Critical Theory
and
Audible Feedback Systems:

a textual construction of acoustic space

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for the degree of Doctor of Philosophy

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Declaration

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

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Abstract

In this project I set out to devise a series of object specific audible feedback investigations founded in Derridean deconstructive terminology. The parameters for this study were drawn from terminology as it existed in the time period of mid to late 1960s, the era in which Jacques Derrida first published the texts that became the foundation for the theory known as deconstruction. I begin with specific elements within this theory defining my investigations into the physical objects. I then translate the findings from these examinations back into the theory via relevant science of the era from which the deconstructive texts were published, specifically advances within cybernetics that resulted in the new science of systems theory. I am then able to examine these physical objects in terms of their audibility and feedback processes, based in the structures from which the theory was extracted. I do this in order to bridge the gap between the physical investigations into the recording devices, and the theory that initially instigated the project. I link the objects - tape/reel-to-reel/minidisc and dat recorders – which also stem from advances within the natural sciences of the same time period, to draw parallels and connections from these aspects of science into a deconstructive context.
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**Introduction**

In this research project I have created a series of investigations into audible feedback systems through the parameters of deconstructive theory. These parameters were drawn from Jacques Derrida’s influential 1960s texts. (Derrida 1972, 1973 [1967], 1976 [1967], 1978 [1967], 1981, 1982 [1972], 1988 [1972]).

Through the development of a series of audible feedback processes, I establish new perspectives to investigate similarities between deconstructive theory and the workings of audible feedback. I focus on objects (recording devices) to form constellations of feedback systems. I use these combinations and compositions of objects in their individual settings to interrogate areas of Derridean deconstructive practice. I contain the scope of the research within the era from which the Derridean terminology used, was developed.

Within the context of this project, feedback describes the situation when output from, or information about the result of, a phenomenon in the past will influence occurrences of the same phenomena in the present or the future. When an event is part of a chain of cause-and-effect that forms a circuit or loop, then the event is said to "feed back" into itself. Audio feedback occurs when a sound loop exists between an audio input and an audio output (Spender and Ghausi 2003). Closed circuit feedback has been a prominent feature in many early experimental electronic music compositions, as seen in the works of David Tudor (1972) and Alvin Lucier (1970).

However, while feedback is increasingly practiced in experimental music, theoretical engagements with the development and composition of feedback processes in relation to the arts are limited.

For this project I have developed a series of explorations of audible feedback systems based on elements of Derridean deconstruction. One interpretation of the workings of deconstruction when ‘deconstructing’ a text is to draw out conflicting logics of sense and implication - the object being to show that the text never exactly means what it says or says what it means.

Derrida’s writings have been predominantly concerned with philosophical, rather than literary texts. Derrida argues that philosophy – like literature – is a product
of rhetorical figures and devices. Yet what defines philosophy as a discipline is its reluctance to face this fact – it ignores the omnipresence of figural language in the texts of its own past and present. Therefore deconstruction is the process of rhetorical close reading that seizes upon those moments when philosophy attempts – and signally fails – to efface all knowledge of this figural drift (Norris 1999, Gaché 1986).

This project sets out to create a series of object specific audible feedback investigations founded in Derridean deconstructive terminology. These investigations are discussed within the context of the zeitgeist they were developed by drawing on the human and natural sciences, as well as sound art of this era.

I begin by using Derridean theory to define how I will interact with different physical feedback systems, such as old tape recorders, reel to reel recorders, mini disc and dat recorders. I set the systems in motion, monitor them, then interpret the results via the science of the era from which the deconstructive texts were published.

The outdated technology (tape, mini disc, dat) is chosen because it stems from technological advances of the era in which the Derridean deconstructive terminology was developed. The use of these systems creates an opportunity to examine the space between the physical investigations and the science of the era, such as cybernetics and systems theory, to which some of the deconstructive terminology owes its foundation.

The investigations into the physical objects is brought back through the theory from which it originated. This brings another level of circularity to the project. The project folds back on itself by instigating the project through the theory.

In Writing and Difference, Derrida links the very meaning of deconstruction to a kind of circularity, when he states;

"All these deconstructive discourses and all their analogues are trapped in a kind of circle. This circle is unique. It describes the form of the relation between the history of metaphysics and the deconstruction of the history of metaphysics. There is no sense in doing without the concepts of metaphysics in order to shake metaphysics. We have no language – no
syntax, no lexicon – which is foreign to this history; we can denounce not a single deconstructive proposition which has not already had to slip into the form, the logic, and the implicit postulations of precisely what it seeks to contest” (Derrida 1978 [1967]).
Project Outline

This research begins with an analysis of the history and theory within which I have demarcated this research project. I then divide the practical iterations of this research into five projects, narrated here in individual chapters.

In the first four iterations of the project, I work with specific terminology drawn from Derridean deconstruction. For the fifth part, I combine these four iterations in an effort to establish an analogy to the processes involved in Alvin Lucier’s composition ‘I am sitting in a room’, through the implementation of the previous iterations and their constituent parts into a hypothetical phase space.

In ‘Mapping the Theory’, I present the various disciplines and strands of theory informing this project.

- Derridean deconstruction and the environment from which it emanated.

- The history and concept of the sine wave and feedback as it relates to contemporary (1960s) Western science.

- The concept of paradigm change as it relates to developments within experimental music (John Cage 1973a, 1973b, 1981, David Tudor, Alvin Lucier and Max Neuhaus)

Through an analysis of the intersection of these fields, I then establish my theoretical and methodological space as the foundation for the audible feedback investigations as set out in the following chapters.

In Chapter 1, ‘Presence without Difference: Divisibility of the Point’, I work with core concepts of Derrida’s critique of metaphysics.

Derrida argues that within metaphysics, every origin is thought in terms of presence without difference – as an ideal moment of pure, unmediated firstness. For example, speech comes before writing, nature comes before culture, according to a logic that is both oppositional and hierarchical. Derrida’s deconstructive theory raises certain problems about knowledge, meaning and representation by asking what ultimate grounds exist, in the nature of experience.
or a priori knowledge, for those items of belief we standardly take on trust (Norris 2000a: 117).

In Derrida’s concept of divisibility, he points to nothing but the infinitely divisible point. In mathematical terms, the point is understood as the absolute unity, without dimension – it is the only true atom, the indivisible unity. However, in direct protest against the point as indivisible, he argues that the fundamental axiom of everything is the divisibility of the point. In his various works, his critique sometimes takes the form of a direct attack on the point, other times indirectly, such as using the possibilities of the French language (Cixous 2004: 62).

Derrida works specifically with the non-concept of différance to illustrate this argument, as he states “différance is neither a word nor a concept” (Silverman 1987: 294). Différance sounds the same as difference but is written slightly differently, where the difference between différance with an ‘a’, and difference with an ‘e’, is inaudible (Derrida 1978 [1967], 1982 [1987]). Whatever might be called the meaning or identity of différance, therefore, exists only within writing, which is to say also that it exists only as writing (Culler 1982: 97, Ulmer 1981).

My audible feedback investigations intend to reverse the order of this non-concept.

In this first instance of my audible feedback system investigations, I explore the idea of the visually distinct but audibly similar. I do this by using objects of the same make and model (i.e. the same physical appearance) and applying identical tuning. This results in duplicate objects that produce different sounds.

In Chapter 2, ‘Structure, Emergence and Supplementarity’, I draw on Derrida’s rethinking of the metaphysical concept of structure in terms of audible feedback systems. I examine the concept of presence being undeconstructible.

I further work with the concept of emergence, where complex systems and patterns arise out of a multiplicity of simple interactions (Laughlin 2005).

These ideas are related to the audible experiments, whereby complex results emanate from smaller processes. These are in turn part of the indeterminate nature of positive feedback.
I also work with Derrida’s notion of the supplement and the idea that what is complete in itself cannot be added to. Hence, the supplement is only able to occur where there is an originary lack.

Derrida shows that with any binary set of terms, the second can be argued to exist in order to fill in an originary lack in the first.

The work of supplementarity thus turns out to be essential to the constitution of ‘the work itself’. This reveals that without the supplement there is no ‘itself’ of the work. Further, the idea of the work itself exists only in the work of supplementarity. Thus the difference between ‘inside’ and ‘outside’ the work is rendered undecidable (Lucy 2004).

I use this notion of supplementarity in my audible feedback investigations to bridge the concepts of structure and emergence.

In Chapter 3, ‘Reversal: The Trace and Erasure of Reinscription’, I draw on Derridean approaches to deconstruction. Derrida strategically deconstructs the traditional philosophical opposition by proposing that we do not find a peaceful coexistence of facing terms, but rather a violent hierarchy.

One term always dominates the other (axiologically, logically, etc.), and thus occupies the commanding position. To deconstruct the opposition at a particular moment, is to reverse the hierarchy (Derrida 1981, cited in Culler 1982: 85). While this is an essential step, deconstruction must, through a double gesture, a double science, a double writing, put into practice a reversal of the classical opposition and a general displacement of the system. On that condition alone deconstruction will provide the means of intervening in the field of oppositions it criticizes and which is also a field of non-discursive forces (Derrida 1982, cited in Culler 1982: 86). Thus the practitioner of deconstruction works within the terms of the system but in order to breach it (Culler 1982: 85-86).

I approach this reversal within the audible feedback system by opening up the closed loop (as seen in the previous investigations of Chapters 1 and 2). I do this by extending the system through the use of microphones.
The introduction of microphones brings an external element into the cycle and reverses its flow. Furthermore, the concept of alterity is invoked by changing the parameters of the acoustic retrieval or information gathering process from being purely internal (through the closed circuit output/input system), to a widened scope (beyond the internal structures of circuitry) that is inclusive of the surrounding acoustic environment.

This second aspect corresponds to the Derridean non-concept of reinscription. The recordings keep overriding and replacing the previous sounds, while also creating a constantly shifting stream of remaining fragments in a circular process. It’s not erasing, it’s not replacing, it’s adding to and through.

In Chapter 4, ‘Iterability’, I work with the notion of iterability in Derrida’s writing. Derrida argues that because of the necessary possibility of repetition, we have signs, words, ideas, concepts and mental images. Ultimately, everything that can be contained by the notions of perception and experience.

Yet none of these would be possible without a concept of repeatability – a minimal and necessary condition of possibility – the possibility of repetition. Repeatability logically denies the possibility of an end to the series of repetitions. A mark must be repeatable in any of its moments ad infinitum. However, this does not imply infinity beyond finite existence. Rather, it implies an infinity in principle, as ground of the finite repetitions of a singular mark. The finite repetitions generate their own infinity of repetitions into the future, which is thus an inescapable absent/present moment as a necessary possibility of the repeatable mark (Lucy 2004, Derrida 1988: 117, 119).

I explore the potential and possibility of repetition in the context of the outside/inside divide. The potentially infinite redoubling or mimesis within online virtual networks is created through a large number of interconnected MySpace pages. The pages represent the majority of the overall project’s participating objects and a selection of their individual output. Each instance inhabits a single object (recording device) with several examples of its aural output.

In Chapter 5, ‘Resonant Frequencies’, I use Alvin Lucier’s composition “I am sitting in a room” (1970) as a contextualizing example. Lucier’s composition plays out a simple procedure in which the architecture of the room and the frequency responses of the equipment, shape the outcome of the piece. The piece
demonstrates the developmental process that happens every time audible feedback emerges (see Lucier 1995, Aufermann 2005).

In “I am sitting in a room”, a text is read out in a room and recorded through a microphone onto one tape recorder. The text is then played back into the same room through loudspeakers and recorded onto a second tape recorder. This second recording is then played back into the room and recorded on the first machine. This pattern is repeated so that as the process continues, those sounds common to the original spoken statement, and those implied by the structural dimensions of the room, are reinforced. The other sounds are gradually eliminated. Through this action, Lucier is able to show how the space acts as a filter and how the speech is transformed into pure sound (Kim-Cohen 2009: 186, Lucier 1995, Wong 2010). What remains are the resonant frequencies of the physical space.

Through a comparison of Lucier’s resonant frequencies and the writing-into of deconstruction, I have devised an analogy of a hypothetical phase space.

The first four iterations of the project and the local narratives they accumulated through the process inhabit this hypothetical space. This space implies the idea of ‘voices’ which feed into an already existing, albeit somewhat indeterminate or open ended, object or construct, with the intention of (directly or indirectly, consciously or subconsciously) generating resonances with components of that object/construct, or, alternatively, canceling out specific frequencies or concepts within that object/construct. Everything (all the material – aural or textual) that goes into the object/construct has its origin in the object/construct itself. As such, this process constitutes a self-generating feedback system that interacts with its environment.
Mapping the Theory

In this section, I discuss the development of deconstruction as a theoretical paradigm and the relationship between this movement in critical theory and the development of sound practices. Through this dialogue of the two mediums, I show an absence in theoretical assessment of feedback, and chart my investigations as will be explored in the following four chapters and their iterations, concluding with the final fifth chapter in which the preceding four project iterations are invoked recursively as constituent parts of a hypothetical phase space.

Knowledge Paradigms and Critical Theory

Derrida and his critics have insisted that deconstruction is neither a system, theory, method or program (Eagleton 1981: 481, Novitz 1985: 103). Deconstruction can here be understood as a theoretical phenomenon which resulted from the twentieth century’s unprecedented social changes. After World War II, as the world underwent dramatic social, political and economic shifts and processes of decolonialism, the essentialist paradigms of modernity were challenged and undermined. The nineteenth and twentieth centuries had been totalised by scientific truths and rationality, two powerful paradigms of knowledge which had embodied specific ideals about the nature of human existence since the sixteenth century. However, in the latter half of the twentieth century, new discourses exploded objectivity as an assumed knowledge doctrine, and modernity was revealed to be a constructed history of interpretations and creations (Rabinow 1984, Harvey 1990).

The ensuing influential works of Thomas Kuhn rejected the conventional idea that science progresses in a rational way, and Kuhn proposed the history of science as a series of ruptures, or ‘paradigms’, as he called them, which swept away the assumptions of the previous regimes (Heartney 2001). Kuhn’s arguments proposed early the idea of knowledge as ‘relative to’ (or ‘constructed by’) some particular linguistic or cultural framework of belief (Norris 1997: 82). Kuhn’s work was followed by the more radical views of Feyerabend who extended Kuhn’s thesis to argue that paradigms were more than just frameworks within science, that paradigms constitute the entire cultural pre-theoretical context within which theoretical science operated (Capaldi 1995: 573). These changes struck at the core of Western theoretical endeavours, and led to drastic changes in the ways in
which knowledge was now assessed and sought after (see Rabinow 1984, Harvey 1990, Anderson 1998).

Post-modernist and post-structuralist works of late modernity prioritized the skeptical inquisition of authority, assumption and convention, most specifically as they had been produced in Western textual histories (see Leitch 1992, Hanssen 2004: 280). The ‘postmodern’ was/is constituted primarily by a crisis of narratives, more precisely of the grand narratives such as the speculative narrative or the narrative of emancipation, whose function it had been to unify or legitimise both knowledge and social practice (Gasché 1988: 531, see also Donato 1973, Wilmore 1987, Shawver 1998). Within this framework, theorists built on the lineage of language theory from Arnold Guelinx, René Descartes, Baruch Spinoza, Arthur Schopenhauer, Martin Heidegger, Ludwig Wittgenstein and Samuel Beckett (see Biesta and Stams 2001). The influential works of Francois Lyotard (1984), Walter Benjamin (1973, 1978), Roland Barthes (1973 [1957]), Michel Foucault (2002 [1976], 1977, 1984a, 1984b) and Derrida (1973 [1967], 1976 [1967], 1978 [1967], 1981, 1982 [1972], 1991) in this period shifted central academic discussion towards the problems of textual representation and interpretation, problems which the dominant modernist paradigms could no longer describe. The emphasis turned to language as a primary anchor in the development of knowledge paradigms.

Contextualising Deconstruction
These works were also based in the century’s antagonisms towards language and philosophy. The key texts of Samuel Beckett had demonstrated an elaborate foray into writing which dismantled the markers between prose and poetry (Beckett 1959). Beckett’s texts resisted being interpreted and categorized, and drew attention to the very problem of interpretation itself. For Beckett, language, and the ways in which human experience is bound up in linguistics, were the primary concerns. His work was particularly influenced by Wittgenstein’s Tractatus (See Perloff 1996), which had already cast many doubts upon language by suggesting that it is somehow less pure than such perfect constructs as logic, mathematics – a certain mathematical stratum being irreducible in philosophy (Plotnitsky 2003: 98) – or silence. Beckett’s texts deliberately defied the notion of what a text should be doing, this form of generic ‘decomposition’ being his primary method of problematising interpretive protocols (Calder 1983, 2001, 2002).
Beckett’s prioritisation of language was a precursor to the significant reorientation from ‘language’ to ‘writing’ in French philosophical thought during the 1950s and 1960s. Within this movement, attention shifted from the problem of the subject in history, to an analysis of structure and language, also reflected in the increasing reaction against the intellectual and doctrinal hegemony of Friedrich Hegel’s existentialism and the relative arguments of theorists such as Jean-Paul Sartre. Hegel’s works had underpinned the historicist and humanist philosophy of the pre- and post-war periods in the twentieth century (Roth 1988, Descombes 1980). However, within this period of new French thought, a new reading of Heidegger and the influence of structuralism from the social sciences began to exercise a parallel and equally powerful influence. Together, Heidegger’s theory and structuralist agendas led to the ‘linguistic’ turn in French philosophy during this period, as seen in Heidegger’s ‘Letter on Humanism’ published in 1947, in which he was already distancing himself from Sartre’s existential humanism of the time, and turning to the study of language, what he called the ‘house of Being’ (Krell 1977, Spanos 1979, Standish 1992).

A few years after Heidegger’s 1947 publication, Maurice Merleau-Ponty, during his inaugural lecture at the College de France in 1953, illuminated the relief that Ferdinand de Saussure’s theory of the sign might offer to philosophers who sought to escape the eternal dichotomy of subject and object (Descombes 1980). This was in the same period in which anthropologist Claude Levi-Strauss proposed that the linguistic model of the sign be applied to the analysis of myth and kinship structure, his anthropological data regularly reduced to mediated binary oppositions (Leitch 1983: 16), and that Jacques Lacan incorporated Saussurean linguistics into his reading of Freud (see Levi-Strauss 1963).

By the early 1960s, the linguistic paradigm had effectively displaced the philosophy of the subject in history (Norris 1985). The word ‘language’ was now being applied not simply to verbal communication, or to the realm of the immediately anthropological, but to any complex system. It could now be argued that everything was, or was structured like, language, as structuralism became a widely-predominant theoretical framework (Johnson 1993). Structuralism aspired to an objective and scientific status beyond philosophy and ideology, and structuralist agendas sought a methodological value in their study of human beings which would be comparable to that of the exact sciences (Roth 1988). Scientific linguistics must concentrate on formulating general principles operating across entire languages (Ree 1999: 309). Structuralism offered a critique of the
phenomenological quest, from Husserl, Merleau-Ponty and their predecessors, to find the origin of meaning in the subject. Its search for meaning valued understanding over experience. When structuralism looked at what makes understanding possible, it did not look at our being in the world; rather, it abstracted language from human embodiment and searched for the rules and laws that made linguistic utterances possible (Steele 1997: 22-23).

Despite the limitations of this program, structuralism opened French philosophy to a greater degree of interdisciplinary exchange, both within and beyond the human sciences (Johnson 1993). Works from Michel Serres and Jean Piaget could be seen as reminders of the more general origins and implications of the structural paradigm. Piaget's survey of structuralism (Piaget 1970), for example, pointed to the multi- and cross-disciplinary origins of the concept of structure, of which linguistic structuralism is but one particular region or instance (Johnson 1993).

Derrida, Deconstruction and Language
Throughout the 1960s, a minor epistemic shift occurred within structuralism, or between structuralism and 'post-structuralism', with respect to the linguistic analogy. The ensuing "theory explosion", which brought with it an entire "theory industry" (Nealon 1992b: 98), involved a change in emphasis from 'language' to the more specific notion of 'writing'. Serres' description of the new Leibnizianism, along with the specific example of the science of biology, showed that it was not simply the metaphor or model of language which had become a generalized feature of contemporary discourse in the twentieth century. Rather, it was the analogy of the script (Macksey and Donato 1970).

As Derrida remarks in Of grammatology;

"For some time now, as a matter of fact, here and there, by a gesture and for motives that are profoundly necessary ... one says 'language' for action, movement, thought, reflection, consciousness, unconsciousness, experience, affectivity, etc. Now we tend to say 'writing' for all that and more" (Derrida 1976 [1967], cited in Macksey and Donato 1970).

Often referred to as both Derrida’s focus on breaking down the distinction between philosophy and literature, as well as an historically layered method for reading texts (Rorty 1984: 2), deconstruction was a major influence in the dissemination of the idea of ‘writing’, thematised in *Of Grammatology* (1976 [1967]) and *Writing and Difference* (1978 [1967]). Along with the notions of ‘trace’, ‘supplementarity’, ‘différance’, and their later variations and mutations, these texts became the most enduring elements of his philosophy.

Derrida saw writing as a symptom as much as a cause (Macksey and Donato 1970: 266). Writing destabilizes words, in the sense that it makes us aware at one and the same time of their alien frame of reference (they are words of the other or come to us already interpreted), and of the active power of forgetfulness (a kind of silencing) which it enables, and which, in turn enables us to write (Hartman 1981: xxi-xxii). He argued that it was impossible to abstract this new development – the introduction of the concept of writing – from its wider interdisciplinary context. Rather, the biologist speaks of writing and *pro-gram* in relation to the most elementary processes of information within the living cell. Whether it has essential limits or not, the entire field covered by the cybernetic *program* would be the field of writing (Derrida 1976 [1967], cited in Macksey and Donato 1970: 266).

Derrida locates his own conception of writing in a context more general than that of philosophy. As he says later in *Of Grammatology* regarding the trace, ‘in all scientific fields, notably in biology, this notion seems currently to be dominant and irreducible’. His works from this early period give the impression that the move from language to writing is a necessary and inevitable one, and the effect of a more general transformation of the modern episteme. Jean Hyppolite recognised this in the discussion following Derrida’s paper given at Johns Hopkins University in 1966, where he stated that ‘the language we are speaking today, *a propos* of language, is spoken about genotypes, and about information theory’ (Macksey and Donato 1970: 266). Elsewhere, Jean-Joseph Goux has argued that Derrida’s grammatology, with its emphasis on a certain materiality of the sign, is in fact directly influenced by recent advances in the information sciences. Goux writes;

“...The scriptural and graphical operation, which, moreover, raises the very question of technology, of the general relation between the living and the machine, is no longer an object of disparagement. There is no
longer a philosophical downgrading of the material reality of the signifier, what cybernetic theory readily refers to as the ‘support’ of a ‘semantics’… As we know, for the new technicist thought, meaning or information have no intrinsic essentiality. According to the cyberneticians, meaning is nothing more than the ensemble of actions it both activates and regulates from machine to machine. It is clearly this new phase of information technology, still in its early stages, which Derrida alludes to, this revolutionary event in the history of the gram that, among other historical determinants, has made possible the new grammatological enquiry” (Johnson 1993: 5-6).

**Introducing Deconstruction**

Derrida’s critiques of language and the logocentrism of Western discourse led to the development of the new theoretical movement of deconstruction. His post-structural arguments sought to demonstrate how texts actually undermine their meanings and are open to repeated interpretation (Derrida 1973 [1967], 1976 [1967], 1978 [1967]). In his attack of the presence of metaphysical assumptions in discussions of knowledge (Stocker 2006: 97), Derrida's work exposes that which has been suppressed in the name of coherence, and reveals how it could be used to demonstrate that any assertion of truth, and any appeal to nature or first principles, is a misconception (Scholes 1988: 281). In a manner reminiscent of the workings of Kuhn, these structures are revealed to be the products of a particular system of meaning, ideological constructs that attempt to make that which is a product of a particular culture or thought system seem natural and inevitable (Heartney 2001). This underpinned his overall concern with “possibilities at the outer limits of authority and the power of the principle of reason” (Derrida 1983, cited in Royle 1995: 1).

Throughout his work, Derrida prioritised the autonomy of the linguistic system in his argument that it is language which constitutes the subject, and it is language, therefore, which speaks. Roland Barthes had offered similar forms on deconstruction in his work *Mythologies* (1973 [1957]), in which he studied the inherent instability between sign and referent in a range of cultural phenomena. A comparable claim is also found in Michel Foucault's protest that 'man is dead' (1984a), and in Heidegger's (1971) position that 'man can speak only in so far as he is the sayer’ (Arendt 1969: 50). In Heidegger's *An introduction to Metaphysics*, he argues that we are wholly contained by the historical powers of language, the well concealed uncanniness of language, and yet at the same time
we believe it is us who disposes of these powers (Heidegger 1959, cited in Wigley 1993: 241-242). Yet in Derrida’s arguments, texts are independent of their author or their intentions, and it is a false assumption which takes the idea in our minds to be that which our writing or speaking attempts to express (Derrida 1973 [1967], Culler 2001).

Derrida pulled apart both the role and innate functions of language, and the identified taken for granted ways of thinking about binary logics such as speech and writing (Culler 1979a: 78), looking closely at the structures and processes of language and meaning, to demonstrate how unstable they are, how they mutate and how supposedly clear distinctions are far from clear (Tormey and Townsend 2006: 192). He used the traditional distinction of structure to arrive at his result (Evans 1991: 54). By teasing out the fissures that have opened up within meaning, and reading between the lines, deconstruction reveals that the apparent meaning of the text often masks its opposite. Through this argument, Derrida attempts to develop paths that subverted linguistic tropes. He demonstrates that structures of meaning can never be translated in their entirety, and nor are they anchored by reference to an outside world (Kates 2008). Where structuralism insisted on the difference between signifier and signified – on the radical difference and the arbitrary association of signifier and signified as the basis of its account of the sign – deconstruction demonstrates that any signified is itself a signifier, and that the signifier is already a signified, so that signs cannot be authoritatively identified and isolated (Culler 1979: 78).

As Bennington states;

“According to the logic of logic (of the logos), the sign is a sign of something, it stands in for the thing in its absence, representing it in view of its return: the sign stands between two presents, and can only be understood in relation to the priority of the presence of these two presents. But not only does Derrida begin with the sign in the order of his published work, he asserts, from the beginning, that the sign is at the beginning. Which will imply very rapidly that there is no beginning, thing, or sign” (Bennington 1993: 24).

The deconstructionist concentration on the category of ‘writing’ is aimed at inverting the relative standard of writing, remote as it is from its author and mistrusted, Derrida argues, since Plato (Felperin 1985: 118). From Plato to Hegel, Rousseau to Saussure and the modern (structuralist) sciences, speech has
always been privileged over writing, since spoken language is thought to possess a unique authenticity, a truthfulness deriving from the intimate relation between word and idea (Norris and Benjamin 1988: 7). Johnson summarizes Derrida’s analysis of the privileging of speech as follows;

“The spoken word is given a higher value because the speaker and listener are both present to the utterance simultaneously. There is no temporal or spatial distance between speaker, speech, and listener, since the speaker hears himself speak at the same moment as the listener does. This immediacy seems to guarantee the notion that in the spoken word we know what we mean, mean what we say, say what we mean, and know what we have said. Whether or not perfect understanding always occurs in fact, this image of perfectly self-present meaning” (Coward 1991: 143).

Speech has been falsely identified with present, authoritative intent (Felperin 1985: 118), the guarantor of presence and authenticity, whereas writing was seen to represent artifice and absence, the alienation and deferment of presence (Johnson 1998: 5). In Derrida’s view, writing provides the logical model for the working of all language (including speech), with its deferral, dispersion and dissemination of present meaning beyond the author’s power to control or even know. Thus there can be no guarantee of ‘this person guaranteeing the authenticity of what he says by presiding over it as a controlling consciousness’ (Felperin 1985: 118).

Instead of a simple either/or structure, deconstruction attempts to elaborate a discourse that says neither ‘either/or’ nor ‘both/and’, nor even ‘neither/nor’, while at the same time not totally abandoning these logics either. The very word *deconstruction* is meant to either/or the logic of the opposition ‘construction/deconstruction’ (Johnson 1987: 12-13). As Barbara Johnson elaborates, deconstruction is both, it is neither, and it reveals the way in which construction and deconstruction are not themselves what they appear to be. She states;

"Deconstruction both opposes and redefines; it both reverses an opposition and reworks the terms of that opposition so that what was formerly understood by them is no longer tenable. In the case of the much-publicized opposition between speech and writing,
deconstruction both appears to grant to writing the priority traditionally assigned to speech and redefines ‘writing’ as **différance** (difference/deferment) so that it can no longer simply mean ‘marks on a page’ but can very well also refer to those aspects of spoken speech (nonimmediacy, the non-transparency of meaning, the gap between signifier and signified) that are normally occulted by traditional notions of what speech is” (Johnson 1987: 13, emphasis in original).


However, Derrida cannot altogether break with western metaphysics. Deconstruction is always, inescapably, bound up with that same ubiquitous system of concepts and categories which it claims to reveal in the texts of logocentric thinkers from Plato to Saussure (Norris 1990: 199, Ihde 1986: 75). As Foucault has stated, any such analysis of discourse is always a quest for and repetition of an origin that escapes all determination of origin (Wolreys 2004: 192). Derrida’s arguments depend on every point of the conceptual resources of an old-age philosophical tradition which effectively determines the form and
possibility of reasoned argument in general. But this is to misunderstand the very nature of his critical engagement with the concepts that organise philosophic discourse. Derrida seeks to bring out this deep and unavoidable complicity between Western metaphysics and the varying efforts to think the limits of that same tradition (Norris 1990: 199);

“Any attempt to understand Derrida’s work is a movement toward its reappropriation by metaphysics, and thereby a movement, paradoxically, towards the former’s recognition and thus destruction” (Harvey, cited in Norris 1990: 199-200).

What is destroyed, is the assurance that those concepts must be the end point of rational enquiry. For Derrida, these problems cannot be overcome by laying down laws for the proper, self-regulating exercise of reason. Hence he asks what conditions of impossibility mark out the limits of Kantian conceptual critique. The concepts of writing, supplement, trace and différance, are some of the terms that he uses to unsettle the presumed deep foundations of this philosophic discourse. Though he knows that there is no getting ‘beyond’ metaphysics – there is no language that would not in some sense be complicit with the language it seeks to deconstruct. And in this way, he also argues that deconstruction is already at work in those classic texts of the Western tradition that invest most heavily in a logocentric scheme of values (Norris 1990: 200).

**Bridging Deconstruction and Systems Theory**

I have thus far discussed the general conversion to the linguistic paradigm in French philosophy during the 1950s and 1960s within its wider philosophical and literary context. However, these references are insufficient alone as an overview of the trends and influences on this theoretical development. The minor epistemic shift from ‘language’ to ‘writing’ which occurred within the linguistic and structural paradigm in the 1960s cannot be adequately understood unless it is assessed in the context of the post-war advances in the related fields of biology and cybernetic theory, a determining context to which Derrida himself refers, and which played key roles in the development of Derrida’s work.

In the history and philosophy of Western science, Serres defines this new paradigm as ‘neo-Leibnizian’ (Serres 1982), after Leibniz set into motion an immense program of algebratisation, which extends to, among other things, modern mathematical logic, computer sciences, and linguistics (Plotnitsky 2003:
His use of this term refers to the ways in which the concept of the code and the basic operations of permutation and combination had come to constitute the predominant methodology across the spectrum of the exact and human sciences (Serres 1982). In his analysis, this change of paradigm, both historically and chronologically, dates from the late nineteenth century, and yet it is not until during and after World War II that it receives decisive and widespread validation through the emergence of the new sciences of information theory, molecular biology and cybernetics (Harai and Bell 1982). Whereas the dominant concept of the nineteenth century had been energy, formalized in the three laws of thermodynamics, the dominant concept of the twentieth century was now information. Serres makes this clear in his discussion of Francois Jacob’s eminent text *La Logique du Vivant*, and the philosophical implications of the new biology. As he states:

“the sciences of today are formalistic, analytical, grammatical, semiological, each of them based on an alphabet of elements ... Their affinities are so apparent that we are once again beginning to dream of the possibility of a *mathesis universalis*” (Serres 1982, cited in Harai and Bell 1982).

Following the discovery of the biochemical basis of heredity, encoded in DNA, life itself could no longer be regarded as an irreducible essence. Rather, life was now understood as the product of molecular combination, the rules of which are open to decipherment;

“What biochemistry has discovered is not the mysterious noumenon, but quite simply a universal science of the character. Like the other sciences, it points towards a general philosophy of marked elements” (Serres 1982, cited in Harai and Bell 1982).

Not only did the sciences move towards this ‘new Leibnizianism,’ but they are also implicated, both as cause and effect, in the more general technological evolution of modern society. Contemporary to the rise of structuralism, some of the new insights provided by these disciplines were being given more general expression at the time in the field of systems theory. As a scientific inquiry, systems theory was seen to address problems of the self-organisation of complex systems and their self-regulation through operations such as feedback. Researchers in this field also sought to theorise questions concerning the passage
between the differing levels of integration of a system, the modalities of openness and closure of a given system, the question of teleology, and the concept of code (Johnson 1994).

**Freud and Derrida**

During this post-World War II era, in the same time frame in which Saussure developed his theory of language, Sigmund Freud developed his work on the functioning of the brain and the behaviour of neurons, specifically in the *Project for a Scientific Psychology* which was published posthumously (Freud 1950, cited in Cilliers 1998: 45). Freud’s model of the brain consists of neurons which interact through pathways that channel the energy in the brain. This energy comes both from outside the body (perception), and from internal sources. Pathways resist the flow of energy, unless it is used often. The characteristics of the brain are determined by the various patterns of energy flowing through it (Cilliers 1998: 45).

While Derrida’s analysis of psychoanalysis has been well theorised (see Kerrigan and Smith 1984, Derrida 1984, Johnson 1980\(^1\), Kofman 1989, Naas 2003\(^2\)), or what others have called his “commitment to the preservation to psychoanalysis” (Rorty 1995: 8), for the purposes of this project, two important aspects of this model deserve attention in this discussion for their recognition in Derrida’s later works. Firstly, the role of *memory* must be underscored. ‘Memory’ refers here to the physical condition of the brain – which pathways are breached (‘facilitated’) and which are not. Memory is not a cognitive function performed by a conscious subject, but an unconscious characteristic of the brain. It is the substrate that sets up the conditions for all the functions of the brain (Cilliers 1998: 45). For the observer, memory is what is absent from the here and now and therefore what has to be inferred; for the subject, it is the nature of memory’s passage from absence to a particular kind of presence – the way in which the subject reads the trace – which governs his future possibilities (Wilden 1972: 395). In other words, memory is the programming of a future output on the basis of an open feedback loop between the present situation of the subject and the present memory of a past relationship (Wilden 1972: 97).

The second important characteristic of Freud’s model is the role of the neurons. No neuron is significant by itself. Memory does not reside *in* any neuron, but in

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\(^1\) Chapter 7  
\(^2\) Chapter 4
the relationship between neurons. This relationship, Freud declares, is one of differences (Freud 1950, in Cilliers 1998: 45-46). What we have, therefore, is a model of the brain which is structurally equivalent to Saussure’s model of language – a system of differences. If we take Derrida’s reading of both Freud and Saussure as a cue, we can develop a description of the dynamics of networks of interacting neurons using the theoretical tools developed in the post-structural approach to language (Cilliers 1998: 45-46).

Derrida attempted to reread and revalue the association of speech with life and writing with death, demonstrating that even ‘living’ speech is based on a split between signifiers and signifieds, on self-difference and referral (différance) rather than immediacy. In other words, rather than beaming ‘live’ meanings directly from one mind to another, speakers, like writers, use a conventional, external (‘dead’) system of signs (language) that must be learned and deciphered. Derrida pursues the analysis of this ‘différance’ constitutive of the human even in contexts where it is the mind itself that is being described, finding ‘writing’ to be the central figure Freud uses to describe the functioning of the mental apparatus (Johnson 1994: 18).

In a short essay entitled “A Note Upon the ‘Mystic Writing Pad’, Freud compares the mind to what was known as a ‘magic slate’, or the Mystic Writing Pad, which was then sold as a novelty toy for children. The pad was made up of a transparent sheet of celluloid on top of a sheet of grease-proof like paper on top of a waxed base. A stylus pressing down upon the celluloid would press the paper down against the wax base, and this latter contact caused the darkness of the base to show through as writing on the lighter-coloured paper. This writing was not actually deposited on the paper, and could be made to disappear simply by lifting the paper away from the base. However, as Freud pointed out, the wax base still presumably retained the mark inscribed by the stylus even when the writing was no longer legible. In this respect, the base could be compared to the unconscious mind (Harland 1987: 142). Freud saw the mind as composed of a layer of protection against direct contact with stimuli (the transparent celluloid sheet), a layer of responsiveness (perception-consciousness, the thin translucent sheet), and a layer that can retain permanent traces (memory, equivalent to the dark wax surface on which the other two sheets rest) (Johnson 1994: 18-19). In his analysis of Freud’s analogy, Derrida has stated:
“No doubt life protects itself by repetition, trace, difference (deferral). But we must be wary of this formulation: there is no life present at first which would then come to protect, postpone, or reserve itself in différance. The latter constitutes the essence of life ... Life must be thought of as trace before Being may be determined as presence” (Hartman 1978, cited in Johnson 1994: 19).

Derrida uses the concept of ‘trace’ to point to the influence that each component in the system of language has on every other component. The notion of trace is intimately linked with the notion of memory – memory in the material, non-subjective sense described above. In a neural network the function of memory is performed by the weights of the relationships between neurons. Because of the 'distributed' nature of these relationships, a specific weight has no ideational content, but only gains significance in large patterns of interaction. It therefore seems fruitful to suggest that the two terms – ‘weight’ and ‘trace’ – can in this context be used to describe each other. To think of weights in a neural network as traces (in Derrida’s sense) helps to understand how meaningful patterns in a network result primarily from the condition of the weights. To think of traces in language as weights helps us to conceive of them not as something ephemeral, but as something actual, albeit an actuality that is sparse (Cilliers 1998: 45-46)

Similarly, Derrida’s concept of différance can be used to describe the dynamics of complex neural networks. Cillier’s discussion of this analogy is extremely relevant here, as demonstrated in his following example;

“If an ensemble of neurons generates a pattern of activity, traces of the activity reverberate through the network. When there are loops in the network, these traces are reflected back after a certain delay, and alter the activity that produced them in the first place. Since complex systems always contain loops and feedback, delayed self-altering will be one of the network’s characteristics. This has much in common with the notion of différance – a concept which indicates difference and deference, that is suspended between the passive and active modes, and that has both spatial and temporal components (Derrida 1982 :1-27). According to the post-structural ‘logic’ of trace and différance, no word in language (or neuron in the brain) has any significance by itself. Rather, meaning is determined by the dynamic
relationships between the components of the system” (Cilliers 1998: 45-46).

In the same way, no node in a neural network has any significance by itself – this is the central implication of the notion of distributed representation. Significance is derived from patterns of activity involving many units, patterns which result from a dynamic interaction between large numbers of weights. The sciences are actually made up of such examples. If we think of all scientific experiments as examples that test or demonstrate the validity of natural principles, we find that, rather than rejecting examples, the sciences actually privilege them. This becomes clearer when we consider the tendency of contemporary discourse to exaggerate metanarratives (Knoespel 1991: 112).

Overarching narratives are barely removed from examples, and yet bear assumptions about their significance. Kuhnian paradigms demonstrate this succinctly, as Kuhn wrote that sometimes, “a law that cannot even be demonstrated to one group of scientists may occasionally seem intuitively obvious to another” (cited in Ulmer 1988: 164). While the paradigm would order an array of examples (normal science), it is through the irregular example that the paradigm is transformed. Although scientific discourse may be simplified by describing it as paradigm dependent, its complex activity becomes more apparent if we approach it through the examples on which it depends. Bruno Latour also makes this point in Science in Action. In contrast to Kuhn, who identifies the paradigm shifts in the history of science and the ways they order the myriad of local narratives, Latour concentrates on the exemplary inscriptions which actually make up the practice of scientific discourse. By looking at science in action rather than the history of science – laboratory science rather than museum science – Latour is able to show scientific activity as a contest involving the generation and coupling of examples (Knoespel 1991: 112-113).
Notes from the Natural Sciences

The Sine Wave
The origins of the sine wave can be traced back to the nineteenth century and a highly productive period in the history of acoustics where new techniques of mathematical analysis were applied to the question of musical sound. These techniques were accompanied by new technological means for the observation, audition, and production of sound. Together they formed a basis for the investigation of acoustics in this era.

The sine wave appeared as a product of the combination of the theory for the analysis of heat developed by French mathematician and physicist Jean Baptiste Joseph Fourier (1768-1830), and its application to the question of musical sound by German physicist Georg Ohm (1787-1854) in the first half of the nineteenth century. Fourier’s theory demonstrated that any manner of complex wave phenomena could be mathematically broken down into an interrelated series of simpler waves for the purposes of scientific examination. The application of Fourier analysis to the question of musical sound by Georg Ohm conflated classical and contemporary definitions of musical sound around the figure of vibration, and in the process produced an artefact in the form of the sine wave (Vogel 1993, Beyer 1999: 44-45).

However, it wasn’t until the latter half of the nineteenth century that the expansion and popularization of this and other ideas pivotal to the development of contemporary acoustics occurred. Many of these stemmed from the experimental research and publications on sensation, perception and musical sound by German anatomist and physicist Hermann von Helmholtz. Central to Helmholtz’s inquiry into sound was the observation that any given sound event was not singular, but composite (Vogel 1993, Beyer 1999: 44-45). Sine waves then were held to be both the most basic unit of sound in and of itself, and also the component parts of more complex and meaningful musical sounds (von Helmholtz 1954: 9).

The application of Fourier analysis to the problem of musical sound gave acousticians of the late nineteenth century a means to explore the composite nature of sound. It provided them with the ability to analyse sound – to break down, or decompose, a given sound into its individual frequencies (Vogel 1993, Beyer 1999: 44-45). Although Helmholtz claimed that his investigation into
musical sound dealt “only with the analysis of actually existing sensations” and sought to establish this theory as empirical fact, he did so by using Fourier analysis, which created an artefact in the form of the sine tone. More than simply a by-product of a process, Fourier’s analysis presented nineteenth century acousticians with an abstract, idealised waveform that they defined as harmonically simple (in that it had one frequency component), and harmonically stable in that it was unwavering in pitch, and noise-free (von Helmholtz 1954: 9).

Feedback

The idea of feedback, as a causality, arose from a key concept in this science of systems theory (Wilden 1972), and was defined and explored by information theorists and systems analysts in the 1940s and early 1950s. An ideal example of a negative feedback system at the time was found in the heater thermostat – a system which regulates itself and maintains a stable condition. Scientists began to look for examples and analogues of this phenomena, and to find similar stability-protection systems in all fields, from physiology to politics. Their investigations showed that negative feedback appeared to be at work all around us, causing things to maintain their equilibrium or stability (Toffler 1981: 305).

Translated into the terms of human communication, feedback describes the formal conditions allowing messages to pass between senders and receivers, and also delineates the existential action and reaction between subjects in such contexts (Wilden 1972: 95). In this feedback model, sender and receiver can be viewed as two ‘black boxes’ individually fitted with facilities for input and output. Feedback compares the output of the black box with its input and adjusts the output accordingly. Negative feedback aims at homeostasis where the input would be equal to the output, while positive feedback aims at change (Wilden 1972: 96).

By the early 1960s, critics such as Professor Magoro Maruyama began to note that an excess of attention was being paid towards the concept of stability, and insufficient attention was thus being directed towards the notion of change. Maruyama urged for more research to be undertaken into ‘positive feedback’ – into the processes that do not suppress change, but amplify it. These were the processes that do not maintain stability, but challenge it, sometimes overwhelming it. Positive feedback could take a small deviation or ‘kick’ in a system and magnify it into a giant structure-threatening shudder. In doing so, positive feedback could illuminate causation in many previously puzzling
processes (Toffler 1981: 305-306). ‘Positive feedback’ was furthermore adopted in the social sciences as a conceptual term with which to assess the ever-increasing global demands, and self-regenerative dependency on technology (Wilden 1987: 208).

Feedback loops result in the generation of complex spatial and temporal patterns and structures similar to those found throughout the natural world. This offers a possible model for relationships between circular, iterative systems, and far more complex forms of natural behavior (Waldorp 1992). Positive feedback breaks stability and feeds on itself. When we put negative and positive feedback together and see how richly these two systems interplay in complex systems, startling insights emerge. As Waldorp makes clear, any truly complex system is likely to have within it both change amplifiers and change reducers, positive as well as negative feedback loops interacting with one another. These change reducers and amplifiers are not necessarily built into complex systems from the start – they may be absent at first, then ‘grow’ into place, sometimes as a result of what amounts to chance. A stray event can thus trigger a multiple chain of unexpected consequences. As a result, change is often hard to track and extrapolate, and a slow, steady process can suddenly convert into an explosive change, or vice-versa. Consequently, similar starting conditions in any system can yield sharply dissimilar outcomes (Waldorp 1992).

All life depends upon electricity and electrical impulses, and, with this in mind, evolutionary biologists argue that life emerges from itself. As Brian Goodwin asserts;

“The organism is the cause and effect of itself, its own intrinsic order and organization. Natural selection isn’t the cause of organisms. Genes don’t cause organisms. Organisms are self-causing agencies” (cited in Nichols 2002).

In this respect, life is understood as an auto-conspired form that emerges to transcend itself, like a snake swallowing its own tail as seen in the mythical symbol Ourobouros that is today synonymous with the concept of feedback. Feedback systems are relatively simple to create, whereby a portion of the output signal is fed back into the input of the same, or preceding stage of the loop. This is a circular causality, a simple feedback loop that is stitched together in endless combinations and forever layered until it forms an unimaginable edifice of
complexity and intricacy of sub-goals, some of which cross their own paths – A triggers B, B triggers C, and C triggers A (Nichols 2002).

In paradox, A is both cause and effect, known as a recursive circuit, and this totally undermines classical theories of everything. This is a way of using electronic feedback to emulate analogous natural systems (as, of course, they are both governed by the same rules) and to experiment with various effects. Feedback oscillators are a fundamental feature of all synthesized electronic sounds – without feedback, synthesizers are almost useless. The creative potential resulting from the outgrowth of unprocessed feedback is almost limitless. When reduced back to its simplest – a feedback cycle – circular causality becomes a fertile paradox (Nichols 2002).

**Phase Space**

The phase space concept unifies classical (Hamiltonian) mechanics and quantum mechanics. In classical mechanics, the phase space is the space of all possible states of a physical system; by ‘state’, we do not simply mean the positions of all the objects in the system (which would occupy physical space or configuration space), but also their velocities or momenta (which would occupy momentum space). One needs both the position and momentum of the system in order to determine the future behavior of that system. Hamilton’s classic equation of motion describes the motion of a system in phase space as a function of time. A quantum mechanical state does not necessarily have a well-defined position or a well-defined momentum. A state is now not a point in phase space, but is instead a wave function, which is a complex-valued function. Certain classes of wave function are strongly localised in both position and momentum, such as a function which is a ‘wave packet’ (Tao 2008, emphasis added).

The analogy between quantum mechanics and classical mechanics provides a fertile heuristic platform for analyzing functions in general, by viewing them as distributions in phase space. From such tools as localised Fourier transforms, one can write an arbitrary function as a linear combination of wave packets. The coefficients of such combination should therefore describe how it is distributed in phase space, in the same way that the decomposition of a musical sound wave into individual notes describes how a musical piece is distributed in both time and frequency (Tao 2008).
The phase space distribution (also known as the phase space portrait, or the score of a function, in analogy to the previous musical example) is a useful guide for comprehending the singularities of a function, and how that function will behave with respect to various operators (such as the observables mentioned above) and under evolution by various partial differential equations (PDE). The rigorous formalisation of these heuristics in physics is known as microlocal analysis, time-frequency analysis, or semi-classical analysis (Tao 2008).

In phase space, the complete state of knowledge about a dynamical system at a single instant in time collapses to a point. As Gleick describes it;

“That point is the dynamical system – at that instant. At the next instant, however, the system will have changed, ever so slightly, and so the point moves. The history of the system time can be charted by the moving point, tracing its orbit through phase space with the passage of time. This can also be conceptualised by thinking of the system as having only two variables (in line with basic Cartesian geometry), one being on the horizontal axis, the other being on the vertical axis. If the system is a swinging, frictionless pendulum, one variable is position and the other velocity, and they change continuously, making a line of points that traces a loop, repeating itself forever, around and around. The same system with a higher energy level, and swinging faster and farther, will form a loop in phase space which is similar to the first, but larger” (Gleick 1987: 134-137).
Applied Poststructuralism in the Arts

The application of poststructuralist thought to art, and vice versa, has taken many developments over the past century, with the previously cited works of Beckett, Barthes, Benjamin and Derrida being used to re-interrogate practical developments in sound theory. As Ulmer states, “theory is assimilated into the humanities in two principle ways – by critical interpretation and by artistic experiment”. For example, Wittgenstein was highly important to the conceptual or ‘language art’ movement, while structuralism was as important in making art as it was to the human sciences (Ulmér 1994: 3-4) and to sound poetry (Perloff 1996, Foster 2004). Richard Galpin’s use of the subtle play of ‘erasure’ in art is another example of this exchange (Galpin 1998).

On par with postmodernist interpretations of texts, experimental music has also been used to push the boundaries of language. For example, Barthes’ “Death of the Author” (1982 [1967]) has been used to discuss the distinction between a work and a text. Barthes argued that the work takes us back to the pre-structural realm, where there is a stable external world from which an artwork or piece of writing issues. The reader’s job is to interpret or consume it, in accordance with the creator’s intentions, where the text, by contrast, is composed of interwoven signifiers and deferred meanings that is poststructuralism. The text, in Barthes’ analysis, is a multi-dimension space in which a variety of writings blend and clash, a collection of quotations drawn from the innumerable centres of culture (Heartney 2001).

In other analyses, the practice of minimalism fostered a new interest in what Deleuze and Guattari (1987) called the “plateau”. These are continuous, self-vibrating intensities whose developments avoid any orientation toward a culmination point or external end (Cox and Warner 2004). The influence of Deleuze and Guattari’s work, itself in dialogue with Derrida’s (see Bearn 2000, Bryant et al 2003, Patton 2003, Lawlor 2003, Smith 2003, Kuiken 2005, Cheah 2008), and the focus on repetition, was influential on a new focus on repetition and process that has since come to define western ‘minimal music’. This has been interpreted as both the sonic analogue, and as a sonorous constituent of a characteristic repetitive experience of self in mass-media consumer society (Fink 2005). It also created the theoretical possibility of a feedback-loop, whose many paradoxical complexities have been surmised as a ‘culture of repetition’ which arises as a result of the extremely high level of repetitive structuring necessary to
sustain capitalist modernity. The concepts of repetition, regimentation and process thus became synonymous with the rationalised, post-industrialized societies that emerged in the 1950s and 1960s (Fink 2005).

Minimalist music has also been based on the notion of reduction, with the chief structural technique being unceasing repetition. From the works of La Monte Young and Terry Riley, to Steve Reich and Philip Glass, minimalism has been understood as the paring down to a minimum of the materials that a composer will use in a given work. In the classic minimalist compositions of the 1960s, practically every musical element, including harmony, rhythm, dynamics and instrumentation, remains fixed for the duration of the work, or changes only very slowly (Schwarts 1996). In traditional Western classical music, repetition is used within the context of a dramatic, directional form, while in minimalism, repetition is used to create what Philip Glass calls ‘intentionless music’ which replaces goal-oriented directionality with absolute stasis (Schwarts 1996).

Drawing on this history, experimental music is also often understood as being distinguished by a change in the dominant mode of signification from the symbolic to the indexical. Within this genre, sound art can be seen to prioritise the phenomena and relationships which are associated with the social practice of music. For example, this might include the psychoacoustic phenomena, or the social relationships between audience, musicians and composers (Grant 2003). As Grant continues, the tendency of experimental music to present, rather than represent, these aspects is characteristic of the works of sound artists such as Alvin Lucier, John Cage, Max Neuhaus, James Tenney, Klaus Lang and Akio Suzuki, all of whom exemplify ways in which features of experimental music can be related back to the general, indexical tendency of presentation as opposed to representation (Grant 2003).

An important aspect of Max Neuhaus’ compositional approach is to allow the listener, rather than the composer or artist, to instigate and control the ultimate acoustic experience, to the point even of ignoring or bypassing it altogether. Neuhaus distanced himself from popular notions of, which instrumentalise subjects in the name of participation (Joseph 2009: 67). “The ideas that I am involved with”, he explained;

“are contrary to that – giving each person the possibility to make a work for himself, but for himself only. For instance, by making a work
that has a topography, one can move through that topography at one’s own pace, stop where one wants to. One has the freedom to form an experience of the work for oneself but not impose it on anyone else” (Neuhaus 1968, cited in Joseph 2009: 67).

Far from incidental, Neuhaus’s concern to free the listener from authorial imposition underlay what was for him the fundamental distinction between music and sound art: placing sounds in the realm of space rather than that of time. “Traditionally composers have located the elements of a composition in time. One idea which I am interested in is locating them, instead, in space, and letting the listener place them in his own time” (Neuhaus 1968, cited in Joseph 2009: 67).

Feedback in Sound Arts

The use of audible feedback systems in sound and installation art practices can be charted back to the advent of electronically amplified instruments in the early twentieth century, and the growing “field of sound” (Perloff 2009). John Cage’s work with indeterminacy raised questions about non-intention, non-doing, and doing-without-doing as he worked with the limits of art and language (see Cage 1973a, 1973b, 1981). Cage’s early theoretical works prefigured Pierre Schaeffer’s ensuing work with Musique Concrète. Influenced by the lineage from the Futurists, to Cage and others, Schaeffer’s work isolated the sound event by means of the recording process. His closed groove experiments consisted in closing a recorded fragment in on itself (as is done accidentally by a scratch), and creating a periodic phenomenon taken, either by chance or deliberately, from any sound continuum and able to be repeated indefinitely (Cross 1968, Chion 1983, Schaeffer 1952, 2002).

With the arrival of the tape recorder, the tape loop replaced the closed groove by creating an exactly similar effect. These early investigations into recording technology were precursors to explorations with audible feedback as seen in many early experimental electronic music compositions, for instance in the works of Karlheinz Stockhausen (1959-1960) and David Tudor’s experiments from the early 1960s (Cross 1968, Chion 1983, Schaeffer 1952, 2002). Tudor’s aspiration for the unpredictable and the unique inspired an in-depth study of the principals of amplification and feedback, culminating in the composition “untitled” (1972) as one of the first works of pure feedback music (Holmes 2002). Working in the
1960s and 1970s, Tudor sought to generate sound without the additional use of input source material. He freed himself from the then conventional composer-instrument relationship, and developed a compositional approach which allowed his electronics to 'do the talking'. The composition and performance of "new electronic music" at this time frequently used devices such as tone generators and tape players, to provide input sources for an electronic set-up. Tudor incorporated this more classic approach of the time into his music, however it was his desire for the unpredictable and the unique that inspired his in-depth study of the principals of amplification and feedback (Kahn 1999, Holmes 2002, Licht 2007).

Robert Ashley calls feedback "the only sound that is intrinsic to electronic music". Not only is it a natural effect that is available wherever a microphone or audio pickup is used, but it also introduces the use of sustained sounds, which is one of electronic music's inherent attributes. In his piece 'The Wolfman' (1964) for amplified voice and tape, the level of amplification is set very high, at the point of feedback for the given audio space. The performer delivers a set of vocal patterns while keeping his mouth in very close proximity to the microphone (Holmes 2002: 27). Since the microphone is placed at an incredibly high volume, the smallest sounds trigger different strains of feedback. Sustained vocal sounds are combined with highly amplified resonant feedback sounds (Emmerson 2007: 134). Ashley elaborates;

"The feedback is a loop and the tape sound is being broadcast into that loop. The bottleneck in that loop is the microphone so that by treating the resonant cavity right in front of the microphone you actually create a model of the room in the size of the vocal cavity. It's a very simple principle. The room just keeps moving around and changing shape because of the way you shape your mouth" (Ashley 1968, cited in Emmerson 2007: 134).

In a series of realisations of John Cage's 'Fontana Mix' subtitled 'Feed' (1965-66), Max Neuhaus placed contact microphones on a variety of percussion objects but unattached, free to move, with amplification set to feedback levels. Neuhaus elaborates (Emmerson 2007: 135);

"Although the individual intensity of these channels is controlled from the score, the actual sounds that make up the piece are determined
by the acoustics of the room and the position of the mikes in relation to the loudspeakers and the instruments at a specific moment (the vibrations cause the mikes to move around)” (Neuhaus 1965, cited in Emmerson 2007: 135).

With Max-Feed (1966), which was Neuhaus’s first art object – a small electronic device – Neuhaus aimed to incorporate a similar effect as that of the ‘Fontana Mix: Feed’ into a convenient, portable package. Set beside a hi-fi stereo, Neuhaus’s box would distort its sound into a wail of amplified feedback. No longer a passive forum for commercial radio, the Max-Feed purchaser’s living room was transformed into an indeterminate and phenomenologically activated installation (Joseph 2009: 69-70).

In Alvin Lucier’s ‘I am sitting in a room’ (1969, Lucier 1990) recorded speech is played back into the listening space and re-recorded via a microphone in that space, hence with the reverberant and resonant characteristics of the room. This recording is then played back into the room and recorded in the same manner. This process is repeated until the result becomes unintelligible and the room’s character (articulated with the frequency and energy contours of the speech) becomes dominant. This is a kind of time-delayed feedback (Emmerson 2007: 133-134). Trevor Wishart (1996) interprets Lucier’s work as the evolution of a mysterious sound object;

“At the beginning of the piece we would unreservedly state that the sound-object is the voice. At the end of the piece the sound-object is clearly a more ‘abstract’ entity whose characteristics derive from the room acoustic. Somewhere in between these extremes our perception passes over from one interpretation to the other” (Wishart 1996: 158, cited in Wong 2010).

In Steve Reich’s Pendulum Music (1968), one or more loudspeakers are placed on their backs, aimed at the ceiling. As microphones were the source of the input signal, the amplitude was turned up to the point where feedback would occur if the microphones were brought within proximity of the front of a loudspeaker. The microphones, suspended from the ceiling on long cables like pendulums, are drawn to one side and set free to swing at the same time, oscillating towards and away from the loudspeaker, provoking wave of feedback. Slight differences mean the rhythm of the waves will be at slightly different rates for each microphone.
and will inevitably ‘phase’. As the microphone-pendulum oscillations slowly decay, so the feedback bursts become a larger proportion of the cycle time until they come to rest directly over the loudspeakers, causing uninterrupted feedback until the amplifier was shut off. The timbre of the feedback is determined by the complex interaction of two resonances, that of the loudspeaker-microphone pair and that of the room (Holmes 2002: 28, Emmerson 2007: 134).

Feedback is commonly understood, and anchored, through a scientific rationale which dissects the scientific properties of feedback processes and amplification (see Mindell 2000). For example, Aufermann (2005) discusses feedback through scientific analysis. He argues that we do not hear a static environment, but rather the oscillatory changes in our environment, and the increase and decrease of the air pressure around us. In fact electronic components, Aufermann continues, can not only carry, but also produce, oscillations. This can be seen in the primary component of a synthesizer, where the ‘oscillator’ does exactly this by connecting a few simple electronic components in a feedback loop. A circuit contains only a capacitor, a coil and a resistor, known as an LCR circuit, and simple electronic circuits have the ability to feed back, while audible oscillations can occur in very complex systems. This process begins without any kind of deliberate input, where it is not possible to determine a start point in the loop. Thus there is no hierarchy between the different components or stages of the loop, and there is no possibility to control the system in a linear fashion (Aufermann 2005).

There remain, as Lucier has argued, many possible homologies to be discovered in artistic work, where the task is to make and find connections that have not been made or found before (Lucier 1995, Aufermann 2005).
Project Structure

The structure of this project exegesis is based in specific theoretical terms drawn from Derrida’s primary works in an effort to define my investigations into the physical objects and their feedback outputs through this terminology. I have done this in order to extract the essence of deconstructive theory in which I could see the links that could be potential grounds for comparison with the concept of feedback. Derrida’s themes talk directly to the kinds of recursion that feedback represents. These are not repetitions as such – they are not a copy of a copy – because as Derrida argues, that is an impossibility. Rather, his work addresses the notions of iterability, supplementarity, erasure, divisibility, and différance, what he sometimes calls “infrastructures”, which he describes as not really or simply concepts at all (Derrida 1981, cited in Evans 1991: 54).

There are a great number of studies and texts that in one way or the other could be relevant to this project far beyond a mere recognition of existence in an introductory fashion like here. I have made a conscious decision not to engage with any literal translation or re-writing-into or re-contextualisation of the Derridean texts into a sound-specific narrative beyond the act of defining a series of studies on terms found in the literature. Such a venture would be outside the scope of this project.

In defining the project in this way, and by structuring it within this terminology, I was able to demarcate certain focus points, narrow the scope, and outline specific interrogations which were crucial to my overall explorations and argument. It was possible to devise a schematic for these individual pieces of the project so that I had specific parameters to look for when I was setting up the feedback systems. This also gave me a certain framework within which to work and to set up the variables for each specific investigation. This increased my ability to be specific and focused in my research goals, and augmented layers to the overall argument.

Working with these inherently recursive and repetitive concepts, meant that the results were going to provide many similar patterns and outcomes. By dividing this project into a group of chapters demarcated through a set of different investigations on terminologies that founded Derridean deconstruction, I was able to establish both a starting point and an end point which would coincide and come together.
With the project demarcated into these headings and the theories defined, I began to examine the physical objects (the recording devices) in terms of their audibility and feedback processes. The results of these experiments were then translated back into the theory via the relevant signs of the era from which Derrida’s work emanated and was indirectly in dialogue with, these being specifically cybernetics and, by extension, systems theory. In this way, I was able to discuss the results by using terminology from these specific sciences that originated in the same era as the deconstructive texts, which is when explorations into the ideas concerning positive feedback specifically began to be noticed within the scientific community. Furthermore, the recording devices used for this project (primarily old tape recorders, reel to reel recorders, mini disc and dat recorders) have their origin in advances made in technology during the same time period. These devices are predominantly considered outdated forms of technology today.

To further implicate and thoroughly found this project in a certain era, all the auditioned investigative iterations comprising this research project will be distributed spatially via a quadraphonic set-up. The quadraphonic distribution within the scope of this project will be the default for setting up any iteration throughout this study. This entails set-ups where groupings of four objects will be investigated together and deemed a system for the purpose of being presented as part of a specific iteration within this project. Auditioning the recording of these systems will then also take place within the quadraphonically distributed listening space.
**Fig. 1:** A basic layout schematic for quadraphonic 4.0 distribution.
Chapter 1

Presence Without Difference – Divisibility of the Point

Introduction
In this first chapter, I focus on Derrida’s interrogations into the metaphysical concept of origin as presence without difference. I translate this strand of critical engagement into experiments with audible feedback systems designed with a foundation in its terminology. I look at simple forms, such as single frequency or sine wave output equivalents, seemingly stable systems but deceptively so in terms of them being systems of positive feedback. This study incorporates two separate series of investigations.

Metaphysics – Presence Without Difference
At the heart of Derrida’s critique is the foundation for the metaphysical tradition, being that of indivisible origins, and his investigation of the prevailing discourse as logocentric reason (Norris 1990: 194). This is the paradoxical relationship between thought and origin (Kulak 2001: 305), which Derrida first interrogated from the work of Husserl (see Dastur 2006: 51, Pasanen 2003, Hagglund 2008), and language and meaning (Culler 1981). From the perspective of deconstruction, the rule of presence is not a primordial condition but an event which has had a history of its own (Schwab 1986: 163). Derrida’s deconstruction of the ‘metaphysics of presence’, i.e. the western philosophical tradition predicated on a belief in the existence of some baseline, it, underlying experience, began with a critique of the presumptions inherent in Husserl’s theory of signs. As Derrida shows, Husserl’s conviction that experience has some access to itself in ‘absolute proximity’ is founded on the metaphysical conceit of presence. Presence assumes, at the very least, that we can posit direct, inner experience of ourselves in a way that would render useless any sign, language, or mediation. This claim for the uselessness of signs for inner communication is, for Derrida, “the non-alterity, the nondifference in the identity of presence as self-presence” (Derrida 1973: 1967). Such nonalterity and nondifference is (literally) unthinkable for Derrida, for whom meaning of any kind is always a product of differentiation, of a process that distinguishes the thing-in-question (never simply itself) from all that it is not. Such a process always leaves a trace of the differentiating procedure, of all the things the thing-in-question is not. Thus the thing-in-question retains, constitutionally, the mark of otherness, alterity,
difference. No thing-in-question is ever simply or obviously a thing-in-itself (Kim-Cohen 2009: 13).

Metaphysics, through the Kantian project of enlightened rational critique, creates the illusion that there is such a thing as static or undifferentiated origins (universals) from which there can be sketched determinate paths. This creates a deception of continuity and stability, of the repetitive regeneration of cause and effect. Within this tradition, the difference between two terms is invariably perceived from the perspective of one of the terms, the favoured or positive term, from which the second term in the opposition is held to derive. The first term is not taken to be affected by the fact that it appears in opposition to another, less valorized term (Gasché 1986, Hogan 2003).

Derrida’s deconstructive theory raises certain problems about knowledge, meaning and representation, by asking what ultimate grounds exist, in the nature of experience or a priori knowledge (see Eagleton 2005: 114-118). Through his examinations of Western philosophical writers from Plato to Aristotle, Kant, Hegel, Husserl and Saussure, Derrida extracts this habit of moving from local observations to universal truth claims (Norris 2000a: 117, see also Dastur 1994). Central to this metaphysical tradition, Derrida argues, is the privileging of speech. This hierarchy is essential to the ubiquity of logocentrism itself, as he shows that analysis is necessarily logocentric – even the most rigorous critiques of logocentrism cannot escape it since the concepts they must use are part of the system being deconstructed. Oppositions such as outside/inside, transcendental/empirical, etc., depend on a point of differentiation, a line of division which distinguishes the two terms and commands the opposition. This is why Derrida works at this moment of speech, where signifier and signified seem given together, and where inner and outer or physical and mental are for an instant perfectly fused; this serves as the point of reference in relation to which all these distinctions are posited (Culler 1979: 139).

Deconstruction refuses to rest content with the notion of an end-point to critical inquiry, a stage at which thinking simply has to accept the self-evidence of its own rational laws (Norris 1990: 199). In contrast, Derrida develops the notion of the arche-trace to explain why the difference between two terms is invariably perceived from the perspective of one of the other, and can be thought of only within paired conceptual structures. The arche-trace stems from an insight into the constituting function of difference, the holding-against-another, of perspective
variations, to use a Husserlian term (Gasché 1986). This concept of the arch-trace will be further discussed in Chapter 3.

Against the absolute silence of the inner, metaphysical voice, Derrida poses his non-concept of *différance* and the trace. The trace reveals and is revealed by the space, or spacing, of writing; be it the gap between letters on the page or the silence that constitutes and differentiates phonemes in speech. Writing allows the difference, the absence, the other inherent in discourse, to appear. The difference that such spacing allows to be heard is captured in Derrida’s concept of *différance* (Dyson 2009: 96).

**The Divisibility of the Point**

Within the confines of this metaphysical tradition, Derrida identifies the role of logocentrism, which falsely seeks to locate some secure anchoring point outside of language (McQuillan 2000: 12, emphasis in original). The age-old metaphysical demand and desire for foundation, for logos, was a desire for discernible order and progression as the historicity of founding originary sites and concepts (Wolffreys 2004: 192). Derrida saw the logocentric concept of alphabetical writing as the bearer of the “most original and powerful ethnocentrism” in Western philosophy (Liu 2006: 549), within the “closed” history of metaphysics (White 1987: 46). Logocentrism works through the erasure of the metaphorical status of privileged terms within a binary opposition (Dews 1987: 10), in order to support a conceptual order structured around the valuing of such terms as positive.

“This necessary forgetting is ‘presence’ – the assumption of the selfsame between reference and phenomena” (Derrida, in McQuillan 2000: 12).

The desire for presence, Derrida argues, is the desire for stable and coherent origins in language. Platonism had assumed such a stability in the realm of the forms to which all particulars are related (McQuillan 2000: 12), and advocated that just as things in the world are faint pictures of their ideal, so words similarly reflect the reality of the things to which they relate (Vanhoozer 1998). Presence, then, is nothing other than the trace of a trace, the obscured remains of an always improper or differential origin (Wortham 2010: 91). In his deconstruction of presence, Derrida seeks to undo the author as a stable source of meaning, and show how the errors in modern language theory stem from Plato’s idea that the central function of language is to relate words to things (Vanhoozer 1998, Levinas 1991: 4).
Derrida states;

“Within the metaphysics of presence, within philosophy as knowledge of the presence of the object, as the being-before-oneself of knowledge in consciousness, we believe, quite simply and literally, in absolute knowledge as the closure if not the end of history. And we believe that such a closure has taken place. The history of being as presence, as self-presence in absolute knowledge, as consciousness of self in the infinity of parousia, this history is closed. The history of presence is closed, for ‘history’ has never meant anything but the presentation of Being, the production and recollection of beings in presence, as knowledge and mastery. Since absolute self-presence in consciousness is the infinite vocation of full presence, the achievement of absolute knowledge is the end of the infinite, which could only be the unity of the concept, logos, and consciousness in a voice without difference. The history of metaphysics therefore can be expressed as the unfolding of the structure or schema of an absolute will-to-hear-oneself-speak. This history is closed when this infinite absolute appears to itself as its own death. A voice without difference, a voice without writing, is at once absolutely alive and absolutely dead”


To deconstruct logocentrism is to show that what was taken to be the truth of the world or the ground of an enquiry is in fact a construct that has been imposed and which is contradicted by certain results of the enquiry it founds (Culler 1979: 138). Derrida argued that it is impossible to isolate a moment that could be called the origin of language, and yet we continue to think of language as a tool under our control, as if we give rise to it ourselves for our own purpose (Derrida 1976 [1967]). Rather, language itself – or the language of the Western ‘logocentric’ tradition – is always subject to the dislocating forces at work in the text. Language is marked by this primordial ‘metaphysics of presence’ which subordinates writing in the name of an authentic, natural speech (Norris 2000: 113). Language affects and conceals a metaphysical gesture because its philosophical conceits – the self, identity, presence, meaning and being – are products of a matrix of signifiers which derive their meaning through their differences (Hull 1994: 325). In his attempt to think through these limits of philosophy, Derrida introduces the term différance as a means of resisting the
drive toward premature system and method (Norris 1990: 205, Royle 2003), and to thwart the hermeneutic desire to reveal obscure truths inscribed in a text, the legend of philosophic tradition (Ormiston 1988: 43). *Différance* separates the previous bond between the signifier and signified by differing their natures and deferring their contact (Taborsky 1997: 66). With the loss of the unique word, *différance* refers to an, in principle, interminable play of differences, similarities, and interrelations in any meaning production (Plotnitsky 2004: 11-12). In his use of this infrastructure, Derrida is able to reinforce the link between writing (or graphic representation) and everything that works to complicate the notion of speech as ideal first presence (Norris 1990: 205, see also Norris 2008).

*Différance* is a neologism, untranslatable into English, whose meaning is allowed to oscillate between the two French words signifying ‘difference’ and ‘deferral’ (Norris 1990: 205). *Différance* is a modification of the French word "différer" (to differ) (Plotnitsky 2004: 11-12), and is formed by substantivizing the participle of the verb *différer*, “to defer”, “to postpone”, “to adjourn”. In the creation of this noun, the ‘a’ has been substituted for the ‘e’, yet this remains a purely graphic change since French pronunciation is unable to distinguish these substitutions in the word’s last syllable (Norris 1990: 205). Thus it becomes a difference that depends on the mute intervention of a written trace – a trace which ties *différance* in with the functioning of the arche-trace (Gasché 1986: 195). Derrida’s development of *différance* is intrinsically linked with his research into linguistics (Hullick 2010: 192). *Différance* launches from the Saussurian claim that language is a structure of differences, irreducible to any straightforward logic of identity (Norris 1990: 205), and that “language, at whatever moment we take it ... is at every moment a heritage from the preceding moment (Saussure, cited in Frank 1989: 161). Saussure rejected the notion that words simply reflected ideas and the inherent shape of the world, with his arguments that illuminated the ways in which signs were arbitrary (Ellis 1989: 45). In *différance*, Derrida brings this platform together with the radical implications of Husserl on the nature of time-consciousness, that the ‘present’ is a moment endlessly deferred through the non-self-identical nature of temporal existence (Norris 1990: 205). In the Saussurian structuralist idea of the linguistic system there are no positive terms, only differences (Atkins and Johnson 1985: 2). For example, the identity of any particular phoneme is not constituted by any positive essence, any real distinctive acoustic sound (for it is realisable in a multitude of qualitatively different sounds), but instead by its differential relations with other phonemes in
the system (Shusterman 1989: 100-101). Accepting Saussure’s demonstrations that language contains only differences, Derrida built on this argument to show how meaning derives not so much from differences between terms, as from differences within each term (Atkins and Johnson 1985: 2, Culler 1979b). Derrida recognised that all the objects and concepts of our world are linguistically mediated and constituted, while asserting that all the objects, elements or categories of discourse are also differentially constituted and do not rest on foundationally real, positive networks beyond the differential network of language. They do not have as their cause a subject or substance that is present, and which escapes this play of differences (Shusterman 1989: 100-101). As he states;

"without a retention in the minimal unit of temporal experience, without a trace retaining the other as other in the same, no difference would do its work and no meaning would appear. It is not the question of a constituted difference here, but rather, before all determination of the context, of the pure movement which produces difference. The (pure) trace is différance" (cited in Atkins and Johnson 1985: 3, emphasis in original).

This is a complex and inter-animating relationship whereby terms are no longer equated to one another, “each containing within itself a trace of the other” (Atkins and Johnson 1985: 3).

It is important to recognise that Derrida also conceives of différance and of the inconceivable of différance much more broadly;

"What is written as différance, then, will be the playing movement that ‘produces’ – by means of something that is not simply an activity – these differences, these effects of difference. This does not mean that the différance that produces differences is somehow before them, in a simple and unmodified – in-different – present. Différance is the non-full, non-simple, structured and differentiating origin of differences. Thus, the name "origin" no longer suits it … we will designate as différance the movement according to which language, or any code, any system of referral in general, is constituted ‘historically’ as a weave of differences” (Derrida 1982, cited in Plotnitsky 2004: 11-12).
Derrida comments on the relationships between *différance* and Heideggerian ‘difference’, by claiming that such a *différance* has no name in our language. However, we ‘already know’ that if it is unnamable, then it is not provisionally so. This is not because our language has not yet found this name, or because it exists in another language outside the finite system of our own. Rather, this is because there is no name for it at all, not even that of ‘*différance*’, which is neither a name nor a pure nominal unity, and which forever dislocates itself in a chain of differing and deferring substitutions (Plotnitsky 2004: 9). This led to Derrida’s infamous aphorism that there is nothing outside the text, related to the doctrine of the opacity (or non-effacement) of the signifier, as any word, sentence, or ‘text’, and the ‘signified’, its intended meaning. This terminology is taken from Saussure’s view of an individual word devising its meaning entirely from its differential function within the total, structural system of language of which it is a part. At first point, this resembles a holistic theme which has been so prominent in recent Anglo-American philosophy of language. Unlike the latter, however, Derrida argues that the meaning of a sound or inscription can never quite catch up with a language-user’s intentions and thus is always delayed or deferred. The differential and deferred meanings of words are always 'disseminated' into an intertextual web of meanings which no speaker or writer can ever fully master (Verges 1992: 387).

Derrida’s deconstruction is not an alternative to semiotics and logocentrism, as there are various ways of playing with or resisting the system that one cannot escape (Culler 1979a: 139-141). It does not claim to supersede structuralism, but to create problems for the structuralist paradigm by establishing precisely the limits that mark out a given conceptual terrain. As Derrida writes “differences are the effects of transformations and from this point of view the theme of *différance* is incompatible with the static, synchronic, ahistoric motif of the concept of structure”. This also means acknowledging the extent to which *différance*’s own operative terms and strategies necessarily work with a restricted economy, and within a given set of enabling philosophical presumptions. In this way, Derrida is unable to attach any sense to the term *différance* without calling upon structural metaphors or analogues (Norris 1990: 205-206), a fact of which he is well aware. Yet he is conscious of deconstruction resisting methodological implementation (Royle 2000: 4). His grammatology is therefore the name of a question (Culler 1979a: 140), a tactical intervention in the history of the word (Pepper 1997: 71), or a “more radical solution” than his historical counterparts (Pressler 1984: 325).
In his introduction of the term *différance*, Derrida puts in his writing a playing movement which produces the effects of difference, by deferring its own naming function (Scott 1987: 153). His writing involves a series of strategic maneuvers and displacements in which he modifies his terms, producing a chain of related but non-identical operators – *différance, supplement, trace, iterability* – to prevent any of his terms from becoming ‘concepts’ of a new science (Culler 1979a: 139-141).

In his book *Noise/Music*, Paul Hegarty links the concept of *différance* to ethnomusicology as caught up in a sanitised exoticism that still praises ‘diversity’ in itself, and sees diversity everywhere and everywhere else;

> “This cosy humanism insists on diversity as a value in no need of further exploration, and modifies Derrida’s notion of *différance* into a homespun, patronising judgement, refusing alterity in favour of a recognizable, proximate form (to praise difference is to control it as a judged otherness)” (Hegarty 2007: 136).

**First Iteration**

This study incorporates two separate series of investigations. Firstly, I consider the Derridean critique of the metaphysical tradition’s concern of, or foundation in, the idea of origins. This thematic will be explored by drawing on the mathematical and acoustic concept of the sine wave as representing the idea of the foundation or origin as it relates to this first series of investigations into object specific audible feedback. This represents, on the most basic level, the single-unit-system feeding back on itself at the level of, or comparable to, the concept of fundamental frequency. The focus here on audible qualities gives the illusion of stability or stasis, while at the same time being a product of a highly unstable non-linear process of positive feedback.

Secondly, I focus on the notion of the indivisible point as it applies to the Derridean critique of metaphysics and Derrida’s related term ‘*différance*’, which sounds the same as difference but is written slightly different, where the difference between *différance* with an ‘a’, and difference with an ‘e’, is inaudible (Derrida 1978 [1967], 1982). For these studies, I interrogate several groupings of identical objects (recording devices of the same make and model) through a
play on appearances, through which I link Derrida’s specific term ‘différance’ to the idea of physically identical objects which can never wholly replicate each other audibly.

I devised four systems for this initial compositional iteration, each of which consisted of four identical objects (sound recorders, which are identical in terms of being the same make and model, but not specifically identical in their overall physical appearance). I set these recording devices to feed back on themselves individually tuned to an assimilation of their individual fundamental frequency. This represented an approximation of the most stable output from a feedback loop within each specific context; in other words, the closest approximation to a representation of a sine wave.

Metaphysics creates the illusion that there is such a thing as static or undifferentiated origins (universals) from which there can be sketched determinate paths. This creates a deception of continuity and stability in the repetitive regeneration of cause and effect. In comparison to the first set of compositions for this iteration in which feedback cycles of recording devices are tuned to a single frequency level, a perceptibly stable output assimilating the sine wave is very much an illusion. This is because with every repetition, with every cycle, there are minute changes – there is always something added to or subtracted from each cycle.

In the second series of compositions under this heading, the systems are comprised of multiple identical objects (recording devices) i.e. they appear under the guise of a singular identity. This, however, will be proven to be only a superficial, or visual misconception. I argue that under the guise of Derridean terminology, within the non-concept of différance, the resulting audible feedback system formations – originating in perceived singular identities – validate, albeit contort or turn over, the inaudible ‘a’ of différance in their unison distortion of the apparent illusion of belonging to an indivisible origin. The seemingly static aural representation of the underlying chaotic and indeterminate process involved in the production of an output within each of the participating objects, while alluding to a stable presence, will never be an identical presence. However, the illusion which it produces will function in a similar way to the ways in which metaphysics views its own foundation.
The sounding object continually defers presence at the same time as it maintains the illusion of a stable entity which is present and traceable to an originary source. As it multiplies, or re-iterates the feedback cycle, this sounding object defers any categorisation except on the superficial plane of what is visually perceptible. The illusive notion of the concept of center or origin in terms of its presence is always and continuously being alluded to through replacement and over-writing in the recursive non-linear movement of the feedback system.

**Conclusion**

In this first iteration of the project I have investigated an area at the core of Derridean deconstruction’s quarrel with metaphysical certainties, through the founding of a compositional rationale based at the intersection between this realm of metaphysical certainties and the Derridean non-concept *différance*. In doing so, I have prepared a first iteration in a series of four Derridean infrastructures (Gasché 1986, 1987, 1994), and in the process produced a context specific range of local narratives (Knoespel 1991).
Chapter 2

Structure and the Emergence of Supplementarity

Introduction
In this chapter I further my investigations into the audible feedback system by starting to open it up to the rich complexities of its potential. To do this I broaden the link from the previous chapter between the audible feedback system and Derridean terminology, through concepts from systems theory and related new sciences of the era.

The purpose of Derrida’s poststructuralist rethinking of the metaphysical concept of structure is to show that this concept, like any concept, depends on the necessity of presence being seen as undeconstructible. Derrida’s point is that the structure of undecidability is what conditions the possibility of concepts such as center and origin. Centers and origins are never just there from the beginning. Rather than preceding the work of undecidability, they proceed from it (Lucy 2004: 131, Hill 2007). Derrida criticizes the notion of the centre as a ‘natural site’ with implicit reference to the Saussurian principle that there can be no signified without a signifier: the centre as “transcendental signified” is impossible because it can never be “absolutely present outside a system of differences” (Derrida 2005 [1967, 1978], in Easthope 1990: 207).³

The objects of this study, and the processes by which they emit sounds, are wholly a product of non-linear (complex) processes of positive feedback. In the previous chapter, I examined the feedback system’s potential for stability in relation to certain relatable Derridean concepts. In this chapter, I focus on the feedback system’s potential for complex interaction and output. I do this through the use of simple rules or procedures through which the system or structure destabilises and starts to exhibit a more complex behavior. This ranges from silence to a myriad of simultaneous tones, unpredictably changing and altering the overall system’s output. The concept of emergence as it existed in the contemporary sciences of systems theory will assist in explicating the system’s behavior along with the Derridean notions of structure and supplementarity.

³ See Derrida’s ‘Structure, Sign and Play in the Discourse of the Human Sciences’ in Writing and Difference, pp. 351-370.
I again look at singular objects and systems of objects. At the outset of the investigations each single object is in a set-state (building on the experiments of the previous chapter) from which they are triggered through a parameter change, or a re-tuning, by a subtle realignment of the balance between their individual input and output. On a macro-level, the system reacts to, and interacts with, these initial changes as though they were coming from the system itself. In other words, changes imposed on one part of the system will have an influence on how the other parts of the system and the overall system behave. In this sense the system can be said to be self-regulating.

I will introduce these investigations through an initial discussion of the central terminology which is implemented in this chapter. This will be followed by an interrogation and further explication of these ideas into and through the audible feedback system.

Structure
Throughout his work, Derrida frequently talks of idealities as structures. He speaks of the representative structure which is meaning – of the primordially repetitive structure of signs (1973 [1967]: 51).

“It belongs to the original structure of expression to be able to dispense with the full presence of the object aimed at by intuition” (Derrida 1973 [1967]: 90, Mulligan 1991: 205).

Structure has always referred to a constructed system functioning perfectly within itself, regardless of whether the term is traced back to the origin of its present usage in the calculus of variations of the 1870s and in topology at the turn of the twentieth century, or to its synonyms in Greek thought (Gasché 1986: 144). Derrida argues that this history of the concept of structure must be thought of as a series of substitutions of center for center, as a linked chain of determinations of the center. The history of metaphysics, like the history of the West, is the history of those metaphors and metonymies (Ryu 2001). Before Nietzsche, and going all the way back to Plato, structure was conceptualized in terms of a center or by referring it to a point of presence – to a fixed origin. Following Nietzsche’s critique of the metaphysics of truth, Freud’s critique of the metaphysics of the self, and Heidegger’s critique of the metaphysics of presence, this earlier concept of structure gave way to a new concept of the decentered structure. The decentered structure came to be associated with what was then defined as
structuralism, a system by which any differences between the Platonic structure and the Nietzschean structure would be effects of a much larger system of structural differences, whether in the form of Lévi-Strauss’s structure of the human mind, or Saussure’s langue as a rule-governing system of differential relations (Lucy 2004: 131).

At this time, the concept of structure remained conceptualised in this fashion, being based on a point of presence or fixed origin which turns its borders into the circumference of a totality and creates a concept of closure. This closed totality, viewed as being withdrawn from all possible change from the outside, and making the structure into an ideal model, is also emphasized by the metaphorical origin of structure in the concept of spatiality (Gasché 1986: 144-145). For Derrida, however, the decentering of structure is not defined by the absence of all centrality, but by multi-centering. This is a potential emergence of many centers and claims upon one or another centrality in the absence of a single, absolute center that would define its alternatives as unconditionally marginal (Plotnitsky 2004). In Derrida’s modified model of the structure, the difference between centered and decentered structure could be seen as being generated from an overarching or underlying structure of differences between non-positive terms (Lucy 2004: 131).

**Emergence**

Contemporary discussions of emergence have grown out of the scientific quest for reduction. Emergence theories presuppose that the once-popular project of complete explanatory reduction – that is, explaining all phenomena in the natural world in terms of the objects and laws of physics – is ultimately impossible (see Clark 1980, Primas 1983, Evandro Agazzi 1991, Brown and Smith 2003). Emergence is the way in which complex systems and patterns arise out of a multiplicity of relatively simple interactions. A property of a system is said to be emergent if it is in some sense more than the "sum" of the properties of the system’s parts. An emergent property is said to be dependent on some more basic properties (and their relationships and configuration), so that it can have no separate existence. However, a degree of independence is also asserted of emergent properties, so that they are not identical to, reducible to, predictable from, or deducible from their bases. The different ways in which the independence requirement can be satisfied leads to various sub-varieties of emergence. Emergent processes are those in which a complexity arises out of interacting processes which form an interconnected feedback cycle. However,
these cycles cannot fully be described in terms of those processes since the system as a whole has properties that the constituent reactions will lack (Schultz 1998, Gilbert and Sarkar 2000).

Commentators generally agree that twentieth century emergence theories fall into two broad categories. These are best described as 'weak' and 'strong' emergence – with the emphatic insistence that these adjectives refer to the degree of emergence and not to the argumentative quality of the position in question (Bedau 1997: 375-399). Strong emergentists maintain that genuinely new causal agents or causal processes come into existence over the course of evolutionary history. By contrast, weak emergentists insist that, as new patterns emerge, the fundamental causal processes remain, ultimately, physical (Clayton and Davies 2006).

**Supplementarity**

Derrida takes the term ‘the supplement’ from Jean-Jacques Rousseau, who saw a supplement as an inessential extra added to something complete in itself. Derrida argues that what is complete in itself cannot be added to, and so a supplement can only occur where there is an originary lack (i.e. some absence in a thing that permits it to be supplemented). A supplement, by virtue of the principle of differential constitution, “produces that to which it is said to be added on” (1973 [1967], cited in Ryan 1982: 26). In any binary set of terms, the second can be argued to exist in order to fill in an originary lack in the first. In this relationship, one term secretly resides in the other. Supplementarity, which is neither a presence nor an absence, is precisely this play of presence and absence, the opening of this play in which no metaphysical or ontological concept can comprehend (Derrida 1978 [1967]: 289, 1976 [1967]: 157). The supplement is that which escapes the system and at the same time installs itself within the system to demonstrate the impossibility of the system (McQuillan 2000: 19-20). The supplement thus occupies the middle point between total absence and total presence (Derrida 1978 [1967]: 289, 1976 [1967]: 157).

As Rodolphe Gasché explains;

“The idea of the supplement raises some interesting questions. We can think of the origin as a place where there is no originary, only a supplement in the place of a deficient originary. It is deficient for this reason. We can think of the supplement as a surplus, something extra
added to the whole and outside of it. But if the whole is really the whole, then nothing can be added to it. If the supplement is something and not nothing, then it must expose the defect of the whole, since something that can accommodate the addition of a supplement must be lacking something within itself. Derrida calls this ‘the logic of the supplement” (Gasché 1985: 206-211).

The outcome of Derrida’s reading is to reveal certain stress points or logical anomalies, which require the adoption of a difference, non-classical or supplementary logic (Norris 2007: 13). The supplement becomes another of Derrida’s similar terms which he deploys as a means of preventing the conceptual closure – or reduction to an ultimate meaning – which might otherwise threaten his texts, the supplement itself bound up in a supplementary play of meaning which defies semantic reduction (Norris 2002 [1982]: 32).

**Second Iteration**

The audible feedback experiments in this chapter were assembled by a range of recording devices (objects) which testing had shown to be more prone towards complex behavior (i.e. likely to display simultaneous multiplicities of tones, or complex aural structures) than other objects participating in this project. In this context, the focal point for investigating the complex behavior of the system is the self-organising element involved, or the sense of perceived structural activity within the system as a whole, as well as the objects individually, and the ways in which these complex structures respond to a specifically defined environment of pre-set parameters where incremental changes are randomly imposed on these parameters.

The sense of structure as it relates to the objects both individually, and as parts of the feedback system, can be thought of as ‘set-states’. This is the starting point for this iteration of the study, whereby each of the objects are individually tuned to a starting point as a ‘set state’.

In *Writing and Difference*, Derrida argues that structure is first the structure of an organic or artificial work, the internal unity of an assemblage and a construction. The concept of structure is a highly charged and ambiguous one, and everything depends upon how one sets it to work (Gasché 1986: 145). The morphological
and geometrical metaphoricity of the notion of structure not only fails to exhaust the meaning of the term, but also depends on the structurality of structure for its very meaning. But by thematising and excluding all the figurative connotations of the original model of structure – that is, its geometrical representation of a unified and centered space – the "structurality of structure" may come into view. The actual structurality of structure only becomes possible as soon as the original metaphorical meaning of structure is recognised as a law according to which the notion of structure has always been subjected to a center. In doing so, one can attempt to decenter structure, to think about its openness, or to think about what remains open in an otherwise closed structure (Gasché 1986: 146).

In a ‘set state’, the objects are set up and tuned singularly within the feedback system and left to interact with the system. A set state in these terms represents the structurality of structure as the 'fundamental structure'; it allows a closed-off totality to open itself, if only in the mere anticipation of its subsequent reclosure. But this 'fundamental' structure is in fact ‘the structurality of an opening’, a transcendental of sorts which allows the minor structures to come to the fore. The structurality of this ‘fundamental’ structure is the opening or possibility of what opens up closed structures, and what closes structures off against any exterior interference. It is the principle that guides the decentering and centering of structures (Derrida 1978 [1967], cited in Gasché 1986).

The transcendentality of this structurality of an opening is therefore both the condition of possibility of a systematic structuralism and “the principled, essential, and structural impossibility of closing a structural phenomenology” or any systematic structuralism of whatever kind (Derrida 1978 [1967], cited in Gasché 1986). As Gasché further elaborates;

“To speak of the structurality of structure is to speak on a level entirely other than the level on which the concept of “the (necessarily closed) minor structure” exists. Structure, in Derrida’s work, has the meaning of a non-regional and transcendental opening that represents the condition of possibility of the minor structures and the accidents that they suffer. Structure, as used by Derrida, is an infrastructure” (Gasché 1986).

The transition from one, or the initial, set-state in the system as a whole, or the individual objects, to another, or the next, is the temporary opening up of the
system to instances of emergence. These instances of emergence open up the set-state of the system to the potential for ‘minor structures’ to collide within the system and influence the order of events and resultant output. This emergence eventually becomes the new set-state of the system where the changed parameters of the system are incorporated into the previous as a supplement.

In scientific analysis, a closed emergent system is one in which all the lower level physical parameters are known. It is not epistemologically emergent. Closed emergent systems arise in situations where the lower levels organise themselves or are organised into complex interactive wholes that obey higher order laws and produce real and novel patterns. It is this whole-part relationship, combined with the development of higher order laws and novel higher order behavior, which characterizes closed system emergence (Clayton and Davies 2006).

In contrast to closed system emergence, systems that betray open system emergence are systems whose full workings are not known and which may rely on principles heretofore unknown. Open system emergence necessarily implies epistemic uncertainty. This may or may not imply ontological openness as well. If the system is complete at the lower level, then that seems to imply there cannot be top-down causality. This is not necessarily the case, however, and it relies on a conceptual confusion which assumes that the ontological levels in a physical system are completely discrete. Peterson (2001) argues that this misinterprets the emergent character of many physical systems. If the mind is a closed emergent system, it is mindful by virtue of the organisation of its physical constituents. In reading Douglas Hofstadter (1980), he further states that closed emergent systems are not simply hierarchies composed of independent levels, but are tangled hierarchies in which levels are not completely discrete from one another.

Peterson’s work shows that by considering ensembles/assemblages of identically prepared systems, and measuring the resultant divergences of emergentism against the behaviour of the ensemble, one can envisage the emergent properties revealing themselves in at least two distinct ways. Firstly, the divergent behaviour might be different from the behaviour of all the members/objects of/in the ensemble/assemblage. Secondly, we could have a merely probabilistic case for emergence if the behaviour of the real system was consistently like that of only a tiny fraction of our ensemble. That is, persistently improbable behaviour would also be a mark of radically emergent properties at work. Thinking about
indeterminism also suggests a new kind of emergentism: the emergence of indeterminism. We can imagine emergent properties that introduce indeterminate behaviour into a system which the final physics claims to be deterministic, or emergent properties could skew the probabilities which the final physics assigns to a system’s possible. It is, however, rather more probable that determinism is an emergent property of systems constituted from fundamentally indeterministic elements (Peterson 2001).

As the emergence of minor structures from within the fundamental structure or initial set-state of the system interact with the overall system in a supplementary capacity, the closed emergent system is temporarily opened up as a result of the closed systems unpredictable or indeterminate internal behavior. As such, this can be said to be in a causally determined yet indeterminate or unpredictable temporarily open state. This unstable open state is, in Derridean terms, the result of a minus in the system being added to by a plus, following the laws of emergence and the logic of supplementarity.

In *Speech and Phenomena* (1973 [1967]), Derrida’s supplementarity represents an attempt to account for a certain contradictory logic which is characteristic of the philosophical discourse on ‘origin’. The idea of supplementarity attempts to reunite in one structure a number of contradictory statements and propositions on origin, in a manner in which this contradiction is not obliterated, but, on the contrary, explicitly accounted for. Supplementarity stresses explicitly the function of substitutive supplementation in general, which is rooted in the “primordial nonself-presence” of “full” terms (Gasché 1986). Instead of referring to Other, supplementarity attributes the structural need of adding an Other to the vicarious nature of presence itself. The logic of supplementarity is the attempt to tie all these different propositions together into a structure that explains both their possibility and the limits of their scope (Derrida 1976 [1967], cited in Gasché 1986). As Derrida states;

“This logic of supplementarity would have it that the outside be inside, that the Other and the lack come to add themselves as a plus that replaces a minus, that what adds itself to something takes the place of a default in the thing, and that this default, as the outside of the inside, should be already within the inside” (Derrida 1976 [1967]: 215).
This describes an infrastructure that accounts for the emergence of origin as an after effect. It accounts for the possibility that such a reconstituted and reconstructed origin can itself be supplemented by additions, for the possibility that such additions can endanger so-called origins, and for the possibility that the operation of supplementation and the function of vicarious substitution are unlimited (Gasché 1986). As Derrida implies;

“The (infra)structure of supplementarity, by knotting together into one structure the minus and the plus, the lack of origin and the supplementation of that origin, does not choose between either one of them but shows that both functions are dependent on one another in one structure of replacements, within which all presences will be supplements substituted for an absent origin, and all differences, within the system of presence, will be the irreducible effect of what remains beyond being” (Derrida 1981 [1972], cited in Gasché 1986).

In the audible feedback system composed for this chapter, the system is still a closed system but leans towards openness. It is an opening of a closed system, or what could be called a semi-opened closed system. The system is a non-linear closed system, and the non-linear aspects of it pry the system open in little flashes which result in these sequences of on-off states, what could also be described as open-closed states, or 1-0 states, which would be it’s digital equivalent. In other words, the system in its highly unstable structural engagements with its constituent parts, are engaging in an on/off or open/closed recursive process or feedback cycle where there is an initial ‘stable’ or set-state as a starting point for the process. This represents what Derrida terms the fundamental structure or the structurality of structure.

The set-state, as the starting point for the system, is where the objects are individually tuned and left to their own devices, so to speak, in order to interact with the overall system. All the individual objects interact from their individual set-states within the system. When a change in the output of the system occurs in either a single object or the whole system, depending on how the process is monitored (i.e. all the objects of the system individually and/or the system as a whole), whenever there is a change, that change has resulted in a temporary opening of the closed system. There has, in other words, been an instance of emergence from within the system.
Once a material object or system attains a sufficient level of structural complexity, it acquires an emergent quality. As Alexander (1920) argues, this emergent quality differs importantly from typical macro-properties which would seem to be appropriately describable as a mere resultant of properties of the object’s micro-structure. That difference is reflected in the fact that it introduces a change in the behavior of the object which possesses it, such that processes internal to that object cannot be explained in terms of the laws which govern its micro-structures in the absence of such organisational complexity (Alexander 1920).

The emergence of this state of instability within the system (a semi-open state, or a state different from the set-state) can be seen as adding to, or writing over/into, the set-state of the system in a supplementary capacity, or as supplementing the initial or previous set state. The result of this process is a new ‘stable’ set-state in which the initial set-state has been supplemented through an event of emergence. From this new set-state, the system starts the cycle over again. In Derridean terms, there are two possible explanations to this behavior in the system. Either it is in a position of responding to a lack or ‘negative’ within the system itself, and as a result of this lack the system is being supplemented through the ‘positive’ event of emergence; or, the system is in a state of ‘fullness’ which represents a complete structure unto itself whereby the supplementary event of the emergence simply writes itself into, or becomes part of that structure, by adding to it. This second alternative could be regarded as akin to Thomas Kuhn’s notion of the paradigm change, whereby one stable structure is replaced by another, not necessarily as a result of a lack within the previous structure, but through sheer necessity of force – it pushes its way into or through the existing system to emerge as a new structurally sound system, and again ad finitum. In summary, it goes from the set state of the closed system, to the temporary opening as emergence of the system as an open system, which functions in a supplementary capacity, assigned to the previous set-state, the result of which is a new set-state – a new fundamental structure from which the next cycle begins.

**Conclusion**

To develop my argument further from the previous chapter, I have drawn on terminology from the new sciences of the Derridean deconstructive era which are relevant and complementary to Derrida’s rethinking of the metaphysical concept of structure. This theory has been applied to audible feedback systems in order to
show that this concept, like any concept, depends on the necessity of presence being seen as undeconstructible. In order to explicate the processes involved in the audible feedback system, through an invocation of the Derridean vocabulary and pointing towards its roots in contemporary science, I have worked with the concept of emergence as the way in which complex structures and patterns arise out of a multiplicity of relatively simple interactions within the system. I have used this terminology to tell the narrative of my experiments, whereby complex results emanate from smaller processes within the system, as part of the indeterminate nature of positive feedback.

I employed Derrida’s notion of the supplement, in which he argues that what is complete in itself cannot be added to, and that this results in a supplement being only able to occur where there is an originary lack. As Derrida argues, with any binary set of terms, the second can be argued to exist in order to fill in an originary lack in the first. The work of supplementarity thus turns out to be essential to the constitution of ‘the work itself’. This reveals that without the supplement there is no ‘itself ’ of the work, and that the very idea of the work itself is constituted only in the work of supplementarity. Thus the difference between ‘inside’ and ‘outside’ the work is rendered undecidable. In my corresponding audible feedback investigations, I have used the notion of supplementarity to bridge the concepts of structure and emergence.

The structurality of structure, or fundamental structure, is a decentered foundation from which the concept and results of emergence can be found to act in a supplementary capacity. In terms of Derridean supplementarity, they do this in order to establish another fundamental structure as a foundation from which the next cycle of supplementary emergence progresses, a cycle which continues.
Chapter 3

Reversal – The Trace and Erasure of Reinscription

Introduction
In this chapter, I build on the previous two iterations to develop further engagements with the deconstructive feedback system. The first iteration, in Chapter 1, looked at simple forms, such as single frequency or sine wave output equivalents, seemingly stable systems but deceptively so in terms of them being systems of positive feedback. The second iteration, in Chapter 2, investigated systems more prone towards complex output, i.e. displaying multiple frequencies of tone. In both previous iterations, these systems have been closed unto themselves by extracting the information directly from the object’s output and feeding it back into the same object’s input in a recursive or circular manner. In this third iteration of the project, I expand on these scenarios by introducing the microphone into these systems. Here the system is opened up from the previously closed state of the feedback loop. This introduces another source of information to the system outside the confines of the objects themselves, and places the objects within their own exteriority while exposing them to the idea of the other or alterity. The overall purpose of this chapter is to open up the initially closed feedback system by expanding on and adding to its contextual variables through the further involvement of Derridean terminology.

When thinking about reversal within the current context of the feedback system, one way to approach it is by opening up the closed loop by extending the system through the use of microphones. By introducing the externality of the microphone into each system cycle, the feedback can be said to flow in the opposite direction, or at least as starting from the opposite end of the output/input paradigm. By connecting a microphone to the object’s input and a speaker to the same object’s output, one achieves two things. Firstly, the starting point for the feedback loop is reversed. Instead of starting the signal flow from the output of the object, as has been the practice with the previous two iterations, here the microphone is plugged into the input of the object and the signal necessarily starts there. It receives acoustic information through the microphone, which is then played back through the speaker attached to the output of the object and consequently picked back up through the microphone attached to the input. Secondly, there is an involvement on another level of this process in which the concept of alterity is invoked. By changing the parameters of the acoustic retrieval or information
gathering process from purely internal (through the closed circuit output/input system) to a widened scope – beyond the internal structures of circuitry – inclusive of the surrounding acoustic environment, the process can be said to extend to the inclusion of the other. Following with the two movements of deconstruction, this second aspect corresponds to the non-concept of reinscription, whereby the result of the reversal is reinscribed through and on top of the same process.

**Reversal and Reinscription**

Derrida’s strategy of deconstruction consists of two phases. The first phase is the inversion of a hierarchy at work in any one of the many oppositions which structure the discourse of metaphysics. Metaphysics orders these oppositions according to the value of presence. The superior term in the opposition represents presence, while the weaker or inferior term in the opposition represents the negative mode of presence or its symmetrical contrary, that is, absence. Derrida performs the first phase by inverting Husserl’s hierarchy of temporality (self-presence) and spatiality (absence), and accomplishes this inversion by showing that spatiality and temporality are interwoven, and that the condition of possibility of space is also the condition of possibility of time. This is not, however, a simple inversion. As a transition to the second phase, Derrida reinscribes spatiality so that it no longer functions as the negative mode of temporality. As reinscribed, it is a product of *différance* (Lawlor 1982: 154).

Derrida argues that deconstruction involves an indispensable phase of reversal (i.e. first-level deconstruction):

“To remain content with reversal is to operate within the immanence of the system to be destroyed. But to sit back and take an attitude of neutralizing indifference with respect of the classical oppositions would be to give free rein to the existing forces that effectively and historically dominate the field. It would be, for not having seized the means to intervene, to confirm the established equilibrium” (Derrida 1981 [1972]: 6).

Deconstruction cannot limit itself or proceed immediately to a neutralization. It must, by means of a double gesture, or a double science, practice an overturning of the classical opposition and a general displacement of the system (Derrida 1982 [1972]: 329). In doing so, deconstruction puts out of play every source of
norms, controls or indicators which, in the ordinary use and experience of language, set a limit to what we can mean and what we can be understood to mean (Abrams 1989: 242). It is only on this condition that deconstruction will provide itself the means with which to intervene in the field of oppositions that it criticizes, which is also a field of non-discursive forces (Derrida 1982 [1972]: 329). On deconstruction as a textual practice, Derrida writes that he wishes to reach the point of a certain exteriority in relation to the totality of the age of logocentrism. The task is to open a reading that produces rather than protects, and to dismantle the metaphysical and rhetorical structures that are at work in the texts (both philosophical and socio-historical). This is done not in order to reject or discard them, but to reinscribe them in another way (Mazzei 2007: 17-18).

Deconstruction locates a point of otherness within logocentric conceptuality, and deconstructs this conceptuality from that position of alterity. To do this, Derrida does not dispense with or merely reverse opposites, but explains their necessity in their specificity within a given field, and resituates and re-delimits them in the new deconstructed conceptual field it creates. He shows how one must produce new concepts that can no longer be, and never could be, included in the previous regime, possibly by using a reversal as a phase of such an analysis and by, strategically, borrowing a name, such as that of writing, from a subordinate member of a given hierarchy. In other words, a given (old) configuration continues to function, both in re-delimited old regimes and in new regimes, rather than being simply abandoned, although some portions of it must be given up (Plotnitsky 2004).

In the same vein, Derrida comments that deconstruction is not an enclosure in nothingness, but an openness towards the other (Kearney 1984: 124, cited in Mazzei 2007: 17-18). Derrida argues that the logocentric philosophical tradition has thought, appropriated, and mastered its other through a reduction of plurality to unity and of alterity to sameness. Derridean deconstruction attempts to locate “a non-site, or a non-philosophical site, from which to question philosophy” (Kearney 1984: 108, cited in Mazzei 2007: 17-18). Deconstruction attempts to attain a point of exteriority, alterity, or marginality that is irreducible to logocentric, philosophical conceptuality (Mazzei 2007: 17-18).

Reflecting on Derrida’s concept of the text, as Bennington argues, text is not quite an extension of a familiar concept, but a displacement or reinscription of it.
Text in general is any system of marks, traces or referral. The text is not a limiting set of marks on a page, but is an opening up of words both written and spoken, of traces in speech and in writing. Writing is simply the paradigm while textuality is the sewing together of these traces. An excessive reading then serves to produce the pattern present in the text and highlights the stitching that holds that pattern together (Bennington 2000).

**Arche-trace and Erasure**

Derrida sought to show how the reading of the metaphysical text need not coincide with the elevation of the logos over the silent marks of a dead language. For Derrida, the trace that is inscribed in the metaphysical text is neither the visible sign of presence nor the invisible law of indifferent Being (Melaney 2001: 8). Trace is a metaphysical concept on the same ground as the concept of presence as self-presence, from which it is derived and referenced from Nietzsche to Heidegger. For Derrida, the word designates something of which the metaphysical concepts of trace and presence are the erasure. Trace is the necessarily metaphysical concept that names an originary tracing and effacement, of which the traditional conceptual pair of trace and presence within the metaphysical text is the trace of effacement (Gasché 1986, see also Barnouw 1986, Appelbaum 2009). As Derrida explains in *Margins of Philosophy*;

“In order to exceed metaphysics, it is necessary that a trace be inscribed within the text of metaphysics, a trace that continues to signal not in the direction of another presence, but in the direction of an entirely other text. Such a trace cannot be thought *mere metaphysico*. No philosopheme is prepared to master it. And it (is) that which must elude mastery. Only presence is mastered.”

“Presence, then, far from being, as is commonly thought, what the sign signifies, what a trace refers to, presence, then, is the trace of the trace, the trace of the erasure of the trace” (1982 [1972]: 65-66).

The arche-trace is the constituting possibility of the differential interplay between the self and other, in short, of what is traditionally understood as difference (Gasché 1986: 186-187). It is the figure of repetition (Sallis 1995 [1986]: 143). *Différance* is the pre-opening of the ontic-ontological difference, while the *archi* is the ineluctable work of the absence that affects the concept, allows it and breaks its plenitude. This is the erasable trace, its "presence-absence." "The non-
presence” of the other” is bound to “the sense of the present” (Dubreuil 2006: 112-113).

Philosophy traditionally considers the other to be secondary to the self, the other of the self, thus annulling the other in its own right. However, Derrida’s inquiry into their difference leads to the recognition of a certain irreducibility of the other with respect to the self. Despite the self’s traditional subjection of the other to itself, its own identity is a function of its demarcation from the other, which becomes endowed with an essential autonomy (Gasché 1986: 186-187).

The originary trace designates the minimal structure required for the existence of any difference (or opposition) of terms (and what they stand for), that is, for any relation to alterity. In the sphere of metaphysics, a trace is derivative of, and opposed to, an instant or instance of full presence. The trace that names the difference, and that must inhabit that agency of full presence in order to distinguish it from its trace, is called arche-trace. This is a trace of which the trace is only a trace, and it has breached the moment of full presence. What the arche-trace allows to appear in a difference of values, concepts, or entities, is its own effacement in the form of the valorized value and in the form of the absence of that value, an absence which is the only possible representation of the arche-trace within the realm of appearances (Gasché 1986: 186-189).

The trace is constituted by the possibility of such an effacement, whereby Derrida puts two terms under erasure (Atkins 1983: 17). The economy of erasure is the economy of the signifier giving way to the signified (Bingham 2008: 19). As Derrida states in Writing and Difference;

“The trace is the erasure of selfhood, of one’s own presence, and is constituted by the threat or anguish of its irremediable disappearance, of the disappearance of its disappearance. An unerasable trace is not a trace, it is a full presence, an immobile and incorruptible substance, a son of God, a sign of parousia and not a seed, that is, a mortal germ. This erasure is death itself” (Derrida 2002 [1967]: 230).

The possibility of erasure constitutive of the trace shows itself in the trace’s effacement of what could maintain the trace in presence. The tracing of the trace is identical with that effacement, and thus with the self-erasure of the trace.
Through the effacement of what could maintain it in presence, the trace constitutes itself as relation to another trace. As Derrida states in *Dissemination*,

“since the trace can only imprint itself by referring to the other, to another trace ... by letting itself be upstaged and forgotten, its force of production stands in necessary relation to the energy of its erasure” (1981 [1972]: 331).

Tracing and effacing are not simply in a relationship of exteriority; what constitutes the trace in depth is precisely the relation to otherness by which the trace’s self-identity and self-presence are marked, and therefore effaced, by the detour through the other. Also, because of this solidarity between tracing and effacing, the arche-trace can never be presented as such outside the differences that it makes possible and as which it itself disappears. As Derrida states in *Speech and Phenomena*;

“it is itself a trace that can never be presented, that is, can never appear and manifest itself as such in its phenomenon. It is a trace that lies beyond what profoundly ties fundamental ontology to phenomenology. Always deferring, the trace is never presented as such. In presenting itself it becomes effaced” (1973 [1967]).

**Topology**

Topology, a mathematical term pioneered by Leibniz, deals with continuity of transformation and engulfs forms in their own variation (Massumi 1998: 16-24). Where geometry has to do with measurement, topology deals only with the structure of space (topos) and with the essential shapes or structures of figures. In so far as one deforms a given figure continuously, (i.e. does not separate points previously connected, and conversely, does not connect points previously separated), the resulting figure is considered the same (Plotnitsky 2003: 99). This variation is bounded by static forms which stand as its beginning and its end, and it can be stopped at any point to materialize other still-standing forms. It is what happens in between that is the area of topology (Massumi 1998: 16-24). Massumi explains this succinctly, when he states;

“The variation seamlessly interlinking forms takes precedence over their separation. Forms figure less as self-enclosures than as open co-dependencies of a shared deformational field. The continuity of that
field of variation is inseparable from the forms populating it. Yet it exceeds any one of them, running across them all” (1998: 16-24).

The transition between one state in a system to the next, or the other, is here a represented as the trace in the Derridean sense, where it implicates the space between being and becoming;

”When the focus shifts to continuity of variation, still-standing form appears as residue of a process of change, from which it stands out (in its stoppage). A still-standing form is then a sign: of the passing of a process. The sign does not in the first instance signify anything. But it does imply something. Or better, it implicates. It envelops in its stillness a deformational field of which it stands as the trace: at once a monument of its passing and a signpost of its potential to be repeated. The variation, as enveloped past and future in ceasing form, is the virtuality of that form’s appearance (and of others with which it is deformationally interlinked)” (Massumi 1998: 16-24).

Leibniz’s ideas concerning the possibility of making topology into a rigorous mathematical discipline are considered amongst his greatest contributions to mathematics, and were developed into modern topology in the nineteenth century as seen in the works of Karl Friedrich Gauss, Bernhard Riemann, Henri Poincare and others, and it is a certain quasi-mathematical geometry and topology that Deleuze primarily takes from Leibniz, as does Derrida’s philosophical ‘algebra’ (Plotnitsky 2003: 99-100).

**Third Iteration**

This part of the project took place in four different environments in Melbourne so as to provide sufficient grounds for comparison in terms of the ways in which the foundational parameters of the composition, as set out through the contextualising Derridean terminology, could be said to interact with, and help explicate on a processual level, the workings of, and output from, the physical feedback system.

The first context was chosen in an effort to establish a hypothetical baseline for the remaining environments, and is as close to an audibly sterile or neutral, non-
emitting setting as possible – a sound proofed recording booth in the studio facilities at RMIT. The idea of setting a baseline is here an attempt to identify the aspects of the aural input received through the microphones which emanate from the objects themselves. As such, while still being a source of aural data sourced from outside of the objects, it would here be considered a different level of otherness or alterity.

The second environment is an old and long abandoned factory in a residential area in Brunswick, directly adjacent to a busy road. This space could be categorised for the purposes of this project as an opposite to the sound-proofed studio booth in that it is a semi-open or semi-outdoor space with a highly unpredictable range of sounds at various levels and at any given time of day. Here the concept of the other comes closer to the fore, and masks much of the object’s mechanical sound by way of other environmental sounds of various range and timbre.

The third space is a living-room environment which, for the purposes of this project, serves as a passive space in terms of being able to predict or interpret the aural activity in the space to a larger degree than in a more active environment.

The fourth and last space is a windowsill inside one of the older buildings of RMIT’s city campus, formerly part of the Melbourne gaol. This building now houses RMIT’s spiritual center, and, compared to the other environments in this section of the study, exerts significantly different aural characteristics. For the purposes of this project, this is an active space in terms of its frequent use on a regular basis by an unknown number of individuals or groups, and as such it leaves the task of predicating the aural activity in the space a more complicated matter.

For every specific context, the parameters would be different and as a result produce varying responses from the system. The added variable of the external input introduced the dimension of the outside – of the other, the unknown, of alterity – which added another unpredictable element to the always already non-linear feedback system.

At times, the environmental factors would overwhelm the system’s output or presence, sometimes simply due to the overall low output level of the system.
compared to the external sounds that permeated the space. In these situations the external other could be described as an un-penetrable wall of already existing information or causal metaphysical certainties, an un-supplementable whole unto itself, without room for any external input, no ears for the other, no emergent properties or potential, yet subtly and continuously added to and subtracted from by the interacting feedback system.

By redefining and expanding on the system within these diverse contextual environments, the other – represented through the engagement with the external variables specific to each spatio-temporal context – becomes another part of the feedback system’s involvement with continually reinscribing itself into and on top of the overall system’s output.

To help explicate the workings of the system within the contexts of reversal and reinscription, the notion of erasure, as found within Derridean terminology, together with the concept of decomposition, are here brought into play.

Like the continuous cycle of the system, whereby its input overwrites or writes itself into the output, the notion of erasure describes the process where the input reinscribes itself on top of and into, or through, the previous cycle. As such, it overwrites itself as a replacement on top of the previous or existing. However, this does not occur in a way that completely cancels out the existing or previous, but rather as an addition to or through it.

The notion of decomposition here specifically refers to the physical changes brought about through the implementation of the system over time, where the physical elements constituting the system as such are exposed to a gradual physical deterioration through extended use. In other words, the very physicality of the system is continuously subject to a process of decomposition which impacts on its overall performance and output.

In theoretical terms, the decomposition of the system refers to similar spatio-temporal processes within a textual construct, where its constituent parts experience degrees of deterioration or fading as a result of various use and implementation over time. In Derridean deconstructive terms, this system first of all reverses the hierarchical order between the system’s input and output by extending the system through the inclusion of the other (microphone/contextual environment). This reversal then sets out to reinscribe itself on top of and into
the existing system through implementing a conceptual erasure analogous to the physical implications of a gradual decomposition.

The compositional systems setup in these four environments were documented both aurally and visually to help narrate the proceedings and to supplement the ADR.

**Conclusion**
For this iteration, I decided on four specific environments in which to expand upon my previous intersectional investigations with audible feedback systems through the use of Derridean terminology. In building on these previous iterations of the project, and in following with the quadraphonic theme of these investigations, I continued to work with the objects in groups of four, this time adding another variable to the equation through the use of microphones. By introducing the concept of alterity into this iteration, and specifically in dialogue with the Derridean non-concepts of trace and erasure, the previously two-dimensional space of inquiry becomes three-dimensional. The direction of the signal changes and reverses its directional flow, in terms of the output/input paradigm, to the inclusion of the other, while continuing to add to the previous two dimensions in the way that the system recursively reiterates through this third dimension.
Chapter 4

Iterability

Introduction
In this chapter I facilitate my fourth iteration through the notion of iterability as it is found in Derrida’s writing. In working with this term, and building on the three preceding parts of the project, I use this Derridean neologism to investigate the potential for, and possibility of, repetition in the context of the outside/inside divide and the human/machine interface. In addition to inquiries into Derrida’s non-concept of iterability, I briefly discuss the development of the computer and its implications on the current paradigm in this context. This iteration of the project examines repetition, as the potentially infinite redoubling or mimesis within online virtual networks, through an experiment with setting up a large number of interconnected MySpace pages (representing the majority of the overall project’s participating objects and a selection of their individual output), and by which each instance inhabits a single object (recording device) with several examples of its aural output.

The Necessary Possibility of Repetition
The necessary iterability or citation of the sign has had an important place in Derrida’s thinking since Speech and Phenomena (Kamuf 1991: 80). Derrida argues that with the necessary possibility of repetition, we have signs, words, ideas, concepts and mental images. That is, we have everything which can be contained by the notions of perception and experience. However, none of these would be possible without a concept of repeatability – itself a minimal and necessary condition of possibility – and the possibility of repetition (Derrida 1988 [1972]: 117, 119). A repetition logically implies sameness but denies identity. So the identities of signs, words, ideas, concepts and mental images depend on at least a minimal difference between repetitions. A mark must be repeatable in any of its moments ad infinitum. However, this does not imply infinity beyond finite existence. Rather, it implies an infinity in principle, as grounds for the finite repetitions of a singular mark. The finite repetitions generate their own infinity of repetitions into the future, and the future is therefore an inescapable absent/present moment as a necessary possibility of the repeatable mark. If finite repetitions are grounded in repeatability, then that would logically always have been the case. So the repetition generates not only an in principle infinite future of repetitions, but also implies an infinite past (Lucy 2004, Derrida 1988: 117,
Iterability

Derrida replaces the word ‘repetition’ with the word ‘iteration’ (Ryan 1982: 30), and in his seminal essay ‘Signature Event Context’, shows language to have its fundamental basis in its ‘citationality’, or in what he calls its ‘iterability’;

“A written sign carries with it a force that breaks with its context, that is, with the collectivity of presences organizing the moment of its inscription. This breaking force is not an accidental predicate but the very structure of the written text’ (Derrida, cited in Bisla 2002: 184).

This basis in citation leads to the person using language being necessarily absented – insofar as he would wish to “be” his “intention” – from himself. Therefore, the entire graphematic structure is connected to citationality, to the possibility of being repeated (Bisla 2002: 184). Which is why, for Derrida, iterability is a constitutive feature of language; all language is always in principle iterable, and a word that could not be repeated would simply not be a word (Rendall 1997: 167). Repetition makes identical, but it also alters or makes different. Without a movement of self-differentiating repetition or citation, there could be no event, no presence of the speech act. Iteration thus contains the double of meaning of repetition and alteration or difference (Ryan 1982: 30). Repetition, Derrida writes, is always the work of the other (iter = other) (MacCannell 1985: 63). Iterability is also another name for supplementarity, to the extent that the latter is already the space of duplication and thus of repetition, as well as différance, with which it shares the structural deferring of the possibility of a present instant or entity. Iterability also partially overlaps the idea of arche-trace, because it names the relation to Other as constitutive of the relation to self (Gasché 1986: 212-213).

Derrida defines “iterability” as the necessary possibility that any meaningful item of language will remain meaningful through its repetition across contexts (Szafraniec 2007: 81). For Derrida, it is a general condition that applies to the original use, which is therefore not original in the sense of being known or experienced without reference to anything but itself (Fish 1989: 47). The issue of iterability has to do with ‘original repetition’ – that is, a repetition prior to common repetition, the latter being always the repetition of an already constituted entity, moment, instance, or the like (Lucy 2004). Iteration, like
supplementarity, is another name for an ungrounding movement in deconstruction (Ryan 1982: 10). As with supplementarity, a repetition becomes possible only if a unit that is both sufficiently similar and sufficiently different to occupy the place of another comes to fill in the lack created by its absence. At that moment, the supplementing unit both repeats the absent unit and becomes an alterity that takes its place. Repetition thus hinges on the structural possibility of an absence of the repeated (Gasché 1986: 213). It is the repeatability of significant marks, their iterability, that makes it possible for an identifiable series of signs.

The 'original repetition' is not of the same order as repetition in the ordinary sense, which presupposes the uniqueness, singularity, and integrity of a 'first time'. As Gasché makes clear;

"It is not, like empirical repetition, a repetition that could possibly take place. Rather, the term refers to the 'repetition of repetition', or to repetition in general – repeatability. In order not to mistake this possibility for the always accidental occurring repetition of common sense, Derrida does not call this iteration, but iterability" (1986: 212).

However, this name does more than just designate the possibility of iteration. Like most of the other infrastructures, it draws upon a cluster of concepts and accounts for a variety of philosophical problems. Iterability reunites two opposite, or incommensurable, meanings. One is the possibility of iteration or repetition; the other, the possibility of alteration. 'Iter' comes from iteram – 'other' in Sanskrit – as Derrida has discussed. This is a pretext for condensing a variety of concepts in one linguistic mark in order to exhibit a set of necessary relations between them (Gasché 1986: 212).

In his discussion of iteration, Derrida argues that the condition of the singularity of a thing – any thing – is that the thing in itself belongs to a general form of such things which that particular thing represents. Therefore, everything is always a trace, a text, an example of writing. This means that for a thing to be what it is, it must be able to be repeated, and every repetition produces a difference. Most importantly, this repetition is never pure; it always leads to alteration. To repeat something is to alter it, to make a difference. Derrida uses the term iterability because, in so far as everything can always be repeated, the condition of repeatability belongs to every thing in itself, and this contaminates or
compromises its purity. His point is not simply that things can be repeated in an empirical or factual sense, but rather, in order to be what they are, they have to be conditioned by this possibility (Lucy 2004).

Iterability is the condition of possibility of re-production, re-presentation, citation, and so on, and can be read as the generalization of representation, reproduction, citation. “Everything begins with reproduction”, writes Derrida in Writing and Difference. “Everything ‘begins’, then, with citation”, he writes in Dissemination and in Of Grammatology he concludes his essay on Rousseau by stating that “the very essence of presence, if it must always be repeated within another presence, opensoriginally, within presence itself, the structure of representation”. Everything, hence, begins with representation; the possibility of reproduction, representation, and citation must be inscribed in any entity, sign, or act of speech in order for an entity, sign, or speech act to be possible in its singularity in the first place (Gasché 1986: 213-214).

This is a possibility that makes things always less or other than what they are. The notion of iterability refers to this structure of repetition-as-difference, which both enables and limits the idealization of every single thing’s singularity, its purity, and its presence. Iterability means that nothing can exist entirely unto itself or in a state of perpetual once-only-ness, never to be repeated – even if it never is repeated as an empirical fact (Lucy 2004).

Another version of what Derrida describes as the most fundamental feature of iterability is decomposition. As Gregory Ulmer (1985) elaborates, this is the principle shared by both speech and writing. The traits of a ‘general writing’ consist of three modes of absence – the spacing, the gap, and the différance of articulation that Derrida opposed to Aristotle’s onomastics. The written mark is iterable in the absence of its producer and in the absence of a referent or signified. The mark may also continue to function in the absence of its own text. This is the crucial element of the decompositional mode of writing. The nonpresent remainder of the differential mark, inaccessible to any experience, and cut off from the origins of a receiver from a signified or a context, remains iterable and still functions as sense because language is a system (Derrida 1988 [1972]: 12). Derrida proposes the fundamental generalisation of his writing;

“And this is the possibility on which I want to insist: the possibility of disengagement and citational graft which belongs to the structure of
every mark, spoken or written, and which constitutes every mark in writing before and outside of every horizon of semio-linguistic communication; in writing, which is to say in the possibility of its functioning being cut off, at a certain point, from its original desire-to-say-what-one-means and from its participation in a saturable and constraining context. Every sign, linguistic or non-linguistic, spoken or written (in the current sense of this opposition), in a small or large unit, can be cited, put between quotation marks; in so doing it can break with every given context, engendering an infinity of new contexts in a manner which is absolutely illimitable” (Derrida 1988 [1972]: 12).

Derrida takes this possibility of cutting free and regrafting to be his (de)compositional principle. If the tradition of aesthetics, following Kant and Hegel, advocated the detached attitude of the objective senses, Derrida responds with that which detaches the piece in order to dissolve it: that the sign detaches itself, which signifies of course that one cuts it out of its place of emission or from its natural relations; but the separation is never perfect, the difference never consummated. The detachment is also-repetition-delegation, commission, delay, relay. Adherence. The detached [piece] remains stuck by the glue of différance, by the ‘a’ (Ulmer 1985: 58-59).

**Systems Theory and the Computer**

Developments within the human and natural sciences of the era from which Derrida constructed his arguments, had implications on a scale that permeated throughout the sciences and consequently the culture of the era. One of the major developments that came out of the post-war jolt to the sciences was the advent of the computer, which has had a pervasive impact on the way humans communicate, and indeed use language as writing.

The idea of a programmable machine emerged around 1800, first with player pianos and then with the automatic loom. By the end of the 1800s, tabulating machines based on punched cards became widely used for commercial and government data processing. While these started out as purely mechanical, most were electromechanical by the 1930s, with units for carrying out basic arithmetic operations, as seen in the Harvard Mark I computer which was completed in 1944. This consisted of many such units hooked together so as to perform scientific calculations, and electronic machines with similar architectures were
built soon after. In the early 1940s, the British wartime cryptanalysis group constructed large electromechanical machines which performed logical, rather than arithmetic, operations. While these systems all had in common the feature that they performed operations in essentially a fixed sequence, by the late 1940s it was clear that it would be more convenient to be able to jump around instead of having to follow a fixed sequence. This became more readily possible with the idea of storing programs electronically, and by 1950 more than ten stored-program computers had been built in the United States and England (Wolfram 2002: 1107).

In parallel with the development of devices for digital computation, various ‘analog computers’ were being built, which used continuous physical processes to perform computations. By the 1930s electrical analog computers had been developed, remaining in widespread use for finding approximate solutions to differential equations until the late 1960s, machines which had to be physically rearranged or rewired in order to perform different calculations (Wolfram 2002: 1107).

Although speed and memory capacity have increased immensely since the 1950s, in many respects the basic hardware architecture of computers has remained very much the same. Where major changes have occurred is in software, particularly the development of computer languages in the late 1950s and early 1960s, and in the late 1960s and early 1970s there developed the notion of operating systems – programs whose purpose was to control the resources of a computer. As the cost of computer memory fell in the late 1970s and early 1980s, it was now feasible to manipulate not only numerical data, but also data representing text and later pictures. With the advent of personal computers in the early 1980s, interactive computing became common, and as the resolution of computer displays increased, concepts such as graphical user interfaces developed. In more recent years, continuing increases in speed have made it possible for more and more layers of software to be constructed, and for many operations previously done with special hardware to be implemented purely in software (Wolfram 2002: 1107).

The development of computers from the mid-twentieth century has provided the sciences with the capacity to tackle extremely complex problems. One particularly influential stream of science and mathematics that has emerged in this time (and as a direct result of the invention of the computer) is chaos theory, which
incorporates dynamical systems theory (Hullick 2010: 28-29). Chaos theory has affected not only mathematics but also such sciences as physics, meteorology, astronomy, and chemistry, plus disciplines like medicine and economics. It casts doubt on (undermines) real randomness (total unpredictability) on the one hand and exact predictability on the other; it denies the possibility of unified order (Brady 1989: 66, 70). As Brady elaborates;

“For some, chaos ‘offers a way of seeing order and pattern where formerly only the random, the erratic, the unpredictable-in short, the chaotic-had been observed’ ... For others it emphasizes that behind hidden order there exists a state of disorder ...” (1989: 66).

Throughout the history of philosophy and science, the view of living systems as self-organising networks whose components are all interconnected and interdependent, has been expressed repeatedly. However, it was only very recently that new mathematical tools became available which allowed scientists to model the nonlinear interconnectedness characteristic to networks, and that detailed models of self-organising systems could be formulated. The discovery of this new mathematics of complexity is one of the most important events in twentieth century science, and dependent also on the development of large high-speed computers. Mathematicians are now able to trace out solutions to complex equations as curves in a graph, discovering new qualitative patterns of behavior of those complex systems and a new level of order underlying the seeming chaos (Capra 1997: 112-113).

The postmodern context catalyzed the formation of this new science (Hayles 1991). It provided a cultural and technological background in which the component parts came together and mutually reinforced each other until they were no longer isolated events, but an emergent awareness of the constructive roles that disorder, nonlinearity and noise play in complex systems. This science of chaos was new, not in the sense of having no antecedents in the scientific tradition, but of having only recently coalesced sufficiently to articulate a vision of the world, which had deep affinities with other articulations emerging from the postmodern context (Hayles 1991).

Hayles illustrates the importance of the microcomputer in the development of chaos theory, in that it allows ‘mathematics to be practiced as an experimental science’ (1991: 5). It has also affected how people have imagined themselves
and their relation to the world, a scenario which she succinctly describes using as an example when someone sits down in front of a computer to model a dynamical nonlinear system;

"Because the computer permits interaction, the practitioner need not proceed through the traditional mathematical method of theorem-proof. Instead she can set up a recursive program that begins when she feeds initial values for the equations into the computer. Then she watches as the screen display generated by the recursion evolves into constantly changing, often unexpected patterns. As the display continues, she adjusts the parameters to achieve different effects. With her own responses in a feedback loop with the computer, she develops an intuitive feeling for how the display and the parameters interact. She notices that small changes in initial values can lead to large changes in the display. She also sees that, although the displays are complex, there are underlying symmetries ... And she is subliminally aware that her interaction with the display could be thought of as one complex system (the behavior described by a set of nonlinear differential equations) interfaced with another (the human neural system) through the medium of the computer" (Hayles 1991: pp. 5-6).

**Fourth Iteration**

The idea behind establishing this fourth iteration was to explore an entirely different context from within which to incorporate the essence of the previous iterations, and to evoke a frame of reference and linkage for another of the key components intertwined throughout Derridean deconstruction – this being the notion of iterability. In order to devise a system under this heading, I compiled several fragments of the recorded output from most of the objects which I had used in other experiments throughout this project, regardless of whether they ended up in any of the individual studies or not. I set up MySpace pages for each individual object and uploaded the fragments to each corresponding site. This resulted in one hundred sites, each containing between two and twenty-two aural fragments. These sites where then made to ‘befriend’ each other, so as to comprise an expansive network of interrelated systems.
In this experiment, every recorded utterance from each individual object, which was uploaded to MySpace under the specific object’s banner, would come to represent some form of limited vocabulary. Each instance of any of the ‘published’ segments – even just a fragment thereof – being pronounced, or reproduced through the medium, would be a reproduction that represented an iteration of a part of this unique and limited vocabulary.

This process reveals ways in which attachments to these utterances occur in similar ways to the attachments which one finds when dealing with any other language – they are manifested by the perfectly receivable and translatable marks of other language. A wide range of contextual variables or dependencies, such as (individual/group based) cognitive and environmental factors, will always influence both the input and the output, how one reads or interprets them, and correspondingly how one writes or responds.

Thus both cognitive and environmental variables are involved and at play in the process of experiencing and interpreting any aural fragment. This specifically pertains to the aural fragments uploaded to the online network site MySpace, where anyone in front of a computer with internet access can prompt an iteration or repetition (play) of any fragment at any time (dependent of course on network issues such as quality and speed of internet connection). This fragment will then be experienced in a context specific environment which is influenced by a range of variables that are unique to this specific iteration. These include private versus public space; personal experience and previous exposure to or knowledge of/about the specific language, or languages (or even language region, or peripheral knowledge) within which the fragment can be said to belong; personal taste in terms of listening preferences such as genre or other such content variables; the individual’s physical abilities to discern specific ranges of frequencies (i.e. high/mid/low frequency ranges where variables such as age and/or hearing damage/impairment are relevant); the equipment through which the fragment is auditioned (i.e. if the fragment is heard through computer speakers or through a sound system which is attached to the computer itself. These are important variables in terms of frequency response or what range of frequencies can be aurally represented by the specific equipment setup through which the fragment is auditioned); and other specifically individual or environmental/contextual factors involved in influencing the listening experience.
In a sense, the underlying assumptions of this iteration of the project, which deals specifically with the Derridean notion of iterability, demonstrates a bridging or translation of the physical operations of the machine (object) by way of re-contextualising the results of these processes within the confines of another medium. This is indeed the medium that is in the process of replacing the traditional foundation of the theoretical enterprise as such – the book. By being translated into, or re-emerging in this other context as a digitalized version of its originary analogue expression, it is redefined less as a physical presence than as a translation (copy, replica, mimetic construct) which necessarily adheres to a different set of rules and parameters which are defined by a logic that is situated within the theoretical realm. In other words, the transition from the physical presence of sound which originates from the internal processes within the objects, instigated and reinforced by the unpredictable workings of positive feedback, is translated (compressed mimetically) into a presence within the confines of the interweb. The re-inscription within this structurally other medium with a foundational grounding within the logic of text, i.e. devised by means of applying theoretical or textual constructs, renders this imprint or mimetic translation as necessarily imposing a changed state of being or physical presence, and, by extension, imposing on its conditions and potential for reproductively becoming. It becomes media within another medium, from sound to re-contextual(ised) sound.

**Conclusion**

Through looking at another intersection between a Derridean infrastructure and the physical realm of a ‘recording device’, this time exploring a realm outside of recording devices for purely audio recording purposes, a further elaboration on the nature of these intersections as they exist within the context of this project is elaborated.

This fourth iteration represents a different kind of interaction from the previous audible feedback scenarios. While still working within the same sonic delineations, the recursive process exists on a different level – that of the interface between human and machine. Within this framework, previously considered concepts from the Derridean literature, such as decomposition and alterity, are functional elements within this specific conceptual narrative, as part of the overarching infrastructure of iterability.
Chapter 5

Resonant Frequencies

Introduction
In this chapter, I extrapolate on the four previous iterations of the project to combine them in a theoretical phase space, which comprises the four infrastructures and their respective local narratives, in an effort to pose the hypothesis that there exists the equivalent to resonant frequencies within the deconstructive theoretical space. This space was first and foremost thought of and developed as a hypothetical investigation into the creation of an analogy. As a supplement to, and potential amplification of, this silent scenario, I place the polylogue of Derrida’s *Cinders* into this space.

Throughout this project, I have consciously opted to limit the focus and scope of the research to a fairly limited space in time somewhat loosely defined around the publication of the Derridean trilogy in the late 1960s (1973 [1967], 1976 [1967], 1978 [1967]) and building around this foundation by incorporating contextually relevant contemporary strands of theory and practice from within the human and natural sciences, as well as composition, installation and the overall sound arts. However, for the purposes of this concluding iteration of the study, it becomes necessary to temporarily expand (open up) this temporal dimension in order to extend all the way into, and potentially even beyond, the present moment. The project as such is still fundamentally situated within the previously demarcated era. Yet, in an effort to narrate the hypothetical argument at the foundation of this theoretical iteration of the project, it becomes vital to include the entire back-catalogue of commentary and writings-into, from the “first-wave reading” (Kates 2008: 16) and beyond, of the “encounter with the (textual) void” (Harwood 1995: 170), which span the initial publication of the above mentioned works, all the way into the present and beyond.

The Theoretical Phase Space
In physics, a phase space is a hypothetical space constructed to incorporate as many coordinates or dimensions that are necessary to define the state of a given system (Tao 2008). Phase space is one of the most powerful inventions of modern science, as it gives a way of turning numbers into pictures, abstracting every bit of essential information from a system of moving parts, and making a flexible road map to all its possibilities. Conceived by physicists, the phase space
refers to the entire range of the possibilities within any given system. Any state of the system at a moment frozen in time, is represented as a point in phase space, and all the information about its position and velocity is contained in the coordinates of that point. As the system changes in some way, the point will move to a new position in phase space. As the system changes continuously, the point will trace a trajectory (Gleick 1987: 134-137).

Every piece of a dynamical system that can move independently forms another variable – another degree of freedom – and every degree of freedom requires another dimension in phase space in order to make sure that a single point contains enough information to determine the state of the system uniquely. While spaces of four, five or more dimensions tax the visual imagination, complex systems have many independent variables. Mathematicians had to accept the fact that systems with infinitely many degrees of freedom required a phase space of infinite dimensions (Gleik 1987: 134-137).

As with all the previous iterations of this project, the elements which comprise this final iteration will be implemented through quadraphonic distribution. This relates not only to the aural content, but also the textual. I achieve this by inserting the four previous iterations of the project, in their capacity as foundational theoretical infrastructures, into a hypothetical phase space, where these insertions imply the defining qualities of this theoretical space and its operational parameters.

In keeping with the quadraphonic distribution, I add dimensions to this initially four dimensional phase space through the implementation of series of four-by-four (4 x 4) local narratives which are drawn from the previously documented sub-structural output of the foundational infrastructures. The compositional phase space now comprises four-by-four-by-four dimensions.

**Hypothesis – The Hypothetical Object**

The generation of plausible hypothesis centers on the use of tested building blocks. This particular method of recombining building blocks draws heavily from genetics – even neurophysiological theories of thought can be described in terms of building blocks. For example, in Hebb’s (1949) theory, a cell assembly is a set of a few thousand interconnected neurons capable of self-sustained reverberation. A cell assembly operates somewhat like a small cluster of rules that is coupled via common tags. Cell assemblies act in parallel, broadcasting
their messages – or pulses – widely via a large number of synapses, or interneuron contacts, and can be integrated into larger structures called phase sequences (Holland 1995: 89-90).

The hypothetical object of study within this theoretical phase space is that of looking at the entire historical lineage of engagement with the Derridean deconstructive oeuvre. I do this in order to implement it within a compositional schema which strives to emulate an approximation or equivalent to the processual engagement in Alvin Lucier’s ‘I am sitting in a room’. This is specifically in relation to its spatio-temporal manipulations which involve the concept of ‘resonant frequencies’. Consequently, I interpret the Derridean deconstructive context to be a specific demarcated space as an analogy for the comparison of the theoretical workings which take place within this space, to those of the physical phenomena at work in Lucier’s composition. I thereby argue for the potential existence of such an analogy or equivalent within this theoretical space.

**Infrastructures**

The previous iterations of this project have all been engagements with Derridean non-concepts, which have been termed ‘infrastructures’ by the philosopher Rodolphe Gasché (1986, 1987). Each of these iterations have implanted themselves within their respective terminologies in a the similar way to that of the parasite (Serres) and produced local narratives from their individual dwellings. For this concluding iteration, the previous four infrastructures will all be implemented within the phase space of this study. This will assist in the construction of the analogy which is sought in the hypothesis presented by this final iteration.

Deconstruction consists of establishing ‘infrastructures’ to account for differences as far as they pertain to concepts and texts (Gasché 1986: 143). This is a strategic term which Gasché uses to demonstrate a relation between Derrida’s work and structuralism and phenomenology, and concerns the laws under which words can be intelligible (see Gasché 1984: 4, 6). Derrida claims in *Positions* to have developed “the most legitimate principled exigencies of ‘structuralism’” (1981: 28), as far as a notion such as “*différance*” is concerned, that is, as one example of “infrastructures” (Gasché 1986: 144). Structure, in Derrida’s work, has the meaning of a non-regional and transcendental opening that represents

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4 A single neuron may have as many as ten thousand synapses.
the condition of possibility of the minor structures and the accidents that they suffer. Structure is an infrastructure, and in Positions, Derrida notes that the concept of infrastructure, as he uses it several times in Of Grammatology, corresponds to a “transformed concept of ‘infrastructure’, . . . an ‘infrastructure’ of which the general text would no longer be an effect or a reflection” (Derrida 1981: 90). When referring to concepts in bipolar opposition – that is, to metaphysical concepts, to the aporias that become visible in the formation of concepts, and to the conflicting strata of argumentative and discursive totalities – the infrastructure is the “open matrix” in which these oppositions and contradictions are engendered (Derrida 1982: 45, cited in Gasché 1986: 147).

Derrida defines infrastructure when he writes;

“Here structure means the irreducible complexity within which one can only shape or shift the play of presence or absence: that within which metaphysics can be produced but which metaphysics cannot think” (1976 [1967]: 167).

The infrastructures represent the relation – connection, ratio, rapport – that organises and thus accounts for the differences, contradictions, aporias, or inconsistencies between concepts, levels, argumentative and textual arrangements, and so on that characterise the discourse of metaphysics. By means of such infrastructures, deconstruction accounts for the differences that fissure the discourse of philosophy, and any other discourses that depend on it (Gasché 1986: 147, Kates 2005).

The infrastructure is what knots together all the threads of correspondence among certain heterogeneous points of presence within a discourse or text. It must be understood as the medium of differentiation in general of the diverse possibilities, contradictory divisions, lexicological disparities, and so on. It is the locus of what Heidegger calls the same, as distinct from the identical (Gasché 1986: 152).

By analogy to Gödel’s discovery of undecidable propositions, Derrida suggests that infrastructures be qualified, provisionally, as undecidables. In an essay, ‘On Formally Undecidable Propositions of Principia Mathematica and Related Systems’, Gödel (1962) demonstrated that metalogical statements concerning the completeness and consistency of systems any more complex than logical systems
of the first order cannot be demonstrated within these systems. Derrida, in *Dissemination*, transcribes Gödel’s theorem in the following terms: “An undecidable proposition, as Gödel demonstrated in 1931, is a proposition which, given a system of axioms governing a multiplicity, is neither an analytic nor deductive consequence of those axioms, nor in contradiction with them, neither true nor false with respect to these axioms. Tertium datur, without synthesis” (Derrida 1981 [1972], cited in Gasché 1987: 9).

The infrastructure of re-marking or of the double mark demonstrates the essential character of infrastructures in general, which consists of their being folded upon themselves in such a manner that they themselves become a paradigm of the law they represent. Infrastructures apply to themselves. The arrangement that they represent is always rearrangement by themselves. For this reason, they are in constant displacement, incapable of assuming any stable identity (Gasché 1987: 12).

**Local Narratives**

I extend this final iteration to include one of the central themes of inquiry throughout the Derridean deconstructive project. This is the continuing engagement with the way in which metaphysics views and depends on the nature of closure, in terms of how it projects a lineage originating from an indivisible origin or point. I do this through the use of the term ‘local narratives’ as it has come to take the place of the example in the arguments posed throughout the iterations of this project.

Deconstruction engages in logical analysis for the study of problematic phenomena, and identifies habits of investigation which have come to privilege themselves. Through an analysis of marginal or boundary situations, these modes bring into range phenomena that have been avoided. Derrida’s own investigations offer such an indication, in that they all are examples, and examples in a significant manner. Rather than demonstrating closure, his investigations open inquiry (Knoespel 1991: 111-113). As Derrida states in *Of Grammatology;* 

“This is the moment, as it were, of the example, although strictly speaking, that notion is not acceptable within my argument. I have tried to defend, patiently and at length, the choice of these examples (as I have called them for the sake of convenience) and the necessity for their presentation” (Knoespel 1991: 114).
Derrida’s use of ‘example’ comes from an awareness that examples are frequently used to demonstrate a closed system. From biblical parables to histories of philosophy or science, one discovers exempla – indeed paradigm – placed in containers and ready to use as prescribed. Derrida initiates a move away from this closure and towards opening and extension, by asking how the language of a particular text becomes the register for absent ideas – such as being, the mind, or the subconscious (Knoespel 1991: 114-115). Rather than using examples to bring about closure, deconstruction maps its enterprise through the proliferation of local narratives that attest to the instability within discourse.

The Polylogue of Cinders
In Derrida’s short text Cinders (1991 [1987]), he creates a recursive system within his own previous work, making direct reference to a selection of previously published texts through citation on the lefthand pages while the polylogue of Cinders itself stays on the righthand pages. In this work, in reference to his own neologisms, Derrida makes explicit references to recording technology as a means to amplify the inaudible other voices within texts;

The polylogue presents itself as an unpronounceable conversation between the audible sonority of the indeterminate number of voices of Cinders and the still silent voice, the absolute minimal voice of the other (Lukacher 1991: 14).

Cinders tells of the coming of différance. In this revised version the privative a takes the form of the silent difference between la cendre and là cendre, between “the cinder” and “there cinder”. In this telecommunicated signal, “there” is precisely what oscillates; là, with or without the accent, is what comes in and out of tune, in and out of range (Lukacher 1991: 8).

This tension risked between writing and speech, this vibration of grammar in the voice, is one of the themes of the polylogue. And this polylogue, it seems, is destined for the eye; it corresponds only to an interior voice, an absolutely low voice” (Derrida 1991 [1987]: 22).

Derrida found the potential to amplify this interior and absolutely low voice through the use of sound technology. This presented the possibility
“to breach a way into the voices at work in a body of writing, to situate them in the work, to give to each of them their space or rather their specific volume, in such a way that each medium is affected or re-invented by the other” (Derrida 1991 [1987]: 23).

Like the mixing of voices in a recording, the polylogue will become polyphony: the other voices, other readings within the text will become audible. “The phonographic act effects this polyphony and dissemination by amplifying the inaudible” (Dyson 2009: 98).

“I am sitting in a room”  
Alvin Lucier’s ‘I am sitting in a room’ plays out a simple procedure. A text is read out in a room and recorded through a microphone onto one tape recorder and then played back into the same room through loudspeakers and recorded onto a second tape recorder. The second recording is then played back into the room and recorded on the first machine, and so on. As the repetitive or recursive process continues, those sounds common to the original spoken statement and those implied by the structural dimensions of the room are reinforced. The others are gradually eliminated.

Each recording captures sound played over loudspeakers in the room. Since all rooms have a characteristic resonance, the effect is that certain frequencies are gradually emphasised as they resonate in the room, until eventually the words become unintelligible, replaced by the pure resonant frequencies of the room itself. In other words, the space acts as a filter whereby the initial speech is gradually transformed into pure sound.

Some frequencies fit naturally in a given room, and are therefore maintained with minimal degradation. Whereas other frequencies clash with the room and are canceled out. Each iteration of the process is subject to additional reinforcement of certain frequencies and additional cancellation of others. Multiple instances of the same frequencies activate simultaneously, reinforcing one another’s stimulation of the air in the performance space. After a short while, the sound of the recording changes dramatically, and is eventually transformed into a shimmering electrical pulse, as linguistic articulations metamorphose into nigh indescribable unbroken sound (Lucier 1995, Kim-Cohen 2009, Aufermann 2005, Wong 2010).
Fifth Iteration

In the vast literature spanning the four decades since Derrida’s original works were published, there is talk of a central first wave of commentary, a second wave diverting from the first wave’s focus, a third wave drawing attention to other aspects or from a different stance while pointing out or arguing for the misreadings of the first and second waves of interpretation, and so on. The interesting aspect of these readings is the fact that the elements of the theoretical foundation that became deconstruction can be analysed in similar terms to that of frequencies, and how certain frequencies are more resonant in some spaces and less in others. By defining deconstruction to be a specific space, and clearly demarcating its boundaries, an investigation into its response over time within this space, in terms of writing-into, or resonance, is arguably a parallel venture to that of Lucier’s feedback system of resonant frequencies.

When writing into a construct, the contributor always comes to that specific construct with an amalgamation comprising one’s personal history and subjective experience. This makes it an active space composed by forces of interaction between dynamic elements. As such, these individual histories will necessarily color or influence, in the first instance, one’s reading of the construct and, as a result, the ‘writing-into’ itself – the commentary or local narrative. A similar process occurs when dealing directly with a physical realm such as the feedback system of constituent parts which ‘write into’ or influence an already established or singularly autonomous system. This input will be influenced by the specific object’s history in terms of usage and previous exposure to processes and systems or parameters which are relative to those involved in the current system’s context.

Comparatively, if one looks at the history of a strand of critical theory such as deconstruction, investigating its origins and its subsequent commentators and interpreters, there is arguably a similar pattern emerging in terms of an analogy to the concept of ‘resonant frequencies’ where, over time, specific aspects of Derridean deconstruction have received more commentary and critical analysis than others. As a result, these stand out as the ‘resonant frequencies’ of that specific space of critical theory.

The system involved in this final iteration of the project consists of four previously iterated iterations and their resultant local narratives supplanted into a
hypothetical phase space. In the previous parts of this project, each of these infrastructures were defined as systems unto themselves, in and of themselves. They were approached as representative of, on the one hand, individual autonomous systems, and on the other hand as an analog to one aspect (building block) of a construct. An example of this is the way in which the aspect or notion of supplementarity is one aspect or building block of the construct of Derridean deconstruction. This conclusive part of the project entailed grouping these autonomous systems together into the quasi-macro-structure of the hypothetical phase space as an analog to a demarcated textual space or construct.

This hypothetical theoretical space could be extended to the inclusion of a hypothetical physical space where this iteration could be located, theoretically, within a space of quadraphonic distribution. In this hypothetical space, the initial four points of distribution, or dimensions within this phase space as degrees of freedom, would be made up of the four previous iterations of this project – represented through the infrastructures of différance, supplementarity, trace, and iterability. On the second level of this phase space, a set of four additional degrees of freedom is contributed to the equation as sub-dimensions which originate from within each of the four infrastructures. These add a total of four-by-four variables, and expand the space to four-by-four-by-four. Following the system further into the third internal level, another expansion by four for each single degree of freedom occurs, and so on through the succeeding levels of continuing engagement with the local narratives. Alternatively, one could decide to specify the third level of the phase space as the conclusive iteration, and end up with a configuration which consists of four-by-four-by-four-by-four, and thereby define/constrict the system to exist/play out within quadraphonic phase space proper.

However, the different approaches to the tuning of this phase space will depend on a stated purpose. Opening the system up to a myriad of possibilities is a productive stage from which to further it. For the purposes of the already existing demarcation of this final iteration, I will propose two scenarios wherein the parameters at the foundation of this study can play out within this space.

The first scenario would be implemented under the pretext of emulating Lucier’s composition by posing the hypothetical question ‘what would be the result of a process that aimed at bringing Lucier’s composition (‘I am sitting in a room’) to its logical (theoretical) conclusion?’
The second scenario would propose an engagement with a simulacrum of Lucier’s process extracted from ‘I am sitting in a room’, and applied to the Derridean oeuvre which is defined as the multiplicities of writing-into spanning an open-ended timeline from the conception of the terminology (demarcated here in the form of the iterations as they exist within this project) to the present and beyond. The process of emulating the resonant qualities of this theoretical space would entail, first of all, as per the definitions of engagement with the phase space, that every variable within the system would represent a dimension in phase space. Secondly, that these variables either be limited to the infrastructures presented in the four previous iterations (for the purpose of this project), or that they extend to include the entire register of infrastructures (following Gasché’s demarcation).\textsuperscript{5} Once the initial dimensional demarcation is defined, it becomes a question of either becoming a purely theoretical system (in the sense that the hypothesis strictly concerns itself exclusively with the textual writing-into of the construct), or extending the phase space to include local narratives (in the sense ‘local narratives’ is used within this project) as sub-dimenional constituent parts, in other words, to the inclusion of the other or non-textual writing-into.

This deconstructive space would become that of reciprocal variation, whose characteristics would shift as the waves of commentary move about, combining and inflecting, where the complexity of their interactions prevent them from ever settling into an equilibrium. The variations that could occur within it would be variations of it. The global characteristics of the space would express the collective effects of the local narratives, without exhausting their dynamism. The space as a "whole" could not be reduced to its "parts," which would retain their local properties in and through their collective mass. The overall effect would be in continual variation as its components continuously interact. The "whole" would not be a whole at all, but an enveloping and expressive field of variation. The self-activity and heterogeneity of this space would stand in contrast to the inertness and homogeneity of the Euclidean matrix, whose invariant axes act as a container for the metaphysical whole figures that are the sum of their parts and are varied, as wholes, through the intervention of a force that enters its space from outside and projects transformations into it. This hypothesis would be a space of higher dimensionality. If each independent variable constitutes a

\textsuperscript{5} Alternatively one could also extend this system to be based in other sets of parameters where the phase space would be defined on different terms but still be within the scope of a working hypothetical hypothesis.
dimension, this space would have four ‘degrees of freedom’ (différance, supplementarity, trace, iterability). If, on the other hand, each part within each dimension would be considered an independent variable, the overall space would have as many dimensions as there are parts, times four (four within four within four within four, and so on). This hypothetical space would necessarily omit defining its own closure, and as such would remain open-ended in its infrastructural recursion through the local narratives.

One could also infer a third hypothetical scenario, situated within the two previous ones. Their combination would spur a system that, in its processual drift towards a simulacrum of resonant frequencies within the Derridean deconstructive spatio-temporal space, would generate volumes of local narratives, infinitely recursive in structure and thematic, reverberating at any given potentiality in its trajectory, oscillating between dimensional parameters.

This becomes a space in which topology helps explicate the multitude of theoretical blind spots within the seemingly hollow and inaudible building blocks that constitute the dimensions of this hypothetical space, maneuvering in between a multitude of continuously elusive parameters defined within ever changing local narratives.

This space is the hypothetical polylogue of deconstruction, constituted by an indeterminate number of voices, a writing apparatus which calls to the unheard voices rumbling through the authorial text of metaphysics. Here the multitude of inaudible writing-into is supplemented through the recording devices (objects), and the local narratives (output) they produce become an amplification of the inaudible others within this writing-into.

The multitude of texts and inaudible other voices within this theoretical phase space can, at any given point in time, be expressed through the amplification of ‘local phase space narratives’, where a snapshot of the system in its current state is extracted and amplified to accommodate audition.

The presented outcomes of this iteration are a series of ‘phase space portraits’ (‘local phase space narratives’), where each one represents a ‘snapshot’ of this phase space in which its constituent entirety collapses to a single point, or, for the purposes of presenting these extractions as temporal audio, to a succession of points.
By defining this conclusive iteration to incorporate the entirety of the previously iterated, it becomes a definition with two fundamental implications. First of all, it implicates the inclusion of all previous activity within this demarcated project, i.e. the theoretical and practical elements which constitute the collective of previous iterations. Secondly, it extends to the inclusion of the entire Derridean deconstructive oeuvre, in the sense that the definition of this project makes specific reference to it within its working hypothesis, which for all intents and purposes will remain a hypothetical hypothesis within the confines of this project, i.e. there will be no resolution or resultant concluding remarks on its findings, either for nor against its stated query. Instead it will stand in for or represent the conclusive remarks to the events that have unfolded within these pages, and will continue to unfold within the hypothesis of this final iteration.

**Conclusion**
The scope of this iteration of the project did not accommodate a thorough implementation of the textual construct through any exhaustive reference to, or analysis of, writing into the Derridean deconstructive oeuvre. Rather, it serves as contextual ground for a comparison to praxis which relates to the physical processes that involve audible feedback systems.

I implemented the processes extracted from Lucier's composition 'I am sitting in a room' with an aim to invoke an equivalent notion to that of sympathetic vibrations or resonant frequencies. Furthermore, I demarcated the grounds for comparison to be established, and treated the systems on equal terms based on these considerations to demonstrate the potential for similarities in the ways in which the systems behaved.

Any change that occurs in a physical system, such as the audible feedback systems in this project, is a product of contributing parts or inputs into that system. These constituent individual and autonomous parts’ internal interactions, which script the parameters within which this contribution can occur, are causally dependent on the mechanics and history of usage that is unique to each individual object or contributing part. Therefore, they can also be said to affect the theoretical processes involved in the writing-into of a textual construct. The writing-into, or commentary, emanates from contributing individual entities whose makeup and history, with regards to a vast number of parameters and variables, greatly influences the content of the contribution.
The culmination of the project in this final instance represents the recursive strategy inherent in the feedback system – bringing the end of a cycle back to its beginning to fold the local narrative into its input and thereby marking the start of a new iteration of the cycle.
Conclusion

In this research project I have expanded on research into audible feedback systems, and developed new approaches in which critical theory is implemented within the wider discipline of sound art. I have defined and structured this project through the use of specific theoretical terminology drawn from Derridean deconstruction, in order to demarcate certain focal points, narrow the project’s research scope, and outline specific interrogations that were crucial to my overall explorations and argument. I devised a schematic for the individual pieces of the project so that I would be able to look for specific parameters when I was setting up the feedback systems, and developed ways in which to invoke the subjective qualities of reading within the interactive parameters of acoustic space. This established certain boundaries within which I could maneuver and define the different variables for each specific investigation, making it more manageable to be specific, focused, and to add layers to the argument.

The innate nature of working with the physical concepts derived from the processes involved in audible feedback systems – their circular movement and repetitive nature – meant that the results were going to provide many similar patterns. Therefore I divided this project into a group of chapters which I demarcated through a set of different investigations based in terminologies that founded Derridean deconstruction. This process helped in providing a foundation for identifying potential similarities within methodology and process that exist between critical theory and audible feedback systems. In doing so, I was able to establish both a starting point and an end point to coincide with the different iterations of the project which would eventually come together conclusively.

This research project has represented a departure from, and at the same time a dissection of, my prior practice with audible feedback in terms of defining the processes involved in composing physical systems through prescribed theoretical means. I have specified a limited focus on certain workings within the processual realm of the physical system or object of study for each segment of the project, based in terminology drawn from a similarly whole unto itself construct of defined theoretical parameters. In doing so, I have investigated the potential for such an equation to interact with, and guide in, the explication of the processes involved in the production of audible feedback systems outside the realm of a purely physical narrative. My previous work with feedback systems has been limited to explorations into the physical constituents and potential for interaction and
complexity within various constellations of objects. However, through this project I have developed a contextual framework from which to investigate this physical interaction through an interdisciplinary comparative and fragmentary model.

Throughout the process of defining this project, I have sourced and developed a sense of the theoretical tapestry at its foundation. Through this process, certain recurring themes continued to remind me of the significance of spatio-temporal parameters in relation to specific contexts. This was coupled with the idea of superimposing these groupings of theoretical narratives onto tools of practical applicability sourced from within the natural sciences.

In concluding this research, I have also interrogated the concept of circularity as it relates to both the theoretical and the practical aspects of this project. In spatio-temporal terms, the theoretical component of this project acts as, or presents itself as, a macro perspective on the investigations. The iterations of the practical component present themselves as micro perspectives in an attempt to explicate the intricacies involved on the theoretical macro level. This is similar to the method in which one can discern or speak of waves of commentary engaging with a theoretical construct, in that one can also describe how the audible feedback system re-engages with itself in its inherently circular manner as it constantly re-emerges through, or re-engages with, the ever-changing spatio-temporal parameters.

The non-exposed nature of the audible feedback system iterations throughout this project (i.e. not publicly performed or presented as such) renders them, in a sense and for the purposes of this concluding context, theoretical elements within or part of the construct – as metaphors by analogy (or synecdoche; of parts referring to a whole) for the theoretical foundations which inform the project. As such, I argue that these physical investigations also engage with the writing-into of the theoretical construct as another wave of commentary. In other words, through bypassing the physicality of the systems investigated, their presence as part of this project can be analysed in terms of representing textual entities within the theoretical construct.

The rationale which structures this project is a chain of parts, linked to a culmination which points towards continued recursive iteration (beyond the scope of this project), wherein the individual project parts or iterations – although being perfectly capable of being re-presented as singularly autonomous systems in and
of themselves – instead work their way, again recursively, into the foundations of the following project iterations, one at a time. Therefore, the impetus of the narrative structuring of this overall project becomes less about the explication of the physical implications of each individual system, or the dissections of its functional parameters post-practice against some stated preconceived notion of this process at the outset. Rather, it becomes a focus on the individual local narratives themselves. It converges on the local narratives as they are constituted from defined theoretical parameters (while still belonging exclusively to this realm in order to feed into the subsequent parts as local narratives), and how they conclude individually as constitutive building blocks for the succeeding parts.
Appendix 1

First Iteration

The first part of this initial iteration of the project involved a primary focus on locating states within the systems investigated that would display ‘simple’ or stable states, or output that could be interpreted as approximations to that of a single frequency or sine wave. This process was undertaken to establish a somewhat foundational perspective on the project for the benefit of the preceding investigations and iterations, while at the same time alluding to its proximity of metaphysical certainties.

For the second part of this iteration, four objects were selected and individually multiplied by four to form four autonomous systems of identical objects (in terms of make and model) to interrogate sonically the Derridean neologism *differance* (see Chapter 1 for further elaboration on the term).

On another level the feedback here functions as an analogy to the repeated reference to the term *differance* in commentary within a vast range of fields since its inception. Every time a reference is made to a specific term it necessarily implies similar recursive traits to that of the feedback loop, i.e. with every loop or every reference the starting point for that particular iteration of the loop or source of the reference is incorporated into the concluding output of the loop or context within which the reference is made.

The process of setting up the individual objects to feed back into themselves, involves first of all connecting an audio cable between the objects output and input, thereby establishing the internal loop necessary to generate a feedback output. The cable serving the output of the object would be a ‘splitter’ or a dual stereo output cable so as to have an additional output line to enable the objects to be individually recorded directly from the source. Once set up, the object’s recording function is activated, and once activated the object is tuned to a preferred initial state dictated by the parameters of the iteration. Here this implied searching for stable or unitary states in terms of frequency in the output of each object individually.
The same process also applies to the second part of this iteration. The main difference with this second part, is that here the systems of four objects are quadraphonically auditioned while recording, so the tuning of the individual objects comprising the system in question are tuned within the confines of that system in addition to the individual tuning.

**Recordings:**

**Part one: Disc (CD) #1:**

**SYSTEM #1:**
- System #1.1: *X-15*
  - Recording: Disc #1, Track #1
- System #1.2: *TC-126CS*
  - Recording: Disc #1, Track #2
- System #1.3: *L-400*
  - Recording: Disc #1, Track #3
- System #1.4: *TCS-430*
  - Recording: Disc #1, Track #4

**SYSTEM #2:**
- System #2.1: *PC-3110*
  - Recording: Disc #1, Track #5
- System #2.2: *TCD-D100*
  - Recording: Disc #1, Track #6
- System #2.3: *S-811*
  - Recording: Disc #1, Track #7
- System #2.4: *RX-SR550*
  - Recording: Disc #1, Track #8

**SYSTEM #3:**
- System #3.1: *TCM-10*
  - Recording: Disc #1, Track #9
- System #3.2: *PORTA 05*
  - Recording: Disc #1, Track #10
- System #3.3: *TCM-1000A*
  - Recording: Disc #1, Track #11
- System #3.4: *WM-D3*
Recording: Disc #1, Track #12

**SYSTEM #4:**
System #4.1: *PMD-222*
  Recording: Disc #1, Track #13
System #4.2: *TRC-1200*
  Recording: Disc #1, Track #14
System #4.3: *MZ-R909*
  Recording: Disc #1, Track #15
System #4.4: *TP-M700*
  Recording: Disc #1, Track #16

**Part two: Disc (CD) #2:**

**System #5:** 4 x *RN-36*
  Recording: Disc #2, Track #1-4
**System #6:** 4 x *TCM-5000EV*
  Recording: Disc #2, Track #5-8
**System #7:** 4 x *MD-MT280*
  Recording: Disc #2, Track 9-12
**System #8:** 4 x *MZ-R55*
  Recording: Disc #2, Track 13-16
Fig. 2: SYSTEM #1: X-15, TC-126CS, TCS-430, L-400 (clockwise from top left).
**Fig. 3**: SYSTEM #2: PC-3110, TCD-D100, RX-SR550, S-811 (c.w. from top left).
**Fig. 4:** SYSTEM #3: TCM-10, PORTA-05, TCM-1000A, WM-D3 (c.w. from top left).
**Fig. 5**: SYSTEM #4: PMD-222, TRC-1200, MZ-R909, TP-M700 (c.w. from top left).
Fig. 6: Clockwise from top left: SYSTEM #5 (4 x RN-36), SYSTEM #6 (4 x TCM-5000EV), SYSTEM #7 (4 x MD-MT280), SYSTEM #8 (4 x MZ-R55).
Appendix 2

Second Iteration

This second iteration builds on the first and extends towards an opening of the system in terms of looking specifically at the objects, or states within objects, displaying a propensity for complex output, or random/simultaneous multiplicity of frequencies.

The theoretical narrative at the foundation of this iteration is also extended upon from the previous cycle to the inclusion of a few variables from Derridean terminology and the natural sciences of the time, specifically the terms supplementarity and emergence (see Chapter 2).

The set-up and process involved in this iteration resembles closely the procedure of the previous iteration, where systems/objects are initially tuned individually and set to feed back into themselves, guided by the theoretical parameters as set out in the corresponding chapter of the exegesis. The objects/systems are subsequently combined in groups of four objects distributed quadraphonically and adjusted accordingly to feed back as systems over a period of time. Minor tuning adjustments are applied to the contributing objects in random intervals to spur change in the overall output of the systems.

Recordings:

Disc (CD) #3:

SYSTEM #9:
System #9.1: XM-R700
   Recording: Disc #3, Track #1
System #9.2: TP-850
   Recording: Disc #3, Track #2
System #9.3: FUJI CORDER
   Recording: Disc #3, Track #3
System #9.4: PMD-650
   Recording: Disc #3, Track #4
**SYSTEM #10:**
System #10.1: P-134
   Recording: Disc #3, Track #5
System #10.2: TCM-450DV
   Recording: Disc #3, Track #6
System #10.3: M-5850F
   Recording: Disc #3, Track #7
System #10.4: IBM-6501
   Recording: Disc #3, Track #8

**SYSTEM #11:**
System #11.1: HONEYTONE
   Recording: Disc #3, Track #9
System #11.2: TP-50
   Recording: Disc #3, Track #10
System #11.3: RQ-2720
   Recording: Disc #3, Track #11
System #11.4: EHRCORDER
   Recording: Disc #3, Track #12

**SYSTEM #12:**
System #12.1: M-35
   Recording: Disc #3, Track #13
System #12.2: TCM-17
   Recording: Disc #3, Track #14
System #12.3: CF-610
   Recording: Disc #3, Track #15
System #12.4: SMALL TALK
   Recording: Disc #3, Track #16
Fig. 7: SYSTEM #9: XM-R700, TP-850, PMD-650, FUJI CORDER (c.w. from top left).
Fig. 8: SYSTEM #10: P-134, M-5850F, TCM-450DV, IBM-6501 (c.w. from top left).
Fig. 9: SYSTEM #11: HONEYTONE, TP-50, RQ-2720, EHRCORDER (c.w. from top left).
Fig. 10: SYSTEM #12: M-35, TCM-17, CF-610, SMALL TALK (c.w. from top left).
Appendix 3

Third Iteration

The selection and range of systems implemented within the framework of this third iteration, was based in the investigations conducted as part of the previous two iterations of the project. To impose a very superficial or surface-reading definition here, these selections were made so as to include a range of ‘steady-state’ and complex systems.

In mapping out this iteration, four environments in which to implement the selection of systems was made based on the idea of establishing the four corners within this quadraphonic system as quasi-fundamental opposites in spatial and aural terms, i.e. quiet/loud, indoor/outdoor, private/public, sterile/contaminated, etc.

In each of these environments the objects were alternatingly auditioned individually and in groups of four. The most significant departure from, or addition to, the previous two iterations of this study, was the use of microphones in an effort to include the sonic context the objects were placed within.

Setting up in these various locations bore the same basic implications as the previous set-ups, with the addition of the other contextualising dimension – the microphone. This added dimension was usually implemented through the use of a small lapel microphone attached to the objects input and a small battery operated speaker attached to the objects output, in addition to the directly looped input/output as with the previous iterations. The resultant effect the addition of the microphone had to the overall output of the object, depended to a large extent on whether the object was supplied with an inbuilt plug-in power circuit to amplify the input signal from the microphone. However, my intentions with the addition of the microphone to this iteration of the project was not with an aim toward achieving an oversaturated and dense feedback effect, but on the contrary to be as subtle as possible in terms of the overall effect of the feedback systems within each specific environment.

The accompanying recordings documenting this iteration is presented in both audio recordings on CD and video recordings on DVD.
Recordings (CD):

1st environment (sound-booth at RMiT):

Disc (CD) #4:

SYSTEM #13:
System #13.1: BM-15
   Recording: Disc #4, Track #1
System #13.2: RQ-212DS
   Recording: Disc #4, Track #2
System #13.3: BM-11
   Recording: Disc #4, Track #3
System #13.4: TRC-1200
   Recording: Disc #4, Track #4

SYSTEM #14:
System #14.1: RN-36
   Recording: Disc #4, Track #5
System #14.2: L-400
   Recording: Disc #4, Track #6
System #14.3: TC-55
   Recording: Disc #4, Track #7
System #14.4: MC-600
   Recording: Disc #4, Track #8

2nd environment (factory in Brunswick):

Disc (CD) #4:

SYSTEM #15:
System #15.1: BM-15
   Recording: Disc #4, Track #9
System #15.2: TCM-12
   Recording: Disc #4, Track #10
System #15.3: WM-GX35
   Recording: Disc #4, Track #11
System #15.4: M-727V
Recording: Disc #4, Track #12

**SYSTEM #16:**
System #16.1: HS-J390  
Recording: Disc #4, Track #13  
System #16.2: TCM-6  
Recording: Disc #4, Track #14  
System #16.3: TCM-17  
Recording: Disc #4, Track #15  
System #16.4: BM-23  
Recording: Disc #4, Track #16

3rd environment (livingroom):

**Disc (CD) #5:**

**SYSTEM #17:**
System #17.1: TCM-6  
Recording: Disc #5, Track #1  
System #17.2: TRC-1130  
Recording: Disc #5, Track #2  
System #17.3: TCM-12  
Recording: Disc #5, Track #3  
System #17.4: TCM-450DV  
Recording: Disc #5, Track #4

**SYSTEM #18:**
System #18.1: BM-575  
Recording: Disc #5, Track #5  
System #18.2: RN-36  
Recording: Disc #5, Track #6  
System #18.3: M-98V  
Recording: Disc #5, Track #7  
System #18.4: L-400  
Recording: Disc #5, Track #8
4th environment (windowsill S.C. RMiT):

Disc (CD) #5:

SYSTEM #19:
System #19.1: WM-GX35
  Recording: Disc #5, Track #9
System #19.2: RQ-2720
  Recording: Disc #5, Track #10
System #19.3: TCM-1000A
  Recording: Disc #5, Track #11
System #19.4: TC-55
  Recording: Disc #5, Track #12

SYSTEM #20:
System #20.1: M-850V
  Recording: Disc #5, Track #13
System #20.2: BM-575
  Recording: Disc #5, Track #14
System #20.3: BM-100
  Recording: Disc #5, Track #15
System #20.4: MZ-R30
  Recording: Disc #5, Track #16

Recordings (DVD):

1st environment (sound-booth at RMiT):
  Recording: DVD, Chapter 1
SYSTEM #14: RN-36, L-400, TC-55, MC-600.
  Recording: DVD, Chapter 2

2nd environment (factory in Brunswick):
SYSTEM #15: BM-15, TCM-12, WM-GX35, M-727V.
  Recording: DVD, Chapter 3
SYSTEM #16: HS-J390, TCM-6, TCM-17, BM-23.
  Recording: DVD, Chapter 4
3rd environment (livingroom):
SYSTEM #17: TCM-6, TRC-1130, TCM-12, TCM-450DV.
   Recording: DVD, Chapter 5
SYSTEM #18: BM-575, RN-36, M-98V, L-400.
   Recording: DVD, Chapter 6

4th environment (windowsill S.C. RMiT):
   Recording: DVD, Chapter 7
SYSTEM #20: M-850V, BM-575, BM-100, MZ-R30.
   Recording: DVD, Chapter 8
Fig. 11: SYSTEM #13: BM-15, RQ-212DS, BM-11, TRC-1200.

Fig. 12: SYSTEM #14: RN-36, L-400, TC-55, MC-600.
Fig. 13: SYSTEM #15: BM-15, TCM-12, WM-GX35, M-727V.

Fig. 14: SYSTEM #16: HS-J390, TCM-6, TCM-17, BM-23.
Fig. 15: SYSTEM #17: TCM-6, TRC-1130, TCM-12, TCM-450DV.

Fig. 16: SYSTEM #18: BM-575, RN-36, M-98V, L-400.
**Fig. 17:** SYSTEM #19: WM-GX35, RQ-2720, TCM-1000A, TC-55.

**Fig. 18:** SYSTEM #20: M-850V, BM-575, BM-100, MZ-R30.
Appendix 4

Fourth Iteration

The inclusion in this fourth iteration of the entire range of objects investigated throughout this project, presented itself as an option once the decision was made to expand the compositional scope beyond a mere cross-sectional selection.

The purpose of this iteration was to implement Derridean iterability within a context of the interweb, and to engage the whole range of objects by setting up a MySpace page for each one and interlinking them by using the inherent ‘friend’ function of this social network domain. The result is a multi-nodal system incorporating one hundred individual sites interlinked as ‘friends’. The idea was to play with the interrelationship between human and machine, the project being still grounded within a specific era, but breaching temporarily its stated temporal borders.

When these sites were first set up, and the idea behind the iteration developed, one was able to audition the content of any MySpace page with a built-in player located on that same page, hence giving you the option to audition several MySpace pages at the same time in separate browser windows. Since then, there has been some changes made to the way in which the MySpace interface functions that has implications for certain possibilities this iteration was initially meant to incorporate. It seems that they have now implemented a stand-alone player that functions as a universal MySpace content player, which means you can only audition a single MySpace fragment at a time. However many different MySpace pages you have open in separate browser windows, you can now only audition one track at any given time. This poses an issue for the scope and vitality of this iteration, in that for it to be experienced as intended it needed the possibility for any constituent part of the system or network of befriended MySpace objects to be auditioned simultaneously and in any possible combination. The solution has been to redirect these already existing MySpace pages through links within each individual page to an external site where each object has its own page with its own player, so the iteration will function as intended only slightly diverted. Of course it is possible to argue for the simpler solution of just re-establishing the whole project on a different site, but part of the rationale behind this iteration of the project was specifically to make use of
the ‘social network’ aspect of Myspace and its already in-built systemic networking framework of ‘be-friending’ as another recursive layer within the feedback system.

Through the necessary extension of this system to include an external site, I decided, instead of just mirroring the fragments that were already uploaded to the MySpace pages, to superimpose a few of the MySpace fragments into a single container (.mp3) for each individual object. The argument to impose a limit for this site only to include one audio reference for each object, was that fact that it was created to facilitate a necessary reference to an already existing set of references, so by collapsing groups of references into a single quote this is exactly what is achieved.

Links to the individual sites:

1. myspace.com/MZ-R50 [deconstructive-feedback.com/objects/mz/mz-r50]
2. myspace.com/PORTA-03 [deconstructive-feedback.com/objects/porta/porta-03]
3. myspace.com/PORTA-TWO [deconstructive-feedback.com/objects/porta/porta-two]
4. myspace.com/TCM-5000EV [deconstructive-feedback.com/objects/tcm/tcm5000ev]
5. myspace.com/TCM-6 [deconstructive-feedback.com/objects/tcm/tcm-6]
7. myspace.com/WM-GX35 [deconstructive-feedback.com/objects/wm/wm-gx35]
8. myspace.com/HS-J300 [deconstructive-feedback.com/objects/hs/hs-j300]
9. myspace.com/TCM-12 [deconstructive-feedback.com/objects/tcm/tcm-12]
10. myspace.com/M-727V [deconstructive-feedback.com/objects/m/m-727v]
13. myspace.com/BM-23 [deconstructive-feedback.com/objects/bm/bm-23]
14. myspace.com/BM-520 [deconstructive-feedback.com/objects/bm/bm-520]
15. myspace.com/BM-575 [deconstructive-feedback.com/objects/bm/bm-575]
17. myspace.com/C-205 [deconstructive-feedback.com/objects/c-205]
18. myspace.com/CTR-96 [deconstructive-feedback.com/objects/ctr-96]
19. myspace.com/DMP-R70 [deconstructive-feedback.com/objects/dmp-r70]
20. myspace.com/EHRCORDER [deconstructive-feedback.com/objects/ehrcorder]
21. myspace.com/FUJI-CORDER [deconstructive-feedback.com/objects/fuji-corder]
22. myspace.com/HONEYTONE-DELUXE [deconstructive-feedback.com/objects/honeytone]
23. myspace.com/L-400 [deconstructive-feedback.com/objects/l-400]
24. myspace.com/M-35 [deconstructive-feedback.com/objects/m/m-35]
25. myspace.com/M-501 [deconstructive-feedback.com/objects/m/m-501]
26. myspace.com/M-570V [deconstructive-feedback.com/objects/m/m-570v]
27. myspace.com/M-585OF [deconstructive-feedback.com/objects/m/m-585of]
76. myspace.com/6050C [deconstructive-feedback.com/objects/6050c]
77. myspace.com/MZ-R2 [deconstructive-feedback.com/objects/mz/mz-r2]
78. myspace.com/QT-60 [deconstructive-feedback.com/objects/qt60]
79. myspace.com/CO-DEG [deconstructive-feedback.com/objects/codeg]
80. myspace.com/TP-12 [deconstructive-feedback.com/objects/tp/tp-12]
81. myspace.com/PORTA-05 [deconstructive-feedback.com/objects/porta/porta-05]
82. myspace.com/M-2541 [deconstructive-feedback.com/objects/m/m-2541]
83. myspace.com/HMV-SOLID-STATE [deconstructive-feedback.com/objects/hmv]
84. myspace.com/TC-136SD [deconstructive-feedback.com/objects/tc/tc-136sd]
85. myspace.com/TC-124CS [deconstructive-feedback.com/objects/tc/tc-124cs]
86. myspace.com/TC-126CS [deconstructive-feedback.com/objects/tc/tc-126cs]
87. myspace.com/RQ-303 [deconstructive-feedback.com/objects/rq/rq-303]
88. myspace.com/RQ-105s [deconstructive-feedback.com/objects/rq/rq-105s]
89. myspace.com/MD-M11 [deconstructive-feedback.com/objects/md/md-m11]
90. myspace.com/TP-M700 [deconstructive-feedback.com/objects/tp/tp-m700]
91. myspace.com/RS-432XA [deconstructive-feedback.com/objects/rs-432xa]
92. myspace.com/CF-610 [deconstructive-feedback.com/objects/cf-610]
93. myspace.com/PC-3110 [deconstructive-feedback.com/objects/pc-3110]
94. myspace.com/WM-D3 [deconstructive-feedback.com/objects/wm/wm-d3]
95. myspace.com/TP-M8 [deconstructive-feedback.com/objects/tp/tp-m8]
96. myspace.com/S-811 [deconstructive-feedback.com/objects/s-811]
97. myspace.com/IBM-6501 [deconstructive-feedback.com/objects/ibm-6501]
98. myspace.com/MD-MT190W [deconstructive-feedback.com/objects/md/md-mt190w]
100. myspace.com/TCS-430 [deconstructive-feedback.com/objects/tcs-430]
101. myspace.com/MS-105 [deconstructive-feedback.com/objects/ms-105]
102. myspace.com/RX-SR550 [deconstructive-feedback.com/objects/rx-sr550]
103. myspace.com/PMD-222 [deconstructive-feedback.com/objects/pmd-222]
Fig. 19: The entire collection of objects uploaded as individual Myspace pages.
Appendix 5

Fifth Iteration

Within the textual phase space established in this final iteration of theory-defined auditory investigations, the terminology-based parameters contextualise the phase space as dimensions of theoretical infrastructures exemplified through mediated local narratives.

Again, the rationale for this last iteration builds upon the previous iterations, in fact, this conclusive iteration gains part of its output from the process involved in re-establishing the previous iteration (chapter 4, see appendix 4) from its original and multiple MySpace dwelling to its consequent multiple-singular re-location within a specifically dedicated domain. Through the necessity to relocate or forward the 4th iteration of this project, the process became one of superimposing the multiple representations of single objects already existing in the MySpace-space into single representations. So in a sense this last iteration of the project simply followed the logic of the move from a MySpace-space through a temporary pointillist collapse of the multiple to the single representation, and from there into the multitude of texts and inaudible other voices oscillating and resonating within this last iterations theoretical phase space.

The presented outcomes of this iteration are a series of 'phase space portraits', or 'local phase space narratives', where each one represents a 'snapshot' of this phase space at that specific point in time whereby its constituent entirety collapses to a single point, or, for the purposes of presenting these extractions as temporal audio, to a succession of points.
Recordings:

Disc (CD) #6:

Track #1: ‘local phase space narrative’ #1
Track #2: ‘local phase space narrative’ #2
Track #3: ‘local phase space narrative’ #3
Track #4: ‘local phase space narrative’ #4
Track #5: ‘local phase space narrative’ #5
Track #6: ‘local phase space narrative’ #6
Track #7: ‘local phase space narrative’ #7
Track #8: ‘local phase space narrative’ #8
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**Recordings**


