other beneficial properties ascertained by the listener.

Bass frequencies are commonly perceived as 'heavy', using the metaphorical axis that places lesser frequencies lower on an imagined height scale. These frequencies are also more energetic, as most sound technicians would know. When they claim that 'bass needs space' they are providing a metaphor that relates a simply property of acoustical physics to an imagined spatial domain. Likewise, composers of electronic dance music (especially genres such as Dubstep and Drum'n'Bass) refer to certain types of bass as being 'fat'; here the metaphor is not only spatial but also involves 'feeding' on energy. Bass frequencies require a lot of energy and hence feast well.

How many of these metaphors are culturally-determined and how many are embedded in our bodily reality independent of culture is a matter open to debate. Smalley suggests that a music which does not take some account of the cultural embedding of gesture will be perceived by most listeners as cold, difficult and sterile (Smalley 1997, p.112). But through source bonding, composers can forge connections back to physicality and the culture it is embedded in, thus avoiding this fate. Given that one measures sonic objects against one's own reality and human scale, listeners will seek metaphors connecting to physicality even if only hints of the physical are presented to them. The tendency is always for physical experience to be supervened by the listener, at least to some degree.

Imagined movement refers back to physical movement and the agent of physical movement can be read in terms of the *thinking body*:

Responding to visual targets, such as reaching for objects or pointing at them, is one of those highly complex actions which we tend to take for granted as part of our coordinated biological make-up, but it is in fact a highly intelligent process. It is in part the way we think in movement, in a “non-ego centered mode of thought”, by which I mean there is no inner voice that verbalises what to do and how to do it. Here we encounter the “thinking body” in the exercise of normal spatially coordinated behaviour. (Baily 2006, p.10)

Baily’s concept of the thinking body parallels the role of the corporeal in this thesis: the body seems not to have to ask permission of the mind to produce movement; the body produces gestures of its own accord. Through proprioception the thinking body breathes, maintains cycles of tension and relaxation, and so on. This occurs within the listening experience as in all other activities.

The conjecture that sounds imprint directly on the body was first advanced in the nineteenth century by way of phreno-mesmerism. This science, now considered a pseudo-science, determined that the brain was a device for storing and reproducing sounds directly, just as it regarded each nook and cranny of the skull as indicative of particular personality traits or disorders (Enns, 2008, p.15). Endeavours with greater scientific validity have followed. For instance, an electro-myograph has been used to measure increased electrical activity in the leg muscles during music listening sessions (Storr 1992, p.25). Subconsciously-generated corporeal manifestations during music listening can be plainly observed. Take, for example, the commonplace tapping of a finger or foot to the pulse or metronomic beat of music.

Furthermore, it is almost universally accepted that the physical massage of the body has the effect of relaxing of the mind. This suggests that the current state of a body affects the

current state of mind; when the body and mind are distressed it is possible for perception to be compromised. Likewise if the body is at ease, the mind is more likely to be at ease and perception can be augmented. Studies in music therapy have demonstrated these relationships of sound and physical rehabilitation. For one example consider Chandra's *The Effect of Sound Stimuli on Neurologic Rehabilitation of Upper and Lower Limbs: A Meta Analysis*. The purpose of her study was to analyse the existing quantitative research evaluating the effect of sound stimuli on neurological rehabilitation of upper and lower limbs. The results indicated that music was significantly effective in rehabilitation (Chandra, 2005). The states of both mind and body are important criteria when engaging with music, whether in the acts of composing, performing or listening.

To shift the argument to perception, it bears repeating that one 'hears' sound not only through the ears but the entire body, different frequencies exciting different cavities, organs and so on. For example, one perceives any frequency under 20Hz in the stomach, not the ears. In her study of singing, Anne Tarvainen reveals that when one listens to another persons voice, one experiences the voice with his or her 'whole body'. Thus sonic experience is not just a matter for the ears (Tarvainen 2008, p.1). When composing, this composer creates pieces that can be interpreted as physical environments where the body plays a key part in understanding; it is with *body-in-mind* that such imaginary worlds are experienced, explored and measured. The body is actively listening.

2.2 GESTURES AS COMMUNICATION

Gesture is movement that helps complete an intentional communicative goal between people. Physical gestures help in breaking down language barriers; when accompanied by verbal utterance, body movements provide a second channel useful for illustrating concepts which might be difficult to verbalize (Argyle 1975, p.255). In everyday communication, physical

gesture strongly reinforces verbal dialogue and can also be used as a stand-alone tool in getting a message across.

It is worth pointing out that commonplace gesture is not in itself a language, omitting consideration here of sign languages devised specifically for such use since physical gestures are non-combinatory. Two physical gestures presented together do not produce one larger gesture of more complex meaning; each symbol is a complete expression of meaning in itself (McNiell 1992, p.21). Besides the obvious fact that a given gesture might have different meanings in different cultures, individuals, too, have a repertoire of gestures that are part of their personal character. The use of a subtle grin or a cheeky smile conveys not just emotional, critical and other content but information on the character of the actor, her internal states and attitudes. These build over time into a gestalt that one recognises as that person; remove the gestures and a good deal of the personality is removed as well.

Now reconsider this section's initial hypothesis: Gesture is movement that helps complete an intentional communicative goal between people. If a subject walks with a limp, their movement indicates to the observer that there might be something wrong with their leg, an injury or congenital defect. But if the cause is instead a stone in their shoe, this interpretation is incorrect. Furthermore, the hobbled subject might not be consciously aware of the limp or intending to communicate using this movement. Thus, the information gathered by observing gesture is not necessarily a result of conscious communication. This problem extends to interpretations of artistic intent.

Gesticulation, as part of our actual behaviour, is not art. It is simply vital movement. A squirrel, sitting with its paw against its heart, makes a gesture, and a very expressive one at that. But there is no art in its behaviour. It is not dancing. Only when the movement that was a genuine gesture in the squirrel is imagined, so it may be performed apart from the squirrels momentary situation and mentality, it becomes an artistic element, a possible dance-gesture. Then it becomes a free symbolic form which may be used to convey ideas of emotion, of awareness and premonition, or may be combined with

or incorporated in other virtual gestures, to express other physical and mental tensions.
(Langer 1953, p.175)

Everyday functional movement should not be confused with performative gestures. Although the interpretation of a given gesture relies on a knowledge of physicality as previously experienced, a composer is still required to articulate these with conscious intent and aesthetic patterning within the work as a whole. The fact that music may be interpreted automatically, in terms of metaphor or physical action, is not a crutch the composer should lean on when attempting to build a rich and coherent sound world.

2.3 GESTURE IN OTHER DISCIPLINES

This section will sketch a quick outline of how gesture has been recognised as an important contributor to communications and associated cultural activities. The main purpose of this fragmentary overview is to demonstrate that the study and use of gesture is cross-disciplinary and extensive in scope. It will also make apparent the fact that gesture has different definitions depending on context.

In 1644, John Bulwer, a physician, wrote the first of five books entitled *Chirologia: the Natural Language of the Hand*. It was the first book known to address body language through the identification and analysis of movement and gesture. Bulwer believed that the underlying neurophysiological basis of gesture confirmed it as a lexicon of human communication (Smith 2010, p.170). However there were other precedents, notably the 1616 publication of Bonifaccio's *Arte de' Cenni* (Art of Signs) which recognised gesture as a universal and unifying form of expression. Both authors understood gesture as historically preceding spoken language and hence being a more 'natural' form of expression. While post-structuralists might have made complex this understanding, here it will be taken as a reasonable simplification.

In 1872, Charles Darwin wrote *The Expression of the Emotion in Man and Animals*, a study which catalogued the use of facial expressions to communicate particular emotions. Darwin considered expressions from the more primitive (love, anxiety, pride, guilt, grief, etc.) to more complex emotional states (shyness, shame), in all cases demonstrating how the expression of these emotions through movement and form are related to those in animals, particularly the primates. Zoologist and anthropologist Desmond Morris popularised the evolutionary viewpoint through a series of books, notably *The Naked Ape: A Zoologist's Study of the Human Animal* (1967), *The Human Zoo* (1969) and the series *Bodywatching* (1985), *Babywatching* (1991) and *Peopplewatching* (2002). These presented human activities as part of a continuum with those of primates and other animals, demystifying cultural activities and emphasising the role of our evolution from a hunter-gatherer society.

The term 'action painting', coined by Harold Rosenberg in 1952, made obvious the primary process inherent in the abstract expressionist art movement in New York, the style of painting popularised by Jackson Pollock among others. This active gestural engagement with the material at the disposal of painters proved to be a source of inspiration across the arts, particularly for its free, subconscious and dramatic approaches to materials. This style was directly related to jazz idioms through method, intention and even the naming of paintings. Similarly, free improvisation had a conceptual and processes basis in abstract expressionism (Sansom 2010, p.29-34). Although serialism and atonality were considered abstract expressionism in music, parallels can also be made with art music where composers unsatisfied with the ideology of serialism adopted indeterminacy in both musical form and method.

This movement was led by composers such as John Cage and Morton Feldman, both of whom were in close proximity to the base of abstract expressionism in New York. Both free jazz and art music, based on indeterminacy, value free movement as a form of musical

expression. A more detailed study of these forms might relate this back to Bulwer's ideas of gesture as a lexicon of human communication.

This brief section has noted the importance of physicality to human expression, emotional communication, anthropological and artistic endeavours. Since the seventeenth century the analysis of movement and gesture has been studied exhaustively. More recently, the application of this field of study to acousmatic composition has been undertaken by several writers and composers. That will be the subject of the next section.

2.4 GESTURE IN MUSIC

Sonic gesture is the movement in and of sound, as interpreted by the composer. "Just as stillness is important for visual discrimination, its opposite, movement, is essential for optimum auditory discrimination and control in a dynamic sound environment" (Maconie, 1990, p.23). Different composers have different approaches to the use, definition and understanding of gesture in their work. This section describes those of Leman (2010) and Wishart (1985).

Leman writes that gesture can be studied combining three different perspectives:

A third person perspective, which is based on the measurement of body parts and sonic forms, a first-person perspective, which is based on self-observation and interpretation of experiences and, finally, a second-person perspective, which is based on how gestures function as social cues. The latter perspective is of particular interest because it entails the view that gestures can be understood as social signals for meaningful music-driven interactions with music and other subjects. I argue that the study of musical gesture can be grounded in an empirical methodology that combines these different perspectives.
(Leman 2010, p.127)

This highlights the extent to which gesture can be interpreted and also suggests a broader, more encompassing benefit of gesture. Wishart extends this understanding to four

distinguishable types: *stable*, *unstable*, *leading to*, *leading from* (Wishart 1985, p.67). These are related to the gestural structure of a single note where Wishart focuses on these gestural types while performing the sound transformations that underlie his compositions (Wishart 1985, p.67).

This section shows how these various interpretations of gesture can be used to build a model of composition in which perceptions of physicality construct a sonic experience in human terms. This results in signs which engender narrative through metaphor. Gesture can be a tool in the organisation and understanding of music as a semiotic system. Semiotic systems are often broken down into three extensions; semantics, the relationship between signs and their signifiers; syntactic, the relationship between signs in formal structures; and pragmatics, the relationship between the signs and those who use them. In this way, this thesis sees the role of gesture in composition as having strong implications for the unity, coherence, direction and grounding of a piece.

This is apparent in acoustic music, where the controlled use of gesture enables a performer to fully realise the expression of music through their instrument. And likewise the composer, by way of careful scoring and the use of the full suite of extended techniques, can elicit from the performer the sonic objects or gestural sonic tokens necessary for the correct formation of the piece as they envisage it. Gesture is explicit in the performer's physical acts, for example the relaxation and tension of muscles and tendons. In the listener, gesture is manifest in breathing, posture and any physical movements they may make while attending to the music, resulting in states of tension, relaxation and the like.

Furthermore, when there is control of gesture in a work, there is an understanding of time, since gestures are diachronic. As demonstrated in the accompanying works, gesture manifests itself in the shaping of time-based structures on both micro and macro levels.

According to Curtis Roads, micro structures include sound particles on a time scale that extends down to the threshold of auditory perception, measured in milliseconds (Curtis Roads 2001, p.4). The macro time scale is that of the overall musical architecture or form, measured in minutes or hours (Curtis Roads 2001, p.3). This structuring of temporality relates directly to the construction of narrative. To conclude this chapter, both this concept and that of gesture will be related back to Smalley (1997) and the description of source bonding presented in Chapter 1.2.

When engaged in the process of source bonding, the movement perceived in sound (gesture) only tells us half the story; *texture* tells us the other half. Gesture has the potential to describe the nature of a sonic objects source, through a representation of that object's materiality and relationship to its environment (acoustics). Texture has the ability to present us with the perception of stasis through close attention to inward-looking detail instead of relational constructs. Smalley considers that when there is a mixture of gesture and texture in a piece of music, either the focus shifts between them or they live in a kind of collaborative equilibrium (Smalley 1997, p.114). Smalley also introduces terminology to indicate which has the superior role in a given passage: “where one dominates the other, one can refer to the context as gesture-carried or texture-carried” (Smalley 1997, p.114). As a rule, the content in the presented sonarratives are predominantly gesture-carried, since gesture is responsible for driving the narrative process forward. However, the importance of the dual roles of gesture and texture will be discussed further in Chapter 3.5, when contiguity and counterpoint are discussed in relation to sonic objects, sonic tokens and gestural sonic tokens.

2.5 'MUSICAL GESTURE' AND 'GESTURE THAT IS MUSICAL'

In the days preceding sound recording, one had to attend a musical event or be within its acoustic range to experience music. Sounds were generated physically and the listener had an immediate proximal relationship with their source. Over time, the listener stored memories of which actions on which instruments caused which sounds. Familiarity with the generation and reception of music grew from repeated cultural experience, reinforced through discussions with other listeners and related cognitive activities, for example analysis, critique, etc.

Due to proximity, music was very much an audiovisual experience, with certain particular exceptions in which the source was deliberately hidden from the listener. For example, churches placed the choir and organ behind or above the congregation. As part of his *Gesamtkunstwerk* (; the total artwork of singers and scenography, Wagner was known to have situated the orchestra in a sunken pit out of the view of the audience. This *disembodying* of the orchestra was part of his *embodying* of all other aspects of the work, a total synthesis of the forms that added up to opera. Other composers put the brass section outside the concert building, in order to create a sense of distance. Examples like these illustrate early manipulation of acoustical space, line of sight and other formal properties of the listening experience in order to create a particular effect outside the cultural norm.

In any case, musical gesture was traditionally the result of movement of the body producing sound on a musical instrument. Studies of gestural control in music have focused on effective gesture and only to a lesser extent on accompanist gesture, that is, gestures that are part of the performance but not part of the sound-making, for example, head movements (Bann *et al* 2001, p.2 and Cadoz/Wanderly 2000). It has been suggested that these are an equally important aspect of physicality in interactive performance. Studies of bodily

relationships with gestural controllers that embody sonic feedback properties describe such gestures as an important trace of the performer/instrument relationship (Bahn *et al* 2001, p.2).

Those who compose for acoustic instruments and voice are not required to overtly plan gestures, since gesture is automatically embedded in the performance through the choice of instrument. The composer can choose to focus more or less on gestural aspects as they interest him. The range of results includes strongly gestural music, for example Brian Ferneyhough's *Bone Alphabet* (1991), to the sparsely gestural work of La Monte Young's *Trio for Strings* (1958). However, it is likely accurate to note that the twentieth-century saw a profound increase in the use of score markings that reflected the gestural thinking of the composer. This derives from a pursuit of greater timbral variety as well as a realisation that scores must delineate not only the onset of sounds but also the energy displacement over time. This is most efficiently indicated through score marks corresponding to gestures.

With the advent of *musique concrète* and electroacoustic music one must take account of a form of musical delivery that does not necessitate traditional instruments or in the case of tape music; instruments of any kind. This said mixed pieces are not uncommon. The interpretation of musical gesture by the listener must therefore include composition with unorthodox sound materials; the traditional definition of musical gesture must now be more inclusive. *Illustration 1* contains a fragment of the score for Stockhausen's mixed piece *Kontakte* (1958-60), a piece that demonstrates gestural thinking in electroacoustic music. Here, Stockhausen uses inclining and declining textural gradients to indicate gesture. The declining gradient appears to be more dense than the inclining counterparts. At 26:1 horn-like markings are introduced, some inclining, some declining. These appear to represent a harsh attack paired with fading release and decay, illustrated by the flattened part of the horn coming first and tapering off to nothing. It is also possible to discern a macro-level sound transformation taking place in this passage. This is apparent from the decline of the denser

gradient to zero and the increase in what could be the pitch or volume of the inclining counterparts, along with the introduction of the horn-like hits. One interpretation of this is that the piece appears to be entering a new phase of development.

KONTAKTE Aufführungspartitur Seite 36 / performance score page 36

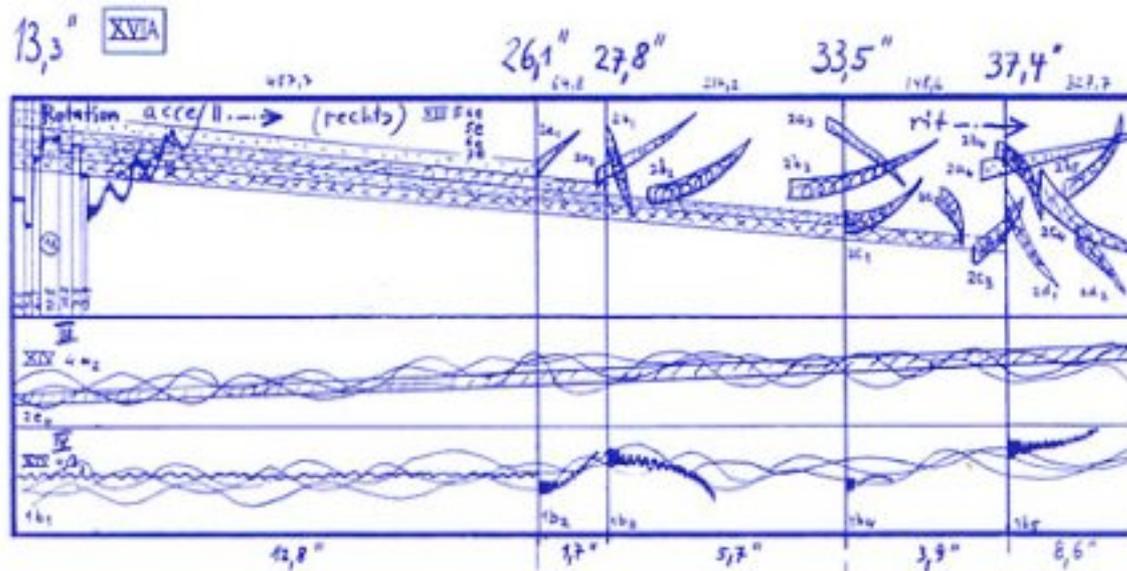


Illustration 1: Portion of the score from Stockhausen's *Kontakte*

Even though these are not traditional musical markings, they still convey a strong sense of musicality. One can see connections between the parts and gain a sense of what could be described as *poetic motion*, an imaginative or sensitively emotional style of expression. In short, the very markings themselves, the direction of the ink in the markings, convey the movement and direction of sound, which is gestural. There is a direct relationship between the act of marking the score and the act of playing the music denoted by those marks; it is this parallel construction that makes it possible to speak of 'gesture that is musical' as distinct from the 'musical gesture' of playing a traditional instrument. The first forms musical matter; the second forms sound matter from music.

The intention of this section is to make explicit the rich superimposition of effects and meanings that arises from a deep understanding of gesture as a music-generating practice. Kuhl claims that musical gesture stems from the generic level of perception where it is tied to gestalt perception, motor movement and mental imagery (Kuhl 2005, p.2). He describes gestures as *rich gestalts* if they combine auditory information (hearing the movement) with implied visual information (imagining how the movement appears) and somato-sensory information (feeling the movement). This suggests that at a higher level of cognition, gestures could be organised in groups and sequences to create musical narrative and form, a claim that is *sine qua non* of this thesis.

In acousmatic works such as those the author presents, the ability of individual musical gestures to expand into motifs and hence evolving musical phrases causes new semiotic effects on every structural level. Such musical semantics are based on a primary signification from musical phrase to gesture and from musical gesture to emotional content and social belonging (Kuhl 2005, p.1). This is explicit in music derived from physicalism, in which all gestural events, real and imaginary, supervene on the musical experience. In other words, the perception and creation of music as a movement-based phenomenon is reliant on an inter-related gestalt of body and mind, another way of deriving the *thinking body* (See Section 2.1).

2.6 IMAGINATION AND GESTURE

It is the imagination that enables humans to bridge the gap between mere sensation and intelligible thought (Warnock 1976, p.34). Without imagination, one could never apply concepts to sense experience (Warnock 1976, p.30-31). This is true in the domain of musical perception, where imagination manifests itself in the form of musical imagery. Musical imagery is the experience of imagining music in the mind's ear (Bailes 2007, p.2). Mental

representations are the result of a perceptual process that connect sounds with embodied experiences, such as motor experiences (Barreiro 2010, p.35-42). Maintaining mental representations is labour-intensive; Carlson suggests that, “gesture is a way to offload some of that burden” (Price 2007, p.1). If listening can engage the motor cortex after imagining how a sound was physically produced, then by extension it is possible that listening involves other human capacities for sensation, even those that have nothing to do with physically producing the sound (Reily 2006, p.166). It is also true that the listener's mental representations motivated by sonic stimuli are subject to changes in accordance to the sonic manipulations and relationships established between the sonic objects in a composition (Barreiro 2010, p.35-42). Godøy validates the claim that music can be traced back to proprioception, movement and gesture, and that this is an integral part of the listening experience. He writes that “from continuous listening and sound-tracing, one can recode musical sound into multimodal gestural-sonorous images based on biomechanical constraints (what we imagine our bodies can do), hence into images that also have visual (kinematic) and motor (effort, proprioceptive, etc.) components (Godøy 2006, p.149-157).

As argued in Section 1.2, Schaeffer’s ideal of a pure and absolute sound object is impossible and perhaps undesirable in practical application. It is impossible for the listener to avoid the exercise of imagination in associating the signscape back to real-world referents, even if the composer had no such associational intent. It is equally impossible for the listener to avoid, through imagination, the creation of acoustic imagery (Filimowicz and Stockholm 2010, p.2). Through source bonding, the listener creates both real and imagined sound sources. There are similarities between studying sound and gestures from a phenomenological perspective, suggesting that Schaeffer’s theoretical concept of the sound object may be extended to what are called gestural-sonorous objects (Godøy 2006, p.149-157). Godøy claims that Schaeffer’s principle of reduced listening is not in conflict with

fundamental principles of embodied cognition, suggesting that the criteria for the constitution and qualifications of sonorous objects can be linked to gestural images. Again, it must be understood that Schaeffer never meant the sound object to include gestural information or for it to be used as a compositional tool.

Perception and imagination fuel the creation of mental gestures; mental gestures could be seen as the mechanics of mental imagery. Mental images are therefore the medium through which meaning is portrayed in this compositional process. The abstraction of gestural movement gives fluency to the imagery created and has the potential to engender narrative, which is essentially a coherence in the relationship of such sonic objects and imagery. Support for this is provided by Godøy, who proposes that the meaning or content of music is actually a matter of gestural images; images of effort, velocity, contours, trajectory, gait, etc. These could all be understood as gestural phenomena (Godøy 2004, p.57).

CONCLUSION

This section established that mental representations of sonic tokens are the result of a perceptual process that connects sounds with embodied experiences. In this compositional process, mental imagery due to imagination is the medium by which meaning is fashioned. Without a gestural imagination one could never relate such concepts in the mind to the experience of the senses and body. Applying the dictum *man is the measure of all things* to the domain of composition forces us to realise that sonic tokens too must be measured against our own reality on a human scale. For this purpose, the concept of the *thinking body* is proposed. The examples of spatial and material metaphors will be explored in greater depth in the next chapter.

Several authors were used to contextualise gesture within the domain of music. From Leman one learns that the first-, second- and third-person perspectives must all be used to build an appreciation of musical gesture. The compositional practise related to this thesis is, in the terminology of Smalley, strongly *gesture-carried*. This incorporation of the physical enables temporal structuring, leading, as will be shown, to the construction of narrative. Listeners use embodied knowledge of proprioceptive and motor activities as constraints on interpreting music. The framework presented here takes this into account at each stage of development.

CHAPTER 3: THE CREATION OF SONARRATIVES

INTRODUCTION

This chapter discusses the creation of sonic narratives. Sonarratives are formed by applying all the concepts termed in this thesis and by recognising the importance of metaphor and narrative to the central thesis. It is through signification, by way of metaphor, that narrative is created in the presented compositions, this happens in two ways. First, during the compositional process itself, narrative shapes the form of a sonarrative through the choices made with regards to transforming sonic objects by perceiving them as gestural sonic tokens. Second, narrative might be engendered in the listener as a by-product of the metaphors created in their imagination. These two modalities are closely interrelated.

Before reading this chapter, it is worthwhile to again make clear the difference between narrative in the more general sense and sonic narrative as it is used as a compositional process in this thesis. As discussed earlier, narrative as defined by the Oxford English Dictionary is: a spoken or written account of connected events; a story. Narrative as used in this thesis is how the composer interprets and discusses with himself – potential meanings, sonic associations, materials, use and synthesis of sound and so on, in the practice of composition. Narrative is therefore the inner voice that relays to the composer, potentials in his work, this contributing to the creation of a sonic narrative. The neologism *sonarrative* has been formed and introduced earlier by combining the words *sonic* and *narrative*. To iterate, sonarrative is defined in this thesis as: a composition incorporating contiguous and contrapuntal events that creates in both composer and listener coherent sonic accounts. It is again important to emphasise that the sonic account is not the same in each listener and is not the result of a direct programmatic transfer between composer and listener. It is also important to iterate here that, due to the very abstract nature of the sound worlds created in

this composers works, it would be unreasonable to assume the listener is be able to incorporate the same processes and hence perceive the same sonarrative. Again, this is not a limitation of the process or definition, but rather allows for further expressive potential so long as the composer is aware of the dynamic of relinquishing control of the composition's perception to the imagination of the listener. Accordingly, the term sonarrative is only used when directly in relation to the authors own sonic development – his process and his own completed works.

Section 3.1 will explain in detail the importance of metaphor in this work by way of (McNiell 1992), (Arnhiem 1997), (Parker 2007, p.1), (Andean 2010) and (Benthall and Polhemus 1975)

Section 3.2 will then discuss the inevitability of the construction of narrative, as it arises from the temporal structure of music and embedded gesture. It will posit texture as non-narrative in contrast to gesture's generation of narrative.

Section 3.3 Discusses Anderson's *figurative listening* where sonic objects have the potential to develop into sonic 'characters' in narratives, with inherent personal qualities, even 'life' of their own.

Section 3.4 Discusses contrapuntal and contiguous relationships in relation to sonic objects.

Section 3.5 Discusses a strong *narrative patterning* to engagement in this compositional process.

Section 3.6 Discusses where one purpose of this thesis is to create particular sonic worlds, in which signs pointing toward a physical experience become the blueprint for a narrative. In his article *The Ambient Novel* (2001), Rino Breebaart proposes a rethinking of the way novels are

read, and suggests ambient music as a comparison. This section will attempt a fusion of Breebaart's and the authors ideas.

3.1 METAPHOR IN ACOUSMATIC MUSIC

The abstract can only be explained by way of analogy, metaphor and symbolic imaging; thus metaphor plays a crucial role in the effectiveness of human thought (McNiell 1992, p.179).

The use of metaphor to explaining that which is difficult to explain is a triumph of conceptual ingenuity, playing an essential role in the development of human comprehension and even consciousness. Without metaphor one would have to begin language with an agreed fact, but there cannot be fact unless there is comparison first. Metaphors allow us to think of the abstract in concrete terms, to think in images of space, form and movement, which are not just images of concrete forms, but abstract concepts (McNiell 1992, p.178).

It is appropriate to integrate metaphor into the discussion of the compositional process for three reasons. First, as discussed in Chapter 1.3, the nature of sound as being invisible and intangible leads us to discuss it metaphorically, for example; bass frequencies are commonly perceived as 'heavy' or 'fat'. Second, since acousmatic music deals with abstract sonic objects divorced from causality, it is appropriate to posit metaphor as particularly important for source bonding. Third, the discussion of gesture assumes a metaphorical relationship between sonic objects as gestural sonic tokens as they are heard and a physical form or process they can be related back to. Arnheim explains that the spontaneous use of metaphor demonstrates not only that human beings are naturally aware of the structural resemblance uniting physical and non-physical objects and events (Arnheim 1997, p.118).

In the compositional process presented here, one can think in terms of gesture 'pushing' and 'pulling' sonic objects into place. In this way physical concepts are applied to non-physical objects. This develops and maintains awareness of the importance of the kinesthetic experience. Perceptual qualities of shape and motion are present in the very acts of thinking in terms of gesture. This is taken further by Arnheim when he writes that “the shape and motion are present in the very acts of thinking depicted by the gestures are in fact the medium in which the thinking itself takes place” (Arnheim 1997, p.118).

In *Women, Fire, and Dangerous Things*, George Lakoff demonstrates that the categories one uses in thinking and speaking are not abstract symbols representing objects in the world, but are embodied in that they are informed by our own physical and social experience, imaginative in that they are influenced by metaphor and metonymy, and are themselves structured by complex systems (Parker 2007, p.1).

It is certainly true in acousmatic composition that the use of metaphor is prevalent. Schaeffer's sound object is a metaphor in itself, one that allows us to conceive of a distinct unit of sound and even think of it having its own body. This usage 'works' because physicalising concepts makes them more tangible to the human mind. Lakoff suggests that one of the fundamental ways in which human beings organize information about their world is through the use of *idealized cognitive models* (Parker 2007, p.1). When presented with the abstract, one engages in a process of imagining, an attempt to make a connection to something physical; this is simply our most efficient option. Metaphoric imagery is hence simultaneously concrete and abstract; a meta-level capacity is inherent in metaphoric thinking. “Metaphoric gestures permit thinking in terms of concrete objects and space when the meaning is abstract” (McNeill 1992, p.263).

Trevor Wishart is an example of an acousmatic composer using metaphor as a musical tool. To use the example of *Red Bird* (2000) again, this work is structured primarily by an elaborate, explicit sequence of symbols and metaphors. Here, gestures act as an accompaniment to the stream of semi-linguistic metaphors which dominate the narrative layer of the work (Andean 2010, p.107-115).

As a final point, this thesis relates metaphor to the larger construction of a shared social experience through feelings.

Metaphor is the root of reason, science and art. It is the root of feeling as understood beyond the sensations of the self and of all expression of feeling. Metaphors are social because speech is social, because all symbolism is social, because mind is social to an overwhelming degree.
(Benthall and Polhemus 1975, p.59)

This relates directly back to a fundamental concern with gesture. As stated in the introduction; gesture is an action performed to convey feelings, sensitivities and responsiveness to influences. In particular, gesture may be interpreted as a sensitivity to physicality expressed through sound. This sensitivity can only be sustained through the symbolic social, which is a very particular context for each gestural act. The social implications of metaphor place it firmly at the heart of this thesis.

3.2 NARRATIVE AND NON-NARRATIVE

Perceived individually, every sound can be said to have a story. For example: the glass fell and smashed on the stone floor. Perceived collectively, sounds become characters of a bigger story, through being involved in narratives in relation to one another. In the compositional process under consideration here, the sonarrative is the rendition of sonic tokens and gestural sonic tokens as suggestive events that make coherent the sonic continuum. The word *events* is important, since in order to have an event, there must be an action, usually resulting in

movement. The works presented in this thesis form a *sonic logic*, an interpretation of sonic events that make sense to the composer as the articulation of an artistic idea. This defines the process of composing with narrative strategies.

Maus asserts that “stories are primarily about human actions, and the storyteller's integration of events into a plot reflects the need to understand actions by placing them in a temporally extended context” (Maus 1991, p.1-34). This thesis follows the aphorism; *never let the truth get in the way of a good story*. According to Maus, the relationship of action to narrative forms an important connection.

The notion of action is not independent of the notion of intelligible action. And when an action requires anything beyond the most routine explanation to render it intelligible, an interpretation will normally situate it within a relatively extended sequence of events. Such sequences, when described explicitly, yield stories. So whenever there is an interesting action, there are stories that can be told about it: the concepts of narrative and of action are made for each other.
(Maus 1991, p.1-34)

In the process under consideration, the composer's intent is to turn interesting action into the building blocks of a potentially interesting narrative. One strategy is to maintain a certain delicacy in the composition by invoking subtle actions and those that build tension over time. Then, at particular points in the sonarrative, sonic objects that are strongly evocative of action (gestural sonic tokens) are incorporated, the choice of placement made with respect to the sonarrative. The fact that not all of the sonic objects are strongly evocative does not make the work any less gestural. Rather, it demonstrates a sense of play between gesture and texture, narrative and non-narrative. Through such structures, compositions build anticipation and expectation in an irregular fashion. Space is provided so that the listener can explore the sonic world that is being created, space for imaginative reflection. Even silence is included for a reason (See Chapter 1.3).

This compositional process develops sonarratives based on the metaphoric imaging of factual and fictional aspects of the composer's sensitivity to physical experience. This imagery, subjectively interpreted, creates conditions ripe for the exploration of potential sonarratives. When auditioning sound, the composer imagines the shape of the sonic object in physical form and interrogates that object's potential shape, purpose and meaning. If accepted for use in composition, further decisions about relational position and function in the sonic landscape must be made. The very act of asking these questions places the composer in the preliminary stages of creating a sonarrative through perceiving sounds as sonic tokens and gestural sonic tokens.

Such narrative strategies can be considered as a complex web of cognitive and semiotic processes that organise human experience into meaningful episodes in time (Polkinghorne 1988, p.1 and LaMothe 2005, p.119). One imposes form on the flow of coherent accounts of experience through the interpretation of narrative semiosis (Sarbin 1986 and LaMothe 2005, p.119). All compositions have a start, middle and end; hence they all lend themselves open to interpretation in terms of possible narrative structures. Human existence is governed by an inevitability that there will be an end to all things, which is why people have a deep-rooted fascination with stories and how they finish. Chrz refers to this as the experience of human finitude.

Experience of human finitude is related to the finiteness of the story. Stories enable us to shape the finitude of human existence because they are “finite” by their own substance. The stories we live by and the narrated stories are “finite” because: 1) they are intended, they have purpose, i.e. it is in their nature to point to the end (“*intentio finis*”), 2) they are integrated into a larger whole, i.e. configuration, which has a beginning, a middle, and an end, 3) they are bound, i.e. limited to include “infinite” richness of human experience, and 4) they embody the fragile and vulnerable human being surrounded by the possibility of non-being.
(Chrz 2008, p.3)

Using narrative strategies makes tangible the composition through gestural sonic tokens. These tokens become persuasive as indicators of the materials and forces that characterise them. If one can imaginatively physicalise potential mechanisms in sonic objects, one is better able to mindfully control, or, in a sense to *oil* them; to create a coherent work that is to be perceived as *in proper working order*.

Smalley writes that “the notion of gesture as a forming principle is concerned with propelling time forwards, with moving away from one goal towards the next goal in the structure, the energy of motion expressed through spectral and morphological change” (Smalley 1997, p.113). Hence, the notion of gesture as a formative principle is essential to creating sonarratives. However, as discussed in Chapter 2.4, gesture is only one-half of the source-bonding equation. Texture exists with gesture in various proportions. As previously stated, the works presented are strongly gesture-carried, where gesture conveys the nature of a sonic objects source, materiality and relationship to its environment.

By contrast, texture presents us with the perception of stasis through close attention to inward-looking detail. Just as gesture can be interpreted in terms of temporal qualities, action and narrative, texture can be perceived as being non-narrative and non-temporal. If narrative involves representation through the passage of time, the non-narrative avoids such representation, presenting itself as texture in the sonarrative. Textural qualities, though they may be secondary, are nonetheless essential in supporting and framing the narrative as process. In addition, all good narratives need space for imagination in their structures; textures and silences fill this role.

3.3 FIGURATIVE LISTENING

Sonic objects have the potential to develop into sonic 'characters' in narratives, with inherent personal qualities, even 'life' of their own. This idea relates directly to Anderson's *figurative listening*, which she defines as:

A stage for the “living” being. Figurativisation is a reception behaviour in which narrativity is not only a metaphor for form but it also provides a model for perceptual construction. Figurativisation has characteristic traits in which the listener imagines, during the listening experience, that various sounds suggest something that moves, ultimately living. The listener searches for a contrast between sonic constructions associated with the image of the “moving entity”, and other elements that have a contextual function, for example the stage, the scene, or the decor. Metaphors are used to describe the images, which imposed themselves during the listening act. (Anderson 2007, p.4)

This concept is exemplified in the work *Nexus Licentiosus*, which uses gestural context to provide the listener with the sense of a creature, something very much alive. This creature was in fact abstracted, redesigned and reconstructed by the composer from the recording of a moth, which is also present (unprocessed) in the same movement. This is where the *factitious* and *fictitious* nature of the work meets. This transformation may be heard by way of six accompanying samples, starting with the original recording (Example 1: Moth Raw) and two successive recordings of its reduction of terms (Example 2: Moth Stretched and Example 3: Moth Reduced). The reduced material was redesigned further (Example 4: Moth Constructed A and Example 5: Moth Constructed B) and these were then placed in context with each other in the sonarrative. This demonstration should make clear how fiction is derived from fact through narrative strategies based on the sensory experience and imaginative exploration of sonic events.

The application of such narrative intelligence to composition relies on the ability to notice and interpret signs. Sonic objects perceived as gestural sonic tokens become characters

acting out roles in the sonarrative. These characters and roles can be structurally or non-structurally attributed as narrative/non-narrative and are also useful in the resolution of compositional problems and dilemmas. Filimowicz and Stockholm write that “acoustic images often play off this underlying dramatic feature of life and present us with dramatic moments and cessations, often called simply tension and resolution, but underlying this is an image of the dynamics of existence as we’ve experienced it since birth” (Filimowicz and Stockholm 2010, p.5-12).

3.4 CONTIGUITY AND COUNTERPOINT

By applying narrative strategies to electroacoustic music, modern musical thought can be more fully integrated with the other arts (Dack 1999). Dack discusses the potential narrative offers in the contextualising of Stockhausen’s *Kontakte*. This example was also chosen because Stockhausen’s use of counterpoint as explained in Chapter 2.5 loosely inspired the work on *Urvogel*. Here it is intended to further the argument that contiguity and counterpoint generate the narrative potential of a work. Dack writes:

A principal narrative feature is that of the “contact”: it is after all Stockhausen’s title. The instruments exist in the physical world of actual materials which behave in a certain, predictable way when energy is applied through human gesture. [...] We can witness the unfolding of small dramas. There is scope for reprises, false turns, premonitions, mistaken identities, notions of similarity and difference, of union, journeys into unknown territories... With such metaphors of characterisation and place the application of narrative structures is not difficult.
(Dack 1999)

It is not the intention of this thesis to prove that Stockhausen composed *Kontakte* with narrative in mind. Regardless, it is a successful example of how a listener might engage in a narrative strategy through metaphor. When metaphor is generated by more than one sound in proximity, the juxtaposition of these together provide perfect conditions for the potential induction of narrative thought. *Kontakte* gives us enough physicality to satisfy the

narrative-hungry listener, keeping them engaged throughout. The movement as gestures of the acoustic instruments is similar to perceiving gesture in the non-acoustic parts. The contiguous and contrapuntal relationships develop a narrative. Similarly, in the opening of *Urvogel*, the montage of chain-like material against the leather/rubber material carries indicative or evocative suggestions to the composer, encouraging narrative thinking. This sonarrative will be explored further in the next chapter.

Sonic worlds are made up of sonic objects that live in a contiguous temporal structure. Contiguity is defined as a continuous mass or a series of things in proximity. The term is derived from one of Aristotle's Laws of Association: that objects occurring in proximity to each other in space or time are *readily associated*. This reasoning can readily be applied to sonic objects in an acoustic continuum, heard contiguously as the movement of a sonic mass, a series of sounds in proximity. Narrative is not merely the action in music; although counterpoint is a very important instigator, it is not the only player when it comes to accomplishing a sonarrative.

The contrasting interaction of certain sounds playing with each other in a continuum, where the gestural engagement or action and reaction are clearly defined as being in contrast to each other, can be seen as contrapuntal. Thus contiguous and contrapuntal sonic objects are both defined in terms of a common space and proximity, but the first implies similarity while the second requires difference or contrast. Thus sounds that are contiguous to each other are not necessarily contrapuntal. For example, if the sound of rain moves across the stereo image against an independent backdrop of constant sustained texture, say white noise, the two are not creating much counterpoint. They can, however, be said to be contiguous to each. If the white noise was to react against the movement of the rain, then a state of counterpoint is created. In other words, counterpoint not only relies on contrast, it relies on movement; very often the most effective counterpoint utilises both contrast in texture and movement.

The sounds in the sonarratives to be discussed move between relationships of contiguity and counterpoint; the two are not mutually exclusive. That said, a mass of sounds that are contiguous can be perceived as texture-forming, whereas sounds that are contrapuntal create gesture. Previously it was stated that gesture creates stronger sonarrative roles than texture, but the dynamic is more complex than that. It is when the sonic objects fluctuate between these two states that sonarrative is most strongly generated.

Counterpoint in traditional tonal and melodic music preserves the independence of melodies that work together and against each other (Witkin 1998, p.15). “Ideally, in tonal counterpoint one should expect to feel that the overall musical texture is going somewhere” (Wishart 1996, p.116). It is possible to interpret polyphonic music as interactions of individual musical subjects where hierarchy, power and privilege are present in the formation of the musical material (Witkin 1998, p.15).

Truax states that “every moment in a composition presents a holonic 'drama' in that we are given either elements that are integrated with each other, or which strain against each other, or some combination thereof” (Truax in Filimowicz/Stockholm 2010, p5-12). Acoustic images can be said to emerge and fade out of this narrative in part or whole, either struggling against their context or surrendering entirely to the whole (Filimowicz and Stockholm 2010, p.5-12). Counterpoint can also be seen as 'thinking multi-dimensionally', having the layers playing together, receding and coming back, which in itself creates a sense of gesture and is essentially narrative. Wishart suggests that evolving streams may be gesturally articulated, and that one may coordinate the gestures between the various parts in such a way as to create a contrapuntal structure (Wishart 1996, p.117). Gestural morphologies create counterpoint in a work on a sonic level and in a semiotic sense. The sonarratives in this thesis consist of extensive layering, with these layers in a flux of contiguous and contrapuntal behaviour. This

dynamic structures the sonarrative based on a sonic and semiotic response strategy developed in the creative process of the composer.

3.5 NARRATIVE PATTERNING AND MAPPING

The author as composer works from originating sounds to sonic objects that signify in a context with other sonic objects by perceiving sounds as sonic tokens . These create metaphor and either refer through signification to gestural actions or establish a context through texture. The composer adopts a listening role in order to explore sonarrative potentials that suggest further transformations or superimpositions of sonic objects. This means there is a strong *narrative patterning* to engagement in this compositional process. This can be anything from tweaked repetitions to the phenomenon of *Chinese whispers*, wherein the same information is relayed with progressive corruptions. The more the story is told, the more alterations are added, the less the story represents the original, and the bigger the story gets.

Pattern is understood here both as an arrangement or a sequence regularly found in comparable objects or events, and as a regular and intelligible form or sequence discernible in certain actions or situations. The patterning of thought is both physical and cultural, being therefore also gestural. Pattern and narrative work together; subject becomes the expression of the composer's mind. Patterns in the narrative are likely to become patterns in the form (sonarrative). Patterns of sign become the contextualising of subject; the morphogenesis of musical form, which suggests the morphogenesis of gesture.

Verbal descriptions constitute a necessary part of gesture entries. Several strategies are used to achieve a discursive representation corresponding to the graphic one. They most often take the form of embedded micro-narratives. On the one hand, movable parts are construed as actors tracing various paths toward their goals and, on the other hand, the gesturing agent is positioned in a hypothetical standard situation. In general, coordinated movements of micro-actors bridge the distant points of “intended” trajectories and these movements are encapsulated into minimal narratives

which purport to represent the meaning of the gesture in the context of its current use. Furthermore, an etymon is often provided by relating the gesture to an assumed deeper history, a macro-narrative through which concrete, practical actions evolve toward more abstract, metaphorical or ritualistic patterned behaviour.
(Bouissac, 2011, p.3)

What Bouissac communicates here is important to how and why gesture is interpreted by this thesis, and its role in creating narrative. Narrative is fuelled by movement; movement is part of a pattern, or is patterned in its own structure. New structures are made up of patterns that not only bind works together but also play on the elasticity of concepts and ideas. A pattern is a model of how well the individual elements interact through tension and release, ebb and flow. Most processes involved are susceptible to becoming patterned in some way. If a pattern develops, it usually means a coherence of materials observed, meaning that there is something about the material that seems to be working together, or working well when mapped to other material. One finds patterns in narrative because one's thoughts are patterned. Communication in everyday life is a patterned schemata. Nature is made of patterns, and nearly everything that one does as a human being involves patterning to some extent. That said, patterns in life are not always obvious, usually because one is *in* the pattern, a *part* of the pattern. One can be so well practised in one's patterns, that one is no longer conscious of them; this is where pattern becomes ritual. Recognition of patterns, whether clichéd or original, is an important aspect in the development of the accompanying body of work.

One way to investigate the sonarrative structure is with a mental map, a conceptual score that can reveal patterns and potential structures that might otherwise be overlooked, which can aid in the temporal and spatial distribution of sonic objects and various other compositional processes. This narrative map does not have to take the form of a grid or even

a drawing, though this exercise is not ruled out. Narrative mapping is a means of structuring and controlling narrative in a composition without the sonarrative becoming programmatic.

3.6 The Ambient Novel

A purpose of this thesis is to create particular sonic worlds, in which signs pointing toward a physical experience become the blueprint for a sonarrative. In his article *The Ambient Novel* (2001), Rino Breebaart proposes a rethinking of the way novels are read, and suggests ambient music as a comparison. This section will attempt a fusion of both Breebaart's and the authors ideas.

The production of meaning in a novel involves working with the resistance or incompleteness of meaning — a writer presents detail in such a way so that a reader aids the production of meaning, he is engaged in the perception of relations which are not explicitly spelled out but intimated, through their contiguities or secondary effects. These effects make an intimation real, physical. Complexity of meaning originates in simple relations. Often the effect of what is left out or absent, or mysteriously incomplete, is the truth of a representation.
(Breebaart 2011)

Similarities with the processes outlined in this thesis are evident. Due to the nature of acousmatic music, the perception of relationships is not made explicit but instead is contiguous through acoustic association. The secondary effects that Breebaart writes of seem similar to the use of source bonding in this thesis, the gestural interpretation of movement, and the counterpoint of sonic objects in the composition of sonarratives. It is possible to perceive resistance or incomplete meaning in the listening and composing of works through engaging/not engaging with physicality. This can be exemplified by the transitions of gestural passages to movements that are more textural. In the case of the novel, perception potentially relates formal structures and narrative times to implied novelistic spaces and affects, where spaces allow for the complexity of a novel's varied meanings and generate a conditional ambience for ideas to take root. This is implicit in the more textured passages of the related

sonarratives. “The ambient novel has a primal dialogue of gesture, physicality and incomplete meaning. Its narrative is free to facilitate a unique temporal motivator or organically complex drive” (Breebaart 2011).

Breebaart’s ambient novel resonates strongly with attempts to link physicality and gesture to narrative content in this thesis. It has a generative force of initiation in and through a field of opposites and resistances. It has a force of duration, maintenance and movement, of flow and continuity. It has a force of closure, resolution or limitation, a particularity of meaning towards which it must move, like a finality. “The ambient novel initiates a reader-based immersion from outside the established code of character-plot and reaction, and their commonly held limits and subversions. And hence it is an invitation to interact, through reading, with the approach to physicality, to immerse in the writerly field of ambience, time and desire — the conditions of spatial being” (Breebaart 2011).

Through the progression of gesture as interpretable material, cohesive links are made to the physical world and its association with the reader or listener. Through spatial, topological and gestural features, physicality is superimposed on sonarrative discourse. Just as in a good novel, there is the potential in compositions for multi-layered discursive meaning, complex inter-relationship between fact and fiction, between action and no action.

CONCLUSION

This chapter justified the relevance of metaphor to sonic works, particularly acousmatic music and the creation of sonarratives. In the associated works, sonic objects as sonic tokens and gestural sonic tokens are collectively organised through metaphor and the relationships of signs to each other by way of the listener's imagination in a sonarrative framework. This is encouraged due to the possibilities that compositions can create narrative due to temporal

sequencing. Human experience is organised into meaningful episodes by way of cognitive and semiotic processes. A sonarrative is hence a coherent expression of signifying sonic objects in a continuum. Narrative intelligence involves recognising and interpreting sonic objects as gestural sonic tokens, therefore signs that generating narrative.

In a more general sense one can examine patterns, that is, those arrangements or sequences regularly found in comparable objects or events. Narrative patterning involves progressive, cyclic or iterative processes or forms. One finds such patterns in narrative (sonic or otherwise) because all communications are patterned.

This chapter relates these concerns back to Smalley's formulation of gesture and texture, both closely related through narrative. Sonic objects that contrast through their interaction in a common space are contrapuntal and hence gesture-forming. Gestural signifiers organised over time create narrative. In comparison, sonic objects that are associated through proximity with each other are contiguous and hence texture-forming. Texture can be perceived as non-narrative, though still necessary to support and frame the narrative. The following chapter will apply these concepts to a detailed examination of the composer's body of work.

CHAPTER 4: DISCUSSION OF BODY OF WORK

INTRODUCTION

This chapter will discuss how the research presented in this thesis manifests itself in the composition of three sonarratives that make up a body of work: *Python in a Toy Box* (2009), *Urvogel* (2010) and *Nexus Licentiosus* (2011). The first section, 'Examples of Methodology', explains how sonic material is selected by recording context, timbre, forms or relationships to the processing methods used. The composer fills the sonic space with these sonic objects, paying particular attention to their innate textural qualities and energy content. The affordance of the token, its facility to take on a given 'role' in a narrative, is continuously evaluated in respect to the signifying relationship of the object in context.

Section 4.2, 'The Title Signed' explains the importance of naming sonarratives as the first stage in establishing a semiotic engagement between the potential listener and the composition. The title, through ambiguous suggestion, acts as a form of meta-sign, intentionally thought-provoking and designed to draw potential listeners into the music. The title is, in effect, the first foretoken encountered in the sonarrative.

Sections 4.3 to 4.5 explicate how this research is reflected in the three sonarratives that form the body of work under discussion. In each case, a general description will be presented, in order to provide an initial insight into the creative ideas behind the sonarrative. There is a certain coherence to the sonarratives as a collection, with many of the same concepts and mechanisms used in each. Instead of repeating explanations for each sonarrative, certain indicative examples that demonstrate the crucial aspects of this thesis. The sonarratives will be presented in chronological order, based on conception rather than completion.

4.1 EXAMPLES OF METHODOLOGY

On initiating a new composition materials are gathered and arranged in terms of similar qualities, these arising from either the context in which they were recorded, their innate timbres and forms, or attributes of the digital processing they have been subject to in the design stage. This material is then used to fill the compositional space, intentionally saturating it, that is, filling it to sonic capacity, as the composer judges it. At this early stage sounds objects are contributed predominantly for their innate textural qualities individually or in relation to others. These sustaining textures underpin the more salient gestural material that will develop. Furthermore, certain sonic objects are used as place holders for structure yet to come, rather than as immediately useful compositional material.

The compositional process thus involves placing sonic objects in proximity, sequentially or layered, in a temporary sonic space in order to form aesthetic judgements as to how they relate or react. In other words, in order to examine a sonic objects potential in a composition, it must be heard in interaction with other sounds and in a particular sonic space. This approach lets the composer judge from an early stage how much energy a sonic object has and how much space it will require. These terms being used in relationship to the perceived physicality as discussed in earlier sections.

In this stage of the compositional process the semiotic is of primary importance. When auditioning materials, the composer listens for the affordance of the sonic objects as sonic tokens, signs of potential 'talent' that might allow this object as token to take on a role in the sonarrative. To extend the metaphor, the composer is listening for potential protagonists, for the unusual, the quirky, for attitude. The selected material should ideally be strong enough to stand on its own and have the potential and quality to take on additional

signifiers. A well-crafted sonic object should have suggestive ability relating to the sonarrative. The amalgamation of such sonic objects perceived as sonic tokens creates a sonic signscape (See Chapter 1) arising from a particular use of gestural attributes as derived from source bonding. The relationships the sounds have with each other and the relationships they have with the acoustic space generate narrative.

The perception of signs is part of being simultaneously composer, listener and narrator. The awareness of these signs engenders metaphor and potential narratives in the process of composition. The composer perceives different levels of signification in the works and consequently is aware of the potential for multiple interpretations and abstract variations thereof. The composer works within different levels of semiotic intelligence, which rely on a sensitivity to interpreting such signs.

A method used here starts with identifying the possible perspectives of the selected materials: the potential percepts in the spatial distribution of the materials and the forces behind them. Sub-layers are developed by examining the materials from different spatial perspectives i.e. foreground and background. A sound placed in the foreground takes on a completely different role to a sound placed in the background. The foremost sound plays an equivalent role to that of the protagonist in a potential story. Through the shifting of focus from foreground to background, sounds and their salient points are carefully proportioned and the strengths of sounds are manipulated. “Developmental movement from symbol to weaving symbols into intricate narratives represents the successful integration of a complex array of semiotic processes and the achievement and possibility of community and communion” (LaMothe 2005, p.111). This communion is with the listener. The narrative is transferred indirectly in the form of a sonarrative, since the narrative behind the compositional process is not disclosed. Thus the listener must engage in conjecture and interpretation, intuiting narratives as LaMothe describes (LaMothe 2005, p.115).

4.2 THE TITLE SIGNED

Some composers wish to keep their titles empty of information, preferring generic names and numbers, for example 'Acousmatic 1', 'Acousmatic 2', etc. The objective of such titling might be to preserve a blank canvas for the listener's imagination, so that only the sounds themselves are material for interpretation. This composer prefers to use titles as the first stage in establishing a semiotic engagement between the listener and the sonarrative. After all, the title is often the first sign of the work that the potential listener encounters. Thus it is of particular importance in defining the signscape.

The reduction of ideas, processes and materials to just a few suggestive words is an important part of the presentation, a way of capturing initial listener interest. The titles of compositions are more than just labels for the piece, they quite often denote the concept. This composer engages in poetic use of language in both the naming and in any descriptive notes that might later accompany the piece. In a radio conversation between John Cage and Morton Feldman, the topic of describing compositions and creating explanatory notes was discussed. Cage said “if you are going to have notes of explanation, I think the notes should have at least some of the ambiguity of poetry, so that one wouldn’t know exactly what they meant. In order that in reading them, the reader would somehow come to life and be in a position to deal with the music” (Radio Happenings V, conversations with John Cage and Morton Feldman).

This approach forms an essential part of the presentation of these works. The title, through ambiguous suggestion, acts as a form of meta-sign. It is intentionally thought-provoking in order to convert potential listeners into listeners, to draw people into the music. It begins the process of creating the sonic narrative. Further, it acts to contextualise the music

in order to aid its appreciation. “Description can open the ears to unknown aspects of the music” (Leman 2008, p.6).

And this has an effect not only on the listener. When chosen early in this process, a title forces the composer think about materials, characters, actions and spaces in particular ways. A title acts as a constraint that may expand, reduce or morph the piece itself. However tentative, the title as sign has an effect through signification on the working processes and on the sound material itself. Changes to the title reflect the currency of change in the process of composition.

Thus the titles chosen for the sonarratives are a crucible in which both the composer and the listener can explore expectations and foretokens in the form of symbols and signification. The most obvious example of this was *Python in a Toy Box*, unique in these sonarratives as it was composed from the title, thus generating a sonic palette based on the quietude of terror. Although this makes the sonarrative appear somewhat programmatic, and in one sense the name denotes the concept; this piece was composed from an abstract process that involved the juxtaposition of physicality, sign, metaphor and narrative inspired by the title.

4.3 PYTHON IN A TOY BOX (2009)

Python in a Toy Box was premièred at a Soundings concert in Limerick, Ireland in association with the CCMCM (Centre for Computational Musicology and Computer Music, University of Limerick). This sonarrative is loosely based around the idea of a 'family' of gestures. Parental gestures; strong, influential, authoritative gestures give guidance and direction. Infant gestures are more playful and sometimes random. *Python in a Toy Box* reflects on the relationship between this family of gestures and how they influence each other and relating elements such as musical direction (forward impetus), structure of musical elements/motifs and time. It also focuses on how more discreet and playful infant gestures, through nurturing, can grow (slowly or quickly) through the family to become as influential as their parents, or even evolve to become direction/structure/time. It also touches on the fact that although infants cannot always express opinion or change or influence people consciously, infancy demands nurturing, infants demand time, and this can reflect on the energy/direction/structure and time of the family.

This sonarrative treats sounds as gestures in an acousmatic environment. The gestures have a particular 'attitude' that have the potential to dictate the roles of other sounds contiguous to them. The main protagonist in the piece is a physically modelled pseudo-instrument that was designed to create gestural sonic tokens in the confines of the potential gestural space, i.e. the musical space which through narrative creates the perception of the toy box in the imagination of the composer. Example PI1 on the accompanying disc has been extracted as an example of this pseudo-instrument. The gestural sonic tokens created by this pseudo-instrument create variations on the axis of tension-relaxation throughout the work. This outlines a relationship between infant and parental gestures.

The composition is constructed around the premise that the sonic objects, through their gestural displacement, have the potential to 'jump out' at listener at any given moment. For example, the infant gestures could 'tantrum' in order to tease out a corresponding reaction. When this occurs, the reaction is interpreted as parental and authoritative. The title of the sonarrative invokes a different metaphor. The python in this toy box is a curious snake whose movements suggest investigating something for the first time. Hence the title intends to ready the listener for the gestural potentials in the piece (As Chapter 4.2 explains).

The listener, through curiosity, might feel encouraged to engage in source bonding when interpreting *Python in a Toy Box*, as part of the natural tendency to discover origins, uncover causality and make sense of the sonarrative presented. An example of one way this was interpreted by the composer as listener is through the percussive 'stone in a box-like object' (sonic object SO1 on the disc) that taps around the sonic space, mapping out the toy box before coming to rest through a series of decreasing and narrowing rattles and shakes. In the imagination of the composer this sound is like a stone being dropped on a false floor in a boxy room. SO1 begins as the stone-like sound at 0:30, finishing at 2:07.

SO1 is then broken down further to three tokens marked SO1A, SO1B and SO1C. These create similar gestural patterns. When played together, the combination of texture, resonance and amplitude allows the composer to interpret a sense of which might be the "heavier" or 'larger' of the three, by comparing the imagined dimensionality of the sounds. This relates directly to the earlier discussion based on Benthall and Polhemus, where the listener's body provides a benchmark for measuring and apprehending the world. The sound is metaphorically perceived as a physical object. SO1 is a sign system where the signifier is the sonic object as token and the signified is the imagined source.

Source bonding relates the sonic objects within a composition (intrinsic) to apparent or imagined sources (extrinsic). This allows us to make a coherent interpretation of the context of each sound. When interpreting the physical differences between SO3 and SO2, it is also imagined by the composer how much muscle tension would be required to grip and lift each of these sonic objects if they were physical objects in a dimensional space. SO3 is perceived as being able to be picked up and dropped easily with one hand, whereas SO2 might require two hands. Although this might be a far stretch of the imagination for some, the important point is that the relationship of proprioception, movement and gesture to these sonic objects as gestural sonic tokens plays a part in how the composer employs them musically. The imagined grip on the sonic objects is interpreted as physical effort and this directly influences how they will be positioned in the sonarrative.

The 'thinking body' conceptualises the claim that sensation, motor functions and cognition are distributed functions of the body, in interrelationship with the mind. SO1 is an example of where the superimposition of sensory experience onto sonic objects can create narrative. If one hears the sound as a stone-like object that has fallen and come to rest, one must then assume it fell from somewhere. The taps that appear to map out the space at the start of SO1 are interpreted by the composer as being of the same nature as the dropped object. This is perceived by him through the acoustic dampening when the 'thud' of the sound maps out the acoustic space. This narrative line is inferred by relating the sound to a possible physical relationship to other (perhaps unheard) objects, by contextualising it in acoustic space and by relating it temporally to causes or effects. This is an example of how meaning becomes fashioned in the process of creating a sonarrative.

In *Python in a Toy Box* the sources of sounds are very abstract with little or no obvious referent, this makes them often difficult to imagine; SO1 has been used as an example because it is the easy to demonstrate the composers understanding of source

bonding. In the tonal and melodic aspects of the composition, this process is more complex, in part because the potential bondings do not evoke any traditional instrument. In these cases, the referent posited may be real but is more likely to be imaginary. For example the psuedo-instrument P11, the main protagonist in this sonarrative, might suggest to some an organic instrument utilising air, but to others an entirely electronically-produced sound.

4.4 URVOGEL (2010)

Urvogel was presented in 2010 at the Irish Chamber Orchestra (ICO) building in University Limerick as part of Contemporary Music Ireland: New Music Marathon and again in 2011 at the Music Under The Influence Of Computers (MUTIOC) Visions Festival in San Diego. The composition of *Urvogel* utilises many strategies but has as its focus a use of sonic objects as gestural sonic tokens that create counterpoint. Gesture in music stems from a generic level of perception, where it is tied to gestalt perception, motor movement and mental imagery. Gestures, accordingly, are rich gestalts, that combine auditory information (hearing and sonic “movement”) with implied visual information (imagining and movement in the visual field) and somato-sensory information (sensation and bodily movement). At a higher level of cognition, gestures are organized in groups and sequences, leading to musical form and narrative. *Urvogel* was composed through exploring the potential of gestural counterpoint in contiguous sonic objects and thus investigating how sonic objects perceived as gestural sonic tokens become foretokens that present possibilities and prospects in the development of narrative, in both the micro and macro levels of composition.

Urvogel was composed under the influence of two developing narrative ideas; a body bound, and the attempts of a bird to escape its enclosure. The name of this sonarrative refers to the imaginary 'first bird'. These narrative cores were developed through connection to metaphor, in order to develop a sonic architecture for the specific sounds. The musical space

refers explicitly to extra-musical associations. For example, the opening movement up to 1:21 was described during composition as a damp and dark space, perhaps a warehouse. Langer notes:

The essence of all composition—tonal or atonal, vocal or instrumental, even purely percussive, if you will—is the semblance of organic movement, the illusion of an indivisible whole. Vital organization is the frame of all feeling, because feeling exists only with living organisms; and the logic of all symbols that can express feeling in the logic of organic processes. Its not just what a piece says, its the way the you say it!
(Langer 1953, p.126)

Consequently, the ideas used in *Urvogel* can be perceived as narrative maps. But this does not mean that the finished sonarrative should be seen as programme music, since the narrative maps are primarily of use to the composer, as a means of constraining a developmental processes. Neither this nor the other sonarratives are presented to the listener in a straightforward programmatic manner. In *Urvogel*, the composer's narrative is realised through contiguous and contrapuntal decision-making in relation to the materials. The sonarrative was developed by exploring the interactions of those quasi-narratives inferred by the materials and their movement forms. The sense of struggle that is presented in the opening movement exemplifies how gesture can be interpreted from a personal sensitivity to movement as an integral part of the physical experience. This is a clear example of Smalley's 'gesture-carried' music (Chapter 2.4) in that gesture drives the narrative forward.

Given the role of source bonding in acousmatic music, the engendering of subject or narrative relies heavily on crafting notions of physicality in sound. This craft is the sum total of all means used to draw the audience into a deep involvement with the music, to hold that involvement, and to ultimately reward it with a meaningful sonic experience. The opening movement of *Urvogel* was designed with exactly that intention, utilising an embodied understanding of movement of sound as relating to the physical experience.

The materials, mostly organic in nature, ranging from unprocessed to slightly processed recordings, map out both gestural time and suggestive space. Before 1:20 they evoke a confined, sheltered and physically constricting space. Through counterpoint and symbolic transpositions, the impression of a macro level body with morpho-kinetic gestures is created. In other words, though all of its sounding parts are constricted, there is a strong sense of something larger trying desperately to break free of its entrapment. The leather, zippers and fastener sounds function as gestural sonic tokens that form in their interactions and superimpositions motivic themes. This demonstrates the use of gesture as interpreted in this thesis to form narrative through a semantic logic of temporal structuring. The gestures are sculpted in a goal-orientated fashion (as suggested by Wishart 1986) and additionally exemplify in a rich superimposition that results in a gestalt (as Kuhl 2008 has it).

From 1:37 the narrative progresses with a struggle, the sonic objects perceived as gestural sonic tokens convey a state of confusion and urgency. Small homogeneous pauses and topo-kinetic gestures are intended to hint at confusion and frustration as they contribute to building tension in the narrative. The micro-level sounds squabble as they compete for macro-supremacy. This intensifies after each musical pause, creating the impression that the environmental space is now beginning to close in.

From 4:07 the slow, sporadic, delayed sounds map out a new gestural space in an environment that is intended to be a little unsure, though the narrative subject is temporally at ease with itself and its environment. The gestural space has increased significantly and the sounds take time to regain energy. It is intended that this gives the listener time to digest and maybe question the sources of materials by letting the subject (the sounds as a collective which portray a macro character) 'time to breathe'. After some playful interactions, *Urvogel* builds to a first climax from 5:43 to 7:27 and finishes at 8:00.

The next example runs from 8:00 to the salient gestural character at 9:40. In this part of the piece the subject of the narrative strives towards freedom, considered relative to the claustrophobic, constrained and confusing beginnings and how these evolved in the first three sections. The structure is less occupied with gesture, instead partaking more of texture and hence acting as ground to what came before. This textural undercurrent does not present as much narrative stimulation, but instead provides space for reflection. This demonstrates the claim (Chapter 2.4) that gesture provokes narrative, while texture can be perceived as non-narrative. The final movement of the work starts at 9:40 and provides a climax that represents the freedom of both the body bound and the trapped bird. Again, this is conveyed by way of metaphorical connections between the space in which the imagined subjects are imprisoned and the musical space created through gestural sonic tokens. At 11:47 the sound of street life and pigeons, signifiers of 'outside' and 'freedom', bring the piece to a close.

Urvogel explores the relationship between contrapuntal (gestural) material and the more contiguous (textural) material in relation to developing a sonarrative, as discussed in Chapter 3.2. It was determined that both aspects are important to the framing and composition of a sonic narrative in which tension and expectation are created and dynamically manipulated. Examining these aspects highlights issues relating to fluency in the development of sonarratives and the presentation of an integrated sonic experience. A balance of gesture and texture is essential to this composer's work.

4.5 NEXUS LICENTIOSUS (2011)

This sonarrative stems from ideas based on 'the mechanics of phone sex'. *Nexus Licentiosus* in this context means a promiscuous connection. The proposition developed in this work concerns how sonic objects as sonic tokens and gestural sonic tokens connect and form narratives. This involves looking at how micro elements connect to become more significant

motifs, how motifs become movements, and, moving up the structural scale, how movements connect to become macro structures, for example; the piece in its entirety.

In a contiguous space, all objects are considered readily associated. In the act of phone sex there are two main spaces, the sex actor's space and the client's space. These are connected by a third and common space, the telephone line. When a connection is made, the two spaces become extensions of each other and the characters in those spaces become contiguous. In addition, one can consider them to be related in a contrapuntal fashion, since the sex actor and the client are related through an inequitable monetary exchange, the purchase of a sex act. Although the two are contrasted in this way, they are also destined by this exchange to become engaged with each other, even if this engagement is, to a degree, imaginary. This situation appeals as a basis for composition due to this structural relationship and the fact that the simulation of the act of sex must engage the imagination in manners both ephemeral and essentially physical. Phone sex is also an acousmatic process in which different forms of source bonding are necessary in order for the participants to imagine how the other appears and feels. Gestural interpretations of the sounds are entirely possible, if not necessary.

Nexus Licentiosus leads with a constant sine tone that is shadowed by a darker undercurrent portrayed by an obstinate sub-bass. Narratively these are thought of as gendered actors: the female being portrayed by the sine-tone, the male by the sub-bass. A connection between the two is clearly marked at 1:02 where the sine tone splits spatially into binaural beats, which reflects an instability in the undercurrent. In this opening movement, the sounds act as foretokens, signs of potential things to come. As the composition progresses, a gendered interpretation of the sonic objects is developed. The perceived feminine sine tone develops into flirtatious beats, connecting with the more masculine undercurrent at 1:03. This is evidenced by the fact that both the sine tone and the

undercurrent are changed by the encounter, creating a contrapuntal intertwining of materials which were once perceived as separated in space. The connection results in the two sounds having the same gestural patterning; a certain engagement is perceived. The first movement finishes at 5:29 and completes the initial characterisation of the narrative.

Pattern is an arrangement or sequence regularly found in comparable objects or events. As explained in Chapter 3.5, one finds patterns in narrative because all communications are patterned. In *Nexus Licentiosus*, narrative patterning is demonstrated through the use and re-use of the sonic motif (SM1) and the fluttering sonic object (SO2). These sonic objects are redesigned and reimplemented throughout the sonarrative, creating progressive and cyclic narrative patterning that twists the structure and its gestural form. Here one should recall the argument based on Godøy and Leman that developed the gestural sonic token as a musical unit that conveys gestural information necessary for the formation of sonic narrative (Chapter 1.4).

All of the sonarratives in this chapter are ultimately demonstrations of how meaning is fashioned by the composer through the metaphoric and narrative intelligence that arise from treating sounds as sonic tokens. The motif SO4 from *Nexus Licentiosus* is an example of a series of gestural sonic tokens separated by silences. Such gestural sonic tokens, when situated in the sonic space, become foretokens that build narrative. Foretokens are sonic signs that create anticipation by signifying potential futures, a necessary result of the diachronic nature of sound. This is exemplified clearly from 7:20 to 13:00, an example in which the sonic tokens (SO4) act as the main protagonists in the sonarrative. In describing them as characters the composer is drawing upon Anderson's 'figurative listening', as discussed in Chapter 3.3.

The discussion of *Urvogel* in the previous section considered the relationship between gesture and texture, narrative and non-narrative. This also plays an important part in *Nexus Licentiosus*. From approximately 8:40 the piece moves in and out of gesture-carried and texture-carried modes, depending on which elements the listener pays the most attention to. By 9:42 the texture-carried nature dominates and slows the narrative pace of the piece to 12:30. Here sparse gestural material barely maps out time; the perception of forward movement is reduced. This changes again at 12:30 where the motif SM1 is reintroduced and staggers time in a disjunctive fashion to the end at 16:02.

Nexus Licentiosus is composed based on the fashioning of meaning through gestural sonic tokens in this work. This meaning presents itself in the form of a sonarrative inferred from the sonic objects through mental associations with previous embodied experience. The composition can thus be said to be a result of a *narrative intelligence* that creates sense and fluency in a state of compositional decision-making. Narrative intelligence involves recognising and interpreting sonic objects as sonic tokens and gestural sonic tokens, thus sound-as-signs generating narrative. Narrative strategies are a web of cognitive and semiotic processes that organise human experience into meaningful temporal episodes. In *Nexus Licentiosus*, as in all the sonarratives presented in this chapter, sounds can signify various aspects of the human experience, depending always on their context and the listener's application of imagination. The compositional practice of sound-as-sign chooses sonic objects on the basis of how well they function as signifiers on the narrative and musical planes. This is exemplified throughout the sonarrative, particularly in the movement from 12:30 to the ending at 19:56.

Overall, *Nexus Licentiosus* demonstrates why it is appropriate to discuss sonarratives in terms of metaphor. First, the nature of sound as being invisible and intangible forces us to discuss it metaphorically. Second, acousmatic music deals with abstract sonic objects

divorced from causality. Third, gesture assumes a metaphorical relationship between sonic objects and their cause.

Breebaart's 'ambient novel' provides a parallel expression of how gesture relates to narrative. *Nexus Licentiosus*, *Urvogel* and *Python in a Toy Box*, when perceived as complete wholes, demonstrate the relationship the composer's work has to the ideas presented in Chapter 3. These works should therefore be listened to as complete wholes to perceive the composer's relationship to Breebaart's ideas.

CONCLUSION

This thesis is rooted on two historically prevalent doctrines. *Man is the measure of all things* (Protagoras) situates human experience in relationship to the body: proprioception, movement and gesture. The physical gestures that derive from the body include musical gestures, and these can be extended by metaphor to sounds that do not have a direct connection to a generative source. Second, the importance of storytelling to human culture is reflected in the myriad narratives created in and around daily life. Applying narrative patterns to music is a natural process, indeed one that is sometimes almost impossible to avoid. This thesis begins and ends with a personal sensitivity to the organisation and manipulation of sounds as human constructs, built always on the composer's experiences as an embodied agent. The compositional process outlined here returns acousmatic music to the body and physical experience, as a means to rebuild, thus compose, from the smallest of percepts. This is achieved by way of a particular approach to organising a sonic experience, similar to that of LaMothe's modes of organising experience, as outlined in the introduction. This conclusion will summarise the key concepts from the body of this thesis and then reflect on the personal process of the composer and how it has been informed by his work on this thesis.

This thesis began by following Schaeffer in his useful terminology, initially adopting 'sound object' as a basis for the developed terminology throughout this thesis, discussing a sound component that can, on some levels, for some listeners, be taken as a unitary whole. This was done while maintaining a critical stance to the idea that reduced listening can divorce a sign from its original referent. The compelling and unavoidable process of source bonding continuously evokes possible causal events, creating chains of signification. Manipulating these in order to expand the potential of sonic narrative becomes a rich methodology for the acousmatic composer.

In the acousmatic realm as opposed to the world of everyday listening source bondings may be imaginary, since the listener cannot rely on experience to reference sounds that may be unlike any they have heard before. Additionally, each listener has their own personalised source bondings, since this process relies on individual experience, memory and cognition. These variables create a rich semantic environment which is here termed a signscape. The implication is that a given piece can never be under the control of the composer, since interpretation of *sonic objects*, (a term introduced to differentiate from Schaeffer's meaning of the *sound object*) and their signification will be varied and unpredictable. On the one hand this possibility can be embraced. On the other hand, careful control over the signscape can constrain the listener to a field of possibilities in line with the composer's intentions.

Mental representations of sonic objects are the result of perceptual processes that connect sounds with embodied experiences. In the compositional process discussed in this thesis, mental imagery due to imagination is the medium by which meaning is fashioned. Without a gestural imagination one could not relate concepts such as these to embodied experience. Applying the dictum *man is the measure of all things* to the domain of composition forces us to realise that objects too must be measured against our own reality on a human scale. For this purpose, the concept of the *thinking body* was proposed, presenting examples of spatial and material metaphors.

Several authors were used to contextualise gesture within the domain of music. From Leman one learns that the first-, second- and third-person perspectives must all be used to build an appreciation of musical gesture. The compositional practise here is, in the terminology of Smalley, strongly gesture-carried. Incorporation of the physical enables temporal structuring leading to the construction of narrative. As listeners, our embodied knowledge of proprioceptive and motor activities act as constraints on interpreting music.

It was emphasised that gesture becomes a rich conceptual tool precisely through its heterogeneous nature and scope of potential meanings. Rather than attempting a reduction of terms, this work embraces the full range of meanings and interpretations of gesture, applying the logic of gesture as sensitivity to movement in the physical experience, to movement in and of sound. Thus a process of composing through source bonding, gesture and narrative was developed. Creativity in this context means creative choices of inclusion and exclusion. The perception of order in sound organisation relies on an intuitive understanding of the sonic experience in human terms. Nonetheless, compositions can be presented as rich sonic experiences that have the potential to mean many different things to many different listeners.

The thesis has demonstrated the specific mechanism whereby this experience is built. Sounds are interpreted as *sonic tokens* (sound-as-signs) and further elaborated in cases where gesture as it is understood by this thesis is taken into consideration, resulting in the thinking of *gestural sonic tokens*; the smallest meaningful units of gestural information in a sound sequence that has narrative value. These act as signs from which metaphor can be derived, based on individual perceptions of the meaning of the sonic objects in the context of the composition. This process creates a *sonic signscape*, a sign system in which the signifier is the sonic token and the signified is the imagined sound source. Being contiguous, these objects can be perceived as a moving sonic mass, both texture-forming and non-narrative, though still necessary to support and frame the narrative. This compositional practice takes into account the tension between gesture and texture, foreground and background, at each stage of development.

When used by the composer as *foretokens*, such signifiers build sequential structured relationships that form a sonic narrative. The term *sonarrative* was created to describe such a sonic account of contiguous events that create a coherent whole. The compositional process

incorporates physicality, sign and metaphor to organise a meaningful sonic experience for the listener by way of such sonarratives.

The thesis has demonstrated how this process applies to the sonarratives created here. They are *Python in a Toy Box* (2009), *Urvogel* (2010) and *Nexus Licentiosus* (2011). These works affirm the belief that engaging in the logic of gestural thinking can provide a coherent explanation of our response to sound in terms of physical characteristics of the real world, and our own experience of gesture. One engages a compositional subject in semiotic and metaphoric behaviours in order to engender narratives. The compositional process undertaken in this thesis is a sonic development based on the metaphoric imaging of factual and fictitious aspects of the physical experience through a personal sensitivity to physicality. In the accompanying sonarratives there are signs for those who might want to understand, there is a sonic experience for those who do not pursue analysis, and narratives that are left open to conjecture.

It has been established in detail that the potential of narrative in acousmatic music, certainly in the body of work considered here, lies in its ability to connect with people on a physical plane, established by the composer through gesture in musical space. This thesis is therefore intended to encourage the reader and listener to be aware and sensitive to physicality both in terms of real acoustics and source bonding to real or imaginary actions. It should be emphasised that this thesis is also intended to encourage the reader and listener to engage on the metaphysical level, to create imaginary sonic worlds by way of *sonarratives*.

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