Sound of Failure

Experimental electronic music in our post-digital era

Gregory James Shapley

Doctorate of Creative Arts

2012

CERTIFICATE OF AUTHORSHIP/ORIGINALITY

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me.

Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Signature of Student

_____

Acknowledgments

I would like to thank my supervisor, Professor Theo van Leeuwen, and former supervisor, Professor Norie Neumark, for all of their advice and encouragement throughout my post-graduate study. I would also like to acknowledge the participation of artists who performed and exhibited at the Sound of Failure festivals and Don't Look Gallery, especially those who took part in my experimental work, *Question/Answer...Interruption* in 2008, being Shannon O'Neill, Jessica Tyrrell, Chris Caines, Peter Newman and Roger Mills.

I would also like to thank Christina Ho for her advice and support.

Finally, I should acknowledge the assistance of Nola Farnham for copyediting my thesis.

Contents

Illustrations

Abstract

This thesis began as a way to both situate my practical work, and suggest (more broadly) future paths for experimental composers and artists in general. My compositions, over the past three decades have taken two main paths that are, I think, compatible: minimalism and the post-digital, but they have also been informed by complexism, indeterminacy and other theories and practices. The post-digital offers a chance to go beyond these historical groupings and, without contradiction, employ the most interesting aspects of all of them, but it also throws up new hurdles and challenges. Lately wide-eyed post-digitalists have recognised the need to address these issues but some of their solutions are just as problematic.

Most of my practical work concerns using conceptual notions of noise (in tandem with minimalistic methods of organisation) to create form through unhindered processes. It is this way of thinking and working that I want to explore as an alternative to the current post-digital discourse. In my thesis I address facets of mine, and current, practice that need teasing out, in a nutshell being: the current post-digitalism, the sound of noise versus noise as a creative generator, a critical appraisal of form (especially within the post-digital), and a rethink of minimalism as a predecessor to the post-digital. I conclude by presenting some of my own work, situating it loosely within frameworks already established within my writing.

Introduction

In 2007 I dreamt up a two-fold plan to explore post-digital sound. The first part involved the creation of a festival dedicated to sound derived from the failure of (mainly digital) technology. This festival was aptly titled 'The Sound of Failure' (SOF) and ran in 2007 and 2008. It was to provide both opportunities for artists to investigate creative possibilities and a way for me to closely survey the local scene, both in performance and installation. In 2008, SOF consisted of 17 performances on two stages at the Factory Theatre, Marrickville, 11 artworks installed at Chrissie Cotter Gallery Camperdown, five environmentally-themed installations at Reverse Garbage, Marrickville, and an experimental performance of one of my works entitled *Question/Answer...Interruption* involving improvisation by five other artists (as well as a couple of other smaller or solo components). The other part was a doctoral thesis that would be used to document the post-digital scene as I encountered it. Professor Norie Neumark became central to both components, as a participant in the festival, and as my initial supervisor for my thesis (and later as co-curator of the *Memory Flows* project), and I would just like to acknowledge her sizable contribution to both. Of all the SOF components I only refer explicitly to one, *Question/Answer...Interruption.* The reasons for this are two-fold: during the festival I got to know many of these artists a little too well to be explicitly critical of their work. During this thesis I do express a disappointment with the current state of the post-digital practice and this extends to many SOF performances (and indeed was an opinion substantially developed during the festival). I would prefer not to give the perception that I am passing personal

judgement (nor do I want to loose friends!). I think it is more productive to apply these general observations at arms' length – to composers and performers who not only do I not know, but who lead the field in post-digital and microsound theory and practice. Secondly, *Question/Answer...Interruption* was a performance conceived and directed by me (although it involved five improvising artists). There are astounding observations to be made about this work (which I've discussed with some of the performers). As this work was developed as an experiment, as a way to observe and glean information about current post-digital performance, I have no hesitation in interrogating its processes and outcome.

This thesis began as a way to both situate my practical work, and suggest (more broadly) future paths for experimental composers and artists in general. My compositions over the past three decades have taken two main paths that are, I think, compatible: minimalism and the post-digital (in that order), but they have also been informed by complexism, indeterminacy and other theories and practices. As well as taking great delight in works from all of these genres, I have also been frustrated at the limitations imposed by practitioners and lack of historically-informed criticality. The former of these can be best illustrated by quotes – remnants of infamous feuds between key players. Eliot Carter (a leading American complexist) has referred to minimalism as 'death', continuing that “If you write one bar and then repeat it over and over again, the music ceases to have anything to do with the composer... It means a person's stopped living” (Noris 2003); Kyle Gann (a post-minimalist) declared that “what passes for rhythmic subtlety with Elliott Carter and his followers is a mishmash”

(2006, 128); Cage was “disturbed by the idea of [the] literal repetition”of the minimalists (Gann 2006, 131): and on it goes, each pronouncement establishing boundaries for a generation or more of compositional tribes.

The post-digital (which I define in my first chapter, but in a nutshell can be best described as sound or visual art that uses failure in the digital – or glitch – as a creative source. It also serves as a critique of the idea[l] of digital perfection and everything that goes with it [see, for instance Cascone 2004]) offers a chance to go beyond these historical groupings and, without contradiction, employ the most interesting aspects of all of them, but it also throws up new hurdles and challenges. I propose that the most important of these hurdles is lack of historical depth. The dominant post-digital discourse (as engaged in by Kim Cascone, Douglas Khan, Mitchell Whitelaw, Phil Thompson and Caleb Kelly to name a few) often cherry picks moments from just over a century of noise-based practice, beginning with the Futurists, and leapfrogging to the present via the aesthetics of noise. There is an emphasis on the sound of noise (or *noisy noise*), as opposed to more conceptual notions of it and on uninformed improvisation as a somewhat dubious way to get out of the studio or beyond acousmatic (or pre-recorded) performance (see Turner 2001 for an interview with Cascone about 'laptop' performance) , and a distrust or ignorance concerning music (as opposed to sound), form and an expansive history of sound (inclusive of music, sound and noise). Lately wide-eyed post-digitalists have recognised the need to address these issues (notably Cascone, by employing the Schillinger method of composition, originally devised in the 1940s), but their solutions too shall be critiqued.

Most of my practical work is concerned using conceptual notions of noise (in tandem with minimalistic methods of organisation) to create form through processes that are allowed to run their courses. It is this way of thinking and working that I want to explore as an alternative to the current post-digital discourse.

The post-digital is interesting to me in another extraliminal way. It is inherently cross-artform, or *post-media* as Lev Manovich (2008) puts it. If data captures, freezes and bottles real life in mid-air, then the post-digital is capable of thawing these myriad of products in ways that are only limited by the vast outputting and formatting possibilities (both legitimate and illegitimate) of digital devices. Not only can data that was originally sound become image (through a process that exploits digital loopholes known as *databending*), but it can become many different images depending on how it is thawed, mediated, transcoded. Further, this process need never end. As data changes art form, it mutates to adapts to the mediation employed, and then this mutant data can be transformed again and again.

My arrangement of material is, perhaps, not transparent and needs explanation. I have not tried to present a single linear argument. Rather, I have addressed facets of mine, and current, practice that need teasing out: in a nutshell being the current post-digitalism, the sound of noise versus noise as a creative generator, a critical appraisal of form (especially within the post-digital), and a rethink of minimalism as a possible predecessor to the post-digital. I conclude by presenting some of my own work, situating it loosely within frameworks already established within my writing.

The first chapter defines and explores specific notions concerning the post-digital. It introduces the specific types (glitch and databending in particular), techniques and players, and then explores its conceptual terrain, especially its apparent inability to be able to shake free from the historical chains of Modernist aesthetics. Process (as introduced by Whitelaw 2004) is touted and investigated (in part) as a way to overcome the objectification of the pure data aesthetic of the post-digital.

Chapter 2 investigates noise – the creative spark within works. This chapter critiques the discourse of (Futurist-inspired) post-digital noise as inferred by some current post-digital theorists, using ideas inspired by John Cage and Jacques Attali amongst others. The crux of Chapter 2 involves deconstructing shallow definitions of noise that limit its history to cherry-picked moments from the last century instead of an extensive, transgressive notion that is applicable to all experimental creativity. Noise is implicated in dissonance, form and even silence. I draw out an argument for a more critical and expansive application of noise.

Following on from the last chapter (and the exploration of noise as a creative generator), form of post-digital composition from the last decade or so is explored in Chapter 3. One of the main questions of this chapter concerns whether the form of these compositions as radical as our aesthetic impression of it might lead us to believe it is? Compositions are looked at (beginning with my own, *Question/Answer...Interruption*) in comparison to historical forms (especially ternary and sonata form). I also ask, what historical forms are hidden under this cloak of

radicalism and tag of 'the new'? This chapter shall culminate in a brief exploration of a most recent (re)discovery by one of the leading post-digital proponents, Kim Cascone; that of the Schillinger method of composition. Seen as much more sophisticated than improvisation-based methods of composition and performance, Cascone touts this way of thinking as the way forward for the post-digital and a significant break with the past. But is this really the radical break we've been waiting for?

Whereas up to now the focus has been outward, looking at some of the critical aspects that inform post-digital practice generally, chapter 5 begins to turn inward, still looking at movements and people that have informed the post-digital, but beginning to apply them to my own practice (and specifically excluding those that I don't find appealing). I have a particular background, interest and (it has to be said) frustration, with the first few years of minimalist music. I see some of the post-digital (and not the post-minimal) as being the rightful heir to these early, rigorous, minimalist works. But, like so many historical movements, what defines the minimalists also hems them in. I take the words of one of minimalisms most prominent spokespeople, Steve Reich, and show how much of the disappointment concerning post-minimalism can be traced back to a youthful, loose tongue.

One of the main questions I ask here is, what is possible with minimalism if you ignore the historic rifts, between it, complexism (of Elliott Carter and Pierre Boulez etc.) and indeterminate works (of John Cage and Morton Feldman etc.)? If what is known as minimalism is not at all antithetical to what is considered complexist, then what what have me missed? Further, is this a way we can invigorate a floundering

post-digital practice that, from a promising start, is dividing down two unacceptable paths, being: a) a mere sound that is ripe for the picking by popular culture, or b) a bunch of sounds and micro-processes that are herded together, unwittingly, into traditional forms (including Cascone's Schillinger)?

Lastly I look at my own practice. Beginning with my early, acoustic minimalist practice, I move quickly to my audio and visual works of the last five years (a practice that I think of as being mainly post-digital, as well as minimalist). During this concluding chapter I try to be honest about my successes and failures, with the understanding, of course, that experimentation often needs hindsight to be judged (if indeed it makes sense to judge at all). While many of my works have proper names and purposes, a number of my later pieces are clearly experiments, intended less as entertainment or consumable chunks, and more as research and though-provication.

Post-digital creativity – exploring granular synthesis, glitch, databending, and generalist post-digital methods

For the past decade or so there has been some talk about the end of the digital as we know it. *So soon*? we might be inclined to respond. *Have not we only just gotten used to these newfangled devices with their distinct space-age terminologies?*After all, high-definition TV and video are still on much of the middle class' Christmas wish lists, our Internet speeds are still never fast enough and digital cameras are still getting smaller while the mega-pixel quantity hurtles ever closer to infinity. Surely we have a long way to go before we can pronounce the digital to be dodo dead (in the words of the Carpenters, have not we *only just begun*)? But, like postmodernism and most 'post' movements, it is not about succession. The post-digital should be about the emergence of a profound, critical reflexivity that disrupts the myth of uninterrupted teleological progress. It is about finding holes in the positivist propaganda and using them as an alternative way forward – doing what successive generations of artists have always done, creating the new from the rearrangement (distortion, corruption, extension) of the old (or the newer from the new, in this case, perhaps rendering concepts of newness redundant in doing so). It is the artist's role to get into the "anxiety-provoking, uncanny underside of the *heimlich* comfort we take in the digital—in its cleanness, familiarity and reliability" (Manon and Temkin 2011, point 34).

The history of modern (non-digital) technology has been the history of the proto-digital, a teleological yearning for a perfection only possible in a world in which the media on which data is stored, and the associated technologies are rendered

invisible (ironically increasing the amount of technology and data needed in the process. see the Double Logic of Remediation, Bolter and Grusin 1999). Like the mythical quest for the fountain of youth, however, once reached we discover that it is not all it is made out to be.

First, perfection is in the eye of the beholder. We have all learnt to be wary of automated processes on computers and other digital equipment. Whether noise reduction in sound programs or auto levels in imaging software, their suitability often comes down to individual taste, which cannot be based on one perfect model (even if a certain flexibility is built in). More cynically, these processes are used to exploit our aural and psychological dispositions. For instance, Greg Milner has written about a phenomenon known as the *loudness war* in which record companies have increasingly used compression to make songs sound louder than they really are to gain more attention on radio (2009, 237-292). This may mean that we initially pay more attention, but this 'attention seeking' comes at a cost. Compression works by pushing everything up, closer to full volume. By doing this you lose information – subtlety in dynamics gives way to an almost constant level: "…the recording industry responded to the increased dynamic range that digital technology offered over analog by making records whose dynamic range was narrower than those of the analog era" (Milner 2009, 239). A telling example that has been doing the internet rounds of late (a stable version of which is available on Wikipedia: http://en.wikipedia.org/wiki/Loudness_war) is Michael Jackson's Black or White. Three versions of this song were released a number of years apart (1991, 1996, 2007).

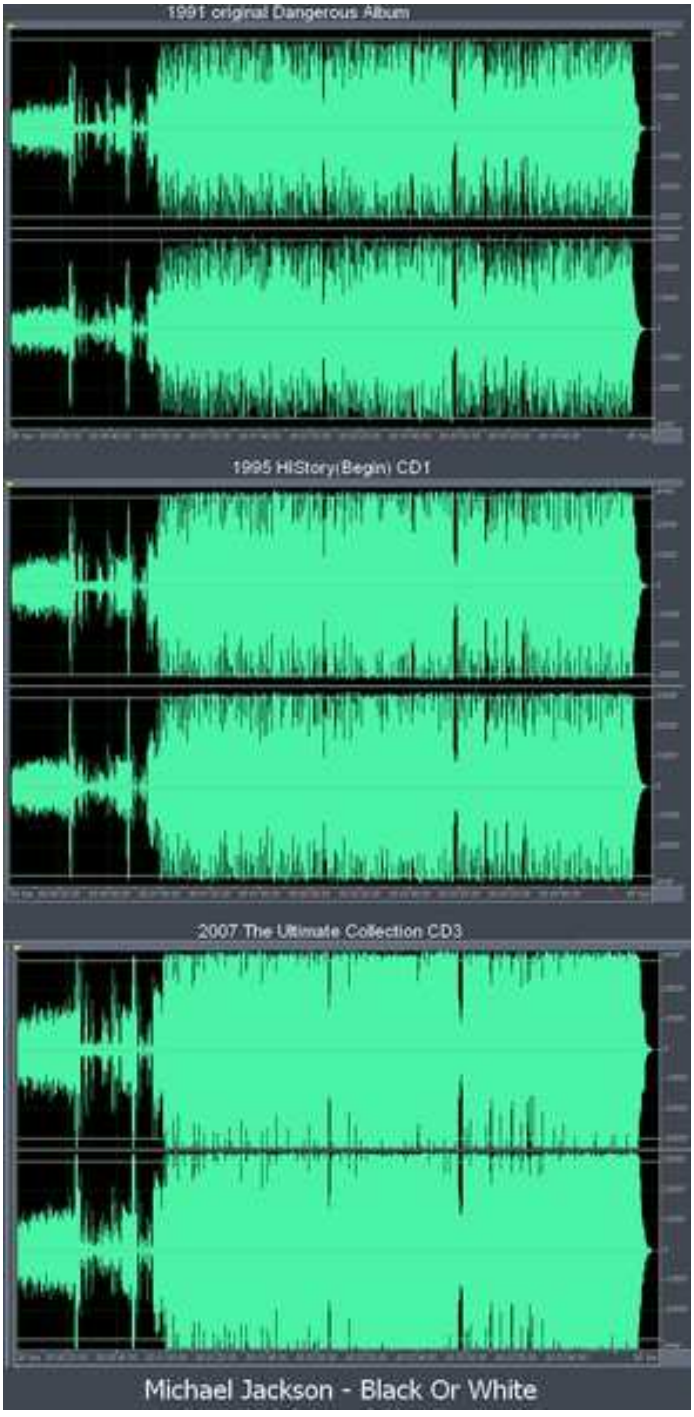


Illustration 1: Amplitude of Michael Jackson's 'Black or White' (1991, 1995 and 2007)

Each one shows a noticeable increase in compression in line with commercial radio demands (compare the amount of light green in the first and last examples). 'Digital perfection' in these cases depends on whether you're a record executive, or a musical connoisseur (the former utilising the ability of digital sound to be reduced to *loud* and the latter, for the digital to contain as much detail as possible).

Second, the digital, despite promises to the contrary, still occasionally reveals its ugly underbelly. Interruptions of data flow and physical imperfections in physical media jerk us violently between digital perfection and the harsh binary garble of digital storage. These corruptions result in *glitches:* CDs and DVDs skipping, digital television pixilating (accompanied by disruptive audio blips) and computer graphics being abstracted and distorted. We can also add to these the artefacts produced in sound and image as a result of compression and other compromises that consumer technologies incorporate in order to keep gadgets and formats small and cheap (for an analysis of this inherent, but arguably necessary, compromise, see Sterne 2006 who argues convincingly that these *compromises* actually reflect a greater understanding of how and where we listen than simple insistences on higher-fidelity. For a somewhat quirky, but charming example of how digital artefacts have been conscripted into the service of art, listen to Cory Arcangel's [2004] re-interpretation of Iron Maiden's *The Number of the Beast* which underwent MP3 compression six hundred and sixty-six times [available here: http://www.coryarcangel.com/things-i-made/maiden/]).

Third, now that we are here (more or less), we are getting bored. At first there was nothing native about the digital. Throughout the late 1980s and early 1990s it was

used to model the ‘real world’ (minus all the imperfections). By the mid-1990s artists wanted more, which resulted in two outcomes. The first was to become nostalgic and put the imperfections (or digital interpretations of them) back in (think of bands such as Jet, White Stripes, Guided by Voices and Pavement that thrived on the notion of having the 'authentic' sound of hums and clicks). Thus we had a sort of reactionary analogue revival with familiar noise re-entering imagery and sound. As Manon and Temkin put it:

> As years pass, it is easy to forget that the era of analog, especially in the mid to late twentieth century, was the era of *noise reduction*… Yet today, in the era of high resolution noiselessness, there exists a latent desire for the noise of old. Lo-fi music and photography are part of this perverse impulse to reintroduce noise… (2011, point 46).

The second was to recognise that the glitch could become a source of creative material. This took a profound re-interpretation of the place of the digital in history. No longer the end of the road, the digital is now melding with a sort of in-between area (perhaps neither analogue nor digital) forming the post-digital. What was thought to be the end of a long load – a search for perfection, may only turn out to be a milestone in this road.

The term post-digital has been used since the late 1990s to describe phenomena where the slick digital façade of computer based audio (from CDs, MP3s, hard disk recording etc.) is shattered, allowing the 'clicks' and 'pops' (the glitches) of the underlying material of the media to show through as potential compositional material.

Sound theorist and practitioner Kim Cascone (2004) has famously described post-digital audio aesthetics as being

> developed in part as a result of the immersive experience of working in environments suffused with digital technology: computer fans whirring, laser printers churning out documents, the sonification of user-interfaces, and the muffled noise of hard drives. But more specifically, it is from the 'failure' of digital technology that this new work has emerged.

He goes on to say that "failure reminds us that our control of technology is an illusion, and revealing digital tools to be only as perfect, precise, and efficient as the humans who build them" (Cascone 2004, 393). The post-digital picks holes in the propaganda of the digital, at the same time as it adds to its canon. As Ian Andrews says, "post-digital refers to works that reject the hype of the so-called digital revolution … but it also refers to the continuation or completion of that trajectory" (Andrews 2002). Manon and Temkin agree pointing out that the post-digital is "very much a practice situated within digital culture" (2011, point 22).

Scrutiny of (and failure within) digital media is different from that of non-digital in one major way – the digital also contains its opposite, that is, the digital code is embedded unrecognizably within a physical media that is non-digital. It is the exploration of this transgressive, abject, liminal world that forms the basis of post-digital art, and that which differentiates it from the less mediated processes of the previous experimental movements:

> Glitch [or general post-digital practice] is an intersection of analog and digital modes of (re)production. Revelling in the blocky, layered, decomposed underside of digital transcoding, glitch art is an anamorphosis in which digital has been poked by its analog other; it is 'digital gone wild' when grazed by an analog fingertip. A taboo has been broken... (Manon and Temkin 2011, Point 18)

Within the post-digital, there are at least three areas (being granular synthesis, glitch and databending) that are generally thought of as being unique, and all of have managed to rupture the slick digital surface. All three fall into a broad grouping that has been labelled *microsound* (a term first used by Xenakis, and adopted by others, such as Roads and Cascone [Thomson 2004, 208]) and is "characterised by real time digital processing, live performance with laptops, and influenced by popular electronica, minimalism, computer music, improv, and technoculture at large," according to Mitchell Whitelaw (2003, 94). To Phil Thomson, microsound: "… places emphasis on extremely brief time-scales, usually a tenth of a second or less… Individual micro-time events are integrated into larger sonic gestures, which in turn are integrated into entire pieces" (2004, 207). Microsound practitioner and writer, Ian Andrews has outlined the most common processes that our three post-digital areas use, being:

> 1. Stock standard audio programs and players are pushed – given too much work, so that the computers processors are overloaded, resulting in errors and malfunction...
>
> 2. File compression (bit reduction schemes) is used in order to modify the sound for its aesthetic effect.

3. The use of raw data – sonorised ascii text and non-audio data

4. Specialised software such as Max, PD, Supercollider, Audiomulch are used to combine intricate webs of audio processes...

(Andrews 2002)

The first of microsound area that I'll discuss uses a technique of composition called *granular synthesis* which "involves dividing audio source material into tiny segments (around 50ms) which are given an amplitude envelope to form sound 'grains'. These grains can then be manipulated and distributed using mathematical and statistical techniques, transforming the original sound radically" (Whitelaw 2003, 95). Unlike the other two areas, granular synthesis has a (relatively) long pre-history that can be traced back through the pointillist tape and digital signal processing (DSP) experiments of the Darmstadt and Koln schools of composition (particularly Boulez, Stockhausen and Pousseur), and early granular synthesis experiments (using analogue synthesisers and tape) of Xenakis (all beginning in the 1950s) (Thompson 2004, 208). In 1990 veteran electronic music composer and soundscape artist, Barry Truax, developed a break-through system that made it possible for granular synthesis to be used in a live situation (Roads 2004, 112). With a somewhat complexist prehistory it might be hard to imagine granular synthesis fitting into a discourse that is primarily minimalist and based on disruption and error, but practitioners do not, as a rule, have a problem seamlessly integrating it with other types of post-digital sound (as the aesthetic is very similar), and it is, by its very definition a loop based (thus repetitive) technique. In the end, it is this reliance on repetition that removes it from a complexist

discourse that is hostile to literal repetition (summed up by proponents such as Elliot Carter who has stated: “To me, our civilization has fed us too much repetition all the time. One of the things about music that I want to do is to make it free us from that” [Grella 2011]). It is also often used to organise other types of post-digital sound. Granular synthesis utilises number four of Andrews' list of processes ('Specialised software such as MAX, PD' etc. [Andrews, 2002]). This thesis is less concerned with granular synthesis than it is with other types of post-digital sound for reasons that will become clear.

The second type of post-digital composition (perhaps more *authentically* post-digital than granular synthesis because of its reliance on the manifestation of the digital, and of more interest to my work) is glitch. As previously mentioned by Cascone, glitch was developed in part due to being immersed in digital technology. He goes on to say that

> when the German sound experimenters known as Oval started creating music in the early 1990s by painting small images on the underside of CDs to make them skip, they were using an aspect of ‘failure’ in their work that revealed a subtextual layer embedded in the compact disc (2004, 393-94).

Conceptually, glitch is important because it provides a bridge between the physical world of the analogue, and the digital (Brown & Bischoff 2006, 373). It is a teetering irreconcilable space that exploits both the (often chaotic) physical property of cause and effect, and the calculable logic of the digital. Manon and Temkin note

what happens when the logic of the digital is intruded upon by cold, hard physical realities:

> When glitches manifest, they are a sudden phenomenological intrusion, a break in the order of logic. The shock comes because when we work with the machine we are contained by it. A glitch ruptures this immersive environment, undercutting the sovereignty of the digital by revealing its pervasiveness (Manon and Temkin 2011, point 33).

The limitations of this 'sovereignty' are of interest to us here. As I have previously written about (unreconstructed) digital technology:

> What is missing here (for most users) is an understanding of processes… [and limitations] that define the number of possible actions and halt any unanticipated experimentation. [The digital offers] many possibilities. What [it does] not offer is *that which cannot be anticipated.* You do not, ever, have an insight into the true means of production, except, ironically, when something goes horribly wrong. (Shapley 2005, 3)

This is, of course, where glitch comes in. It is important to note, however, the tenuous position of the glitch:

> Digital technology, in keeping with the binary logic that drives it, either succeeds or fails – a computer either crashes or it doesn't crash. And what's more, it's only the failures that you remember (no one remembers that their computer hasn't crashed) (Shapley 2009).

Manon and Temkin agree:

> …unlike its predecessors, when digital technology fails, it tends to fail catastrophically. It takes nothing—a fleck of dust, minor condensation—to flummox the digital. Comparatively, to effectuate an analog media catastrophe one needs to bring out the heavy artillery: fire, scissors, sandpaper, a large magnet (2011, point 28).

This leaves glitch in a precarious position. For a computer, or digital machine to produce glitch art, it has to teeter; it cannot catastrophically fail (as computers tend to do). Manon and Temkin have labelled this *Failure to fully fail* and point out that this is only possible when "improper data is decoded properly" (2011, point 3).

Glitch is not necessarily something that is brought in from the outside (although it can be as Oval found out when he started painting the undersides of CDs). If a computer were left to run in a 'perfect' environment (perfect temperature, no viruses etc.) it would still be prone to internal, primal error. In his article, 'There is No Software', Fredreich Kittler outlines the environment in which long-forgotten mistakes are able to bubble to the surface :

> … the so-called philosophy of the computer community tends to systematically obscure hardware by software, electronic signifiers by interfaces between formal and everyday languages… DOS services… hide the BIOS [which hides the assembly code], WordPerfect [or other high-level application] the operating system, and so on and so on until, in the very last years… fundamental changes in computer design… have brought this secrecy system to its closure.
>
> …graphic user interfaces… hide a whole machine from its users. ….so-called protection software… [prevents] 'untrusted programs' or 'untrusted users' from any access to the operating system's kernel and input/output channels. (Kittler 1995)

Mistakes made and shortcuts taken in programming decades ago are often not removed or repaired; they are simply glossed over, worked around, or even ignored by subsequent, more sophisticated code. Manon and Temkin explain:

> Code is built in layers, each with a metaphor constructed by the programmers building it, to enact and describe its behavior… They are perched on hidden metaphors beneath —those used by the programers who created the libraries, other software components, the operating system etc. Each metaphor tries to be completely descriptive of the code's behavior but the lower levels, with their foreign and seemingly primitive logic, cannot be contained—they leak. The details that are obscured at the lower levels—such as using a two-digit number to store a year which is displayed in four digits—can potentially play havoc with higher level systems, as many feared would happen with the so-called Y2K bug. These hidden layers spill logic upward, sometimes slowly, but often in sudden bursts: a glitch. (2011, point 30)

Unlike granular synthesis (which represents "the consummation of the Western modernist impulse towards the atomisation of musical material and control of that material on ever-lower levels" [Phil Thomson 2004: 210]), glitch poses an outward social, political and legal challenge. Glitch artist Yasunao Tone, in an interview with *Music Magazine,* talks about the equipment he that uses to play CDs that have been altered with scotch tape:

> I have two machines. In 1984, I bought the first one to experiment with then half a year later I bought a different machine. It has better functions for ordinary use, but it's less useful than the first one for me. Within a half-year the machines already improved, so I

> don't think I could use a brand new machine for my performance. I would have to look for old, used ones. (Marclay & Tone 2004: 342)

Glitch began "in more or less explicit reaction to the predominant form of electronic music in pop culture, which is rave-oriented techno" (Thomson 2004; 212), and now constantly challenges corporations to fortify their inventions against any intrusion into the world beyond their digital surfaces.

As Manon and Temkin point out:

> … glitch is an instance in which *analog punks digital*. Glitch upsets the proper, it is a gesture of non-compliance, a hostile refusal to use software correctly, a technologized form of squatting… [an] open-source mentality of sharing knowledge… This all reflects an anxiety over authenticity and the underlying politics of glitch—something not strictly defined, but which favours cooperation and community over the proprietary motivations of any individual *auteur.* (Manon and Temkin 2011, point 48-49)

Sound-wise, the glitch has also become representative of the rebellious and the abject – the brooding, bubbling, seething muck that lies in wait just below the surface. Rock bands like Radiohead use it as a political metaphor for uprising, anarchy, revolution. Cop shows that routinely delve into dark worlds of homicide, psychology and post-mortems, such as the BBC production, 'Wire in the Blood,' also frequently use it as a device to exaggerate the mood. Glitch uses numbers one and two of Andrews' process classification ("stock standard audio programs and players that are pushed..." and "file compression" [Andrews, 2002]).

The decontextualised sound of glitch (and other post-digital forms), although providing a goldmine of sound for adult TV, is problematic. This will be discussed more thoroughly toward the end of this chapter.

The final type of microsound is actually a branch of glitch but it is a particular type with the potential to go beyond the glitch of painted CDs. Databending, "the use of raw computer data for sound synthesis" (Thomson 2004: 212), is,

> both a process and a loose-knit subculture of audio artists working across the interbreeding genres of contemporary electronica. In its most recent form it is a digital relative of 'circuit bending', the exploratory hacking of electronic musical toys and instruments. (Whitelaw 2004, 1-2)

Circuit bending was first practiced by Reed Ghazala in the 1960s (Manon and Temkin 2011, point 5). "Databending is… [according to stAllio! – databender and blogger] the artistic misuse of digital information" (2008), the most common types of which are:

- *reinterpretation*—converting a file from one medium to another…
    - (and subcategory) *sonification*—the reinterpretation of non-audio data into audio data…
- *forced errors*—forcing an application or piece of hardware to fail in the hope that it will behave unexpectedly or the data will corrupt [note – this could also be classified straight glitch]
- *incorrect editing*—editing a file using software/hardware intended for a different form of data… (stAllio! 2008).

It offers many possibilities, initially as a way of creating new musical aesthetics (an understandable, but problematic usage), but, in the long term as a method of multimodal exchange and a way of devising process-driven form and content. As Thomson puts it:

> The interchange of digital information (text becomes image becomes sound becomes…) has been exploited by other artists in similar ways, thanks to the availability of (in)appropriate software tools. These interchange-abilities allow one to manipulate sound files in an image editor, or text files in a wave editor, enabling new forms of production and aesthetic effects resulting from a structural characteristic of the digital medium itself: its composition from neutral and trivial bits which can be arranged in a variety of data formats. (2004: 212)

When you open a text file into a sound program (assuming this is possible – software companies do attempt to limit this type of behaviour), you are at once confronted with utter nonsense and inherent logic. The binary that exists below the ASCII coding (‘normal’ text) that you and I understand is revealed in a mediated form as our poor sound program attempts to make sense of it. No actual words in this text file make any literal sense; all original meaning is scrambled, but a new meaning (and a new aesthetic) is born from the ashes of the old. This has implications beyond the sonic; it is possible to take this sound file and open it as an image or back into ASCII and then used as some other sort of data. Each time the computer tries and fails to interpret this data correctly, a new form and aesthetic evolves.

> As with much glitch, ‘the final’ products do not necessarily represent ‘the goal.’ Individual works of glitch art may just as well be residues of 'the way'… the exhibited

> image, sound, or video is strictly secondary to the process: a kind of notational proof that the technique in fact worked… (Manon and Temkin 2011, point 10)

('Process' will be discussed at more length later in this chapter). As they go on to point out: "Glitch [including databending] is not inherently a machinic event" (2011, point 19). They proceed to give an example that highlights a role that an organism (in this case, a person) as opposed to a machine, might play in the process:

> …choose a media file at random and transcribe its lengthy hex code by hand from the computer screen (error is inevitable). Then delete the file and re-enter the code from the handwritten sheets (more error). Press save. Open the file with the appropriate software: a glitch. Such an experiment lays bare the analog/digital nexus of glitch art. (Manon and Temkin 2011, point 19)

Databending employs process number three in Andrews' list ("the use of raw data – sonorised ascii text and non-audio data" [Andrews 2002]). A large number of uncompromising examples, performance documentation, and software links (etc.) can be found on a website called Bit Synthesis (http://bitsynthesis.com). This site demonstrates just how flexible and intermedial databending can be.

Databending can be assisted and enabled via a number of software tools that are available. Some of these programs just speed up manual databending (the 1991 release of SoundHack for instance that was little more than a sound-file filter and file converter [Erbe 35, 1997]) while others are more interventionist (arguably producing output that is too mediated and contrived to be truly in the spirit of databending) such as MPF that converts MP3 files into text and then back to the original format after

making some noticeable changes (see http://runme.org/project/+mpf/). Other such programs include HyperMammut, Coagula and AudioPaint.

I should also note that the post digital techniques are rarely used in isolation. They are often combined with each other, or with traditional digital mixing techniques. This is both a necessity and problematic. When the post-digital *sound* is de- or re-contextualised there is a risk that it will just become another sound ripe for the picking, an edgy aesthetic that can be used until it is used up. As Whitelaw notes:

> Frequently data bending is used to generate sonic source material, rather than an entire piece: stAllio!'s twelve inch *True Data* consists of edited excerpts from 'random data files' sequenced into noisy, abrasive techno… As a creative strategy, data bending might be explained as simple sound expansion – that tendency, in the musical avant-garde, to constantly seek out new sound materials… (2004, 2)

He continues, however, that, "data misappropriations, transcodings and manipulations are more than mechanisms for sound expansion, they are cultural acts and statements, and readable as such" (2004, 2).

This is true, up to a point. But, when these "data misappropriations, transcodings and manipulations" become totally disconnected from their processes (sample collections on CDs for instance) the cultural acts and statements are surely lost amongst established forms. Although appropriation (and the reassignment and recreation of meaning) has become legitimate and unavoidable in our post-post-modern world, there are two reasons why it is undesirable from an artistic perspective in this case. Firstly, when used in movies and television, there is little new meaning

that develops from its decontextualisation that does not already exist in the form it's transferred to. In other words post-digital sound in this instance serves as little more than a flavour enhancer: little, or no new meaning is created by its use. There is no doubt that this often serves well the purposes of movie makers – as a descriptive device the post-digital often helps set the mood and create tension. This enhancement, however, is not reciprocated. Post-digital sound is left a hollow device, a type of sound (instead of a nuanced range of processes and creations) that can be turned on and off like a faucet. Secondly, the sound of the post-digital is limited in its timbrel possibilities. For me, the interest in the post-digital lies in its creative processes, and its possibilities as a device for creating form beyond its noisy aesthetics. To elaborate, it relies at least partially on the (now stereotypical) digital/data/binary sound that has been with us since the proliferation of fax machines (and became culturally embedded as the sound that dial-up modems produce). It is nearly always comprised of saw-toothed wave-forms, is of limited pitch and dynamic range and, for many, is almost unbearable. Used as a sound, interest in the post-digital will not be prolonged.

Manon and Temkin write about the conundrum of glitch consolidating into a style where the "aesthetic becomes the most recognizable aspect of glitch" (2011, point 39). They also point to a paradox where although the "glitch aesthetic [has] been co-opted by mainstream media… [citing] Kayne West's video for *Welcome to Heartbreak* [and] the soundtrack CD for *The Social Network*" (2011, point 44), it "never seems to inch any closer to the art world's mainstream" (2011, 51). They put this down

to the fact that although “glitch art is visually and aurally consumable, it is deemed unworthy as a consumer product in capitalist exchange because it is suspected to have involved very little work” (2011, 51). In other words, glitch exists as a bunch of experimental processes, or aesthetic fodder for popular culture, but never as a valued, commodifiable (art) product. (Popular culture excluded) this is not such a bad thing as, “To polish, layer, or embelish glitch is undeniably to move away from its ontology” (Manon and Temkin 2011, point 14).

There is another category of the post-digital that is rarely talked about, but widely practised. It shows signs of a maturing post-digital practice, but, perhaps, also of an increasing tendency to apply ideas inherent within, more broadly (beyond what is normally considered post-digital). The post-digital is also the post-analogue. Despite how it might appear now, the digital revolution of the eighties did not bring on the instantaneous death of the analogue. It did however realise a dichotomy, a dialectical confrontation – digital versus analog. The death of the analog has been held over until very recently, until the advent of the post-digital. Perhaps what we really have now is the death of difference – the annihilation of the categories themselves – analogue and digital (rendering the post-analogue and post-digital the same).

Initially the post-digital was seen as (and was, to some extent) an “intensification of the digital, by focusing on its inherent properties” (O'Neill, 2006). Our perception does, however, seem to have changed over the last couple of years. The post-digital made noise permissible. Not just *intentional* noise, but the unintentional hubbub behind the authored rabble – the noise of the technology

(interference and media noise) that was supposed to go unnoticed. This unintentional digital noise became the central player within the post-digital.

As stated previously, the history of analogue media is the history of noise reduction (Manon and Temkin, point 46). This ideal, unattainable in non-digital form was only realised when digital technologies became widely available (with the proliferation of the CD player and DAT recorder). Most of the history of the recorded sound has had this teleological aim – the annihilation of noise. This type of noise was extraneous to the compositional process – it was on the outer. Glitch and the post-digital authenticated the noise of the media – it made the whir of the means of production inseparable from the product.

This has led to a revaluation of the non-digital. This has not been an obvious, purposeful occurrence. Rather, it is an extension of post-digital permissiveness, as well as a weariness with the "intensification of the digital" (O'Neill, 2006) (which to many appears myopic).

Practices that involve the digital and analogue are now seen and practised by post-digital practitioners *in light* of glitch. I am calling this practice the generalist post-digital. It is now possible for a post-digital composition to contain no actual failure of digital technology, created by practitioners who live digital (and analog) failure (my own *Question/Answer...Interruption* is one such work that will be discussed at length later on).

The post-digital is also a term that has been used in an alternative way (but one that may be compatible with an outward-looking generalist post-digital creative practice). Robert Pepperell and Michael Punt argue that,

> Far from subscribing to [a] general diagnosis [of this century being defined in terms of the 'digital age'], … the intellectual restrictions of the digital paradigm are now becoming unavoidable not least since it insists on the reduction of continuous reality into discrete binary units. [...] The term postdigital is intended to acknowledge the current state of technology whilst rejecting the implied conceptual shift of the 'digital revolution'. (2000, 2)

While Casone and many other post-digital sound practitioners understand and exploit the flaws and failings of digital technology, they still centre their practices around computers. Pepperell and Punt's social definition of the post-digital, however, is far more skeptical. It accepts the presence of the technology, but questions its reach and its simplistic binary logic. Digital technology is in no way a god-send, it is just another tool (or set of tools) that can have negative (as well as positive) social effects.

This extra layer of skepticism is a good fit with a generalist post-digitalism that in part has grown weary of 'spacebar' performances and modem-sounding music.

The tendency of the post-digital to want to expose the medium as much as the message (and thus recreate a modernist tendency) creates an interesting dilemma for post-digital artists who might not necessarily want to be associated with an empty formalism.

Take, for instance, the following typical project that recalls non-digital works by Alvan Lucier, *I am sitting in a room,* Nam Jun Paik, *Zen for Film* and even John Cage, *4:33*. The LAPS project by the Art of Failure (http://bitsynthesis.com/2010/07/laps-by-art-of-failure/) began

> ...as a silent audio file, the stream is bounced between a number of different servers, eventually returning to the home server where it is played back on the project homepage and sent out for another loop…Each pass adds new artefacts to the audio, effectively creating something out of nothing (Baker-Smith 2012).

With works such as these, artists strive to foreground the background (an idea articulated most strongly by media theorist Marshall McLuhan [1964: 8]). *Zen for Film,* for instance, is a work comprised of 23 minutes of imageless film leader. Dispensing with the image altogether, Paik created a work that relied solely on the deterioration of the media for its content. Each time this leader is played it accumulates dust and scratches that are only seen in future 'performances'. This revelation of media anticipated the post-digital (including the LAPS Project) by three decades. In the post-digital, intended output is subverted; the shiny CD is scratched, the Photoshop computer file is opened into a sound program. Just as Paik was not really interested in the look of perfect leader film, neither (it seems) are many post-digital artists interested in the 'surface' sound or look of the digital media. It is the fallibility and changeability of the underlying media make-up (and consequential endless possibilities) that have intrigued both (see Cascone 2004: 292–293 and Thompson 2004: 212).

But, as Manon and Temkin note:

> Born too late for modernism, these new forms have not yet exhausted formal self-reflexivity, which they use alongside postmodernist strategies such as re-appropriation. This has provoked some anxiety for glitch artists and theorists and so is often explained away by emphasizing the differences from the long-resolved Greenbergian [modernist, formalist] agenda (2011, 24).

Mitchell Whitelaw is one such anxious critic. In his article 'Hearing Pure Data: Aesthetics and Ideals of Data-Sound' (2004), Whitelaw outlines an argument that I'll attempt to summarise briefly and address.

Whitelaw places databending along with data sonification within the meta-category of *Data-Sound*. Databending is "arbitary, abstract and aesthetic", while data sonification is "designed, referential and functional" (note that data-sound, is not entirely consumed under the umbrella of the post-digital. While databending is most definitely post-digital, data sonification has a history that goes back beyond the proliferation of the personal computer) (Whitelaw 2004, 5). "Where data bending seeks out *the data itself,* sonification seeks out meaningful, usable information" according to Whitelaw (2004, 5). Data sonification is (in very basic terms) the mapping of data into sound. Some early forms of data sonification include the geiger counter and sonar (stAllio! 2009). These technologies were scientific instruments, of course, and not constructed for art but they did nevertheless make inaudible data, into graspable sound. (It should be noted that I do not necessarily agree with Whitelaw's rigid categories. To me, databending is never *pure* and is always mediated [otherwise,

why the bending?], and [digital] data sonification is, as a mediated form, just another type of databending).

Whitelaw's explanation and critique of databending can be summarised as follows: "Data-bending is a form of anti-content… It makes a (doomed) attempt to resist the production of yet more arbitary media content, and instead reveal what is 'true' (about itself)" (2004, 3). It is also anti-information: "…information is not data: information is the content of data, its message. So data-bending is an attempt to hear the underneath of information, to deny the (intended) message" (2004, 4). Thus, this is an attempt to live the modernist dream of denying the subjective message for the objective underbelly, the real material, the data. Whitelaw, however, rejects these intentions on two fronts:

> Semiotically, a message always creeps back in… [and] The data is always and inevitably ordered, organised, formatted – even if it is mis-formatted, it is re-formatted, and in fact any format is yet another trace of subjectivity and intention: it is a cultural artefact, an agreed convention of form (2004, 4).

Overall, Whitelaw's analysis of databending is correct, but my one question would be, does an "agreed convention of form" carry across media? Can the intentionality of the encoding of an image, for instance, carry into sound? Surely it loses context with neither the functional nor descriptive code functioning or describing as 'agreed'. His earlier proposition where the meaning creeps back in, that is, it develops alternative meaning at least partially dependent on the circumstances and interpretation of the listener, is probably more accurate. This 'slip', from something

other than sound to sound must rearrange meaning in unpredictable ways. Later I will mention “collision of a multiplicity of subjectivities”. This is one such example of this.

I also question whether he overstates artists’ quest for purity in data. For example, he talks about one artist and blogger, stAllio! who released a recording entitled *true data*. The title (amongst other things) is mentioned as proof as the artist’s intention to reveal ‘true data’. But, as Whitelaw himself has already noted, the material has been heavily manipulated – it contains no ‘true’ data. An earlier recording of stAllio!, *dissonance is bliss*, (if we are reading things into titles), suggests highly constructed meaning; that of dissonance (possibly the most loaded, disputed and misunderstood term in the history of music – see my chapter on noise for more about dissonance) (stAllio! 2009). Perhaps artists’ search for ‘pure data’ is often knowingly exaggerated, hyperbolic and inflammatory? Many are inspired by the Futurists and probably not beyond stirring the pot. Have some theorists simply taken these rebels too seriously?

Whitelaw cites Lev Manovich’s definition of the *anti-sublime* (which could also suffice as a definition of data sonification as a whole) as such: it is the “condensing and collapsing of the unimaginable vastness of contemporary datasphere, into perceivable objects” (2004, 7 referencing Manovich 2002). (The *sublime* itself is only vaguely defined by Manovich as a Romantic arts ideal that attempted to visualise unrepresentable effects and phenomena. It is “something which goes beyond the limits of human senses and reason” [Manovich 2002]). By reducing it to manageable portions, the incomprehensibility of this vast data (the quality that would render it sublime) is lost. We get its true nature, and once again we are through the looking

glass. Whitelaw, however, turns this on its head, claiming that we are left with a sort of binary set of alternative dimensions; our digestible metaphoric world of the mapping and (still in tact) the incomprehensible other:

> This sublime of the data returns us to the notion of data as pure, found object; there is a shared sense of data as other and elsewhere, constituting or inhabiting another realm. This construct is comfortable and familiar, for it has deep cultural roots: cyberspace, virtual reality, the Ars Memoria, Heaven and Hell. (2004, 8).

There are two terms that arise in Whitelaw's article as being helpful in avoiding the traps of 'pure data' (within both databending and data sonification): 'interaction' and 'process'.

When one considers interaction with regards to any digital new media practice, it is hard not to think of what passes for this in most works; often awkward, attempting clever, pre-defined choices that participants attempt to immerse themselves in as square pegs jumping at round holes. These are generally unreconstructedly digital, the post-digital only breaking through when things go unintentionally wrong (as they often do). Interaction as Whitelaw means it refers to more fluid practices that may engage, not just with a forgiving onlooker, but with the datasphere. To him, "Interactive or open systems… begin to reveal the contingency of any particular mapping and the abyssal plasticity of the dataset, the impossibility of the *in itself*" (2004, 6).

This interaction (which is a type of mapping, but a critically reflexive one) is playful but complex, accessible but layered with meaning. It reconstructs the data, not as a metaphoric way of reading it (a compressed, or summarised version), but as a way

to poke holes in its vastness and infallibility, and to demonstrate foibles and idiosyncrasies. In these instances, the message is not about the greatness of the datasphere; in fact, the best of this art ignores it all together, preferring to focus on the process of momentary lapses in coherent digital logic. It reveals and assembles glitches; the odd and the curious that would otherwise be buried under mountains of data-sameness.

One work Whitelaw cites is

> Jason Freeman's N.A.G (Network Auralization of Gnutella) [which] elegantly sonifies both transaction and content. N.A.G. seems initially to be simply a client application for the Gnutella peer-to-peer file-sharing network. It is a Gnutella client, but a slightly bent one; enter a keyword and N.A.G. begins not only downloading matching files, but playing back loops and fragments of its find… It illustrates a kind of mutant sonification, radically open and uncertain in sonic content and correspondingly in the "information" it communicates'. (2004, 6)

Most of us engage with this 'mutation' of information on a regular basis. When using search engines (Google, for instance), no matter how precise we make our search terms, we can usually be sure that the majority of *information* gleaned from the datasphere is, while technically correct, utterly useless. There are a growing number of new media works that playfully exploit these inabilities (our inability to express precise terms, for Google to know what we are thinking by the terms we use, for content providers to use terminology the way that we or Google might use it, etc.). Another such work was installed at Don't Look Experimental New Media Gallery (where I was

Director) in 2008. In an exhibition entitled 'This is not a Film Premiere' (Bi and Curran 2008) net artist Nic Hodges installed a text work that searched new entries to Wikipedia in real time for any references to money, replacing them with the word 'love' and then representing this text for gallery visitors. An RSS feed based on slim search criteria drew together (often) unrelated entires, changing them only slightly, but profoundly, reconstructing meaning from indifferent material. It was a simple enough work once in operation but it demonstrated a playfulness and a way to engage with the seemingly insurmountable quantity of new material being uploaded every second to the datasphere without ever having to comprehend its vastness.

'Process' is almost implied in this definition of the interactive. Of it, Whitelaw says:

> Perhaps the most important lesson from data-sound comes from process, rather than product, for in this domain it is the artists who are prototypical data-subjects. Theirs is not a single subjectivity, but uses diverse strategies and mappings, and these not complete, rational or determined, but arising through mixtures of whim, convenience, insight and chance. (2004, 8)

In a later article (that is admittedly less keen to unproblematicly endorse process) Whitelaw notes that there is "value… [in a] practice that selects, frames, and maps data, while seeking to make those processes transparent (as opposed to omitting or erasing them)" (2006). This is the process that so intrigued Fluxus artists and John Cage (and other radical art movements and artists throughout the twentieth century).

When defining, indeed implementing, categories relating to the post-digital, it is easy to neglect process; to think it insignificant (again, as a means to an end). For

example in a course summary by Christopher Ariza, such an error has been made. Sonification, for instance has been defined as “mappings of data to musical parameters where perception of the original data is valued” (2010, 165). Databending is referred to “mappings of data to musical parameters where the musical output is most valued” (Ariza 2010, 165). Later, Ariza refers to “musical listening and sonification listening” (2010, 165), reinforcing this binarism and leaving no room for process. (There is only ‘source’ or ‘output’: the process is considered insignificant).

If we are to reject data-sound as aesthetic object/artefact, that is, accept that it is clear processes in the creation of data-sound that are important, we discover ways of avoiding the dilemma outlined by Whitelaw, being the doomed neo-modernist attempt to find and exalt ‘pure data’ as an objective, self-reverential ideal. We also escape the flip side; art being a result of personal mysticism, or an outpouring of individual genius.

Process implies circumstance, movement, choices within defined parameters (as suggested by circumstance), and interaction with something, somehow (even if this interaction is very minimal). We must also recognise that processes, as we conceive of them, are never able to foresee every possibility. Thus useful processes must not be afraid of chaos, they must be self-reflexive and be able to expand, contract and distort without breaking (or else break gracefully when they are done). A multiplicity of subjectivities (players in process) produce materials that collide in unforeseen ways, rendering notions of objectivity and subjectivity redundant (a type of naïve, stunned objectivity exists as these subjective materials collide; obliterating and engaging in

creative-destruction, as a new subjectivity is forming, only to collide again before the paint is dry). In the words of an unlikely source, complexist stalwart, Pierre Boulez: “I prefer discussions in which ideas from one field are completely transposed into those of another, provided, of course, that this is done in a truly imaginative way” (Boulez et al. 1990, 10).

The sound of noise and the noise in sound

Post-digital aesthetics was a term coined in the late nineties, generally attributed to sound artist, Kim Cascone, to describe the sound (and noise) produced by the failure of digital technology, beginning with glitch but soon widening to include numerous types of microsound such as databending. This use (or abuse) of digital technology began in the early nineties with sound artists such as Oval and Tone Yasunao and initially exploited the physical vulnerabilities of the first consumer digital sound technology, the compact disc. It was an inherently *noisy* sound comprised of that which lies between the slick, seamless digital surface and the datafied underbelly (the sound of the media itself). Over time (and certainly by the time that Cascone wrote his most well known essay 'The Aesthetics of Failure: "Post-Digital" Tendencies in Contemporary Computer Music' [2004]) this noise became to be regarded as a mostly aesthetic phenomenon – a sound that was ripe for the picking. For examples of this you have to look no further than crime shows (such as the English TV productions, 'Wire in the Blood' and 'Silent Witness') that regularly delve into the abject world of graphic homicide and post-mortems and also happen to be splattered with glitch and other post-digital sound (as mentioned in the last chapter this can be problematic as it puts an end to any significance it may have beyond a mere disembodied sound).

Why has post-digital noise become so commonly viewed like this? Beginning with a discussion of a recent book about sound derived from malfunctioning sound equipment, this chapter argues that the creation of post-digital noise is cast increasingly as a sound without a significant context because of the skewed historical

view its practitioners and theorists have developed, primarily as a result of its place in history (being after digital or *post-digital*). The very thing that led sound artists to critique the period in which they lived (the *digital* period) has also hemmed them in. More broadly this chapter looks at some concepts of noise (although not definitively) that help understand the current dilemma.

Cracked Media is a recent book by Caleb Kelly whose main focus is the exploitation of bent media (primarily since the fifties) to foreground the background, making the media the message and thus eradicating any distinction between the two (2009). A big part of Kelly's interest revolves around the inevitable and intentional noise that such processes create. For him (and many others) this creation whose linage can be traced to the Futurists in the early 20th century has forced a break with sound's musical past, culminating in post-digital glitch (the territory in which he seems to feel most at home).

Beginning with poetic enthusiasm - "Noise fills the audio output of cracked media: cracked lines, lost data, static and hiss, broken signals, chaotic production, earth hum, piercing tones, and digital glitch" (2009, 61), Kelly soon begins to ponder the intricacies of noise categories that include "acoustic noise, noise in information theory, subjective noise, and material noise" (2009, 69). Despite this rather clinical approach Kelly obviously likes the sound (and look) of unadulterated *noise*. Thus we get the feeling that for him it is a dish best consumed as raucous, raw sound (Japanese noise music – along with 'drum 'n' bass' – is, after all, his starting point for cracked media, as he tells us in his introduction [2009, 11]). In his book Kelly has adequately

summarised a post-digital understanding, most strongly proposed by theorists such as Douglas Kahn, that legitimises a false dichotomy, between *noise* and *music* (preferencing noise in the process). As I will show, this oversimplification, brought about in part by the homogenising processes of early digital sound technology, leads to a distorted view of history. This will be done to later draw attention to an important feature of my own practice: the use of noise to create form, a practice that does not necessarily have to lead to 'noisy' compositions, and one that is certainly not confined to influence from the last century.

Statements such as: “Traditionally, Western art music has drawn a significant distinction between musical and nonmusical sound ... Musical sounds were sounds produced from traditional instruments, played in the correct manner by trained musicians” (Kelly 2009, 14) are sweeping, and draw a line in the sand between music and noise. Kelly quotes extensively from Douglas Kahn who concurs: “Within the history of Western art music, noises… were simply the sounds music could not use” (1999, 79). At one point Kelly asks: “What is the difference between noisy and non-noisy sound?” which he begins to answer with a quote from Herman Helmholtz: “The soughing, howling, and whistling of the wind, the splashing of water, the rolling rumbling of carriages, are examples of the first kind, and the tones of all musical instruments of the second” (Kelly 2009, 70 quoting Helmholtz 1954, 8). Although he then thickens the stew with other definitions, the basic premise, that musical instruments produce music and everything else is noise, goes unchallenged.

Transgressive Theory Of Noise

In most (non-*noisy*) cases, noise is not something you can capture and bottle. Noise is not like sound that can be defined as a concrete physical phenomenon. Nor is it like music, that may be defined purely culturally (admittedly in a variety of ways). Noise is a conceptual chameleon. We think we have got it, grasped its motivation and intent, and then, like a slippery cake of soap, it eludes us, moves on to occupy territory that, at best, we see (hear?) in our peripheral vision (hearing?). For this reason I would like to suggest a way of understanding noise that may allow for new or forgotten ways of hearing it. If noise is not an entity as such, perhaps it could be theorised as a progression, as something that is always in a state of becoming, that once arrived at ceases to be:

- noise begins as in information theory (more or less) as 'anything extraneous to the message' (this includes Kelly's 'subjective noise' where the message and thus noise are defined by the subject) (2009, 71-72). Of course, the case could be made that noise at this stage is yet to be anything (including 'noise'), seeing that there's no signifier to categorise it as such;
- we then recognise this noise (which can quite often be background and/or as a result of the sound of media, but not always) as a point of interest, as something that can be foregrounded, or mixed with the foreground to create new aesthetics and forms;
- having fulfilled the last point this new 'noise' becomes aestheticised and accepted as music by others beyond composers (this point may take longer for some 'noise' than others. Of course no music is ever universally accepted).

This way of looking at noise is not incompatible with Jacques Attali's dialectical approach, although Attali focuses more on the link between sound and the socio-political economics of history:

> Today, music heralds—regardless of what the property mode of capital will be—the establishment of a society of repetition in which nothing will happen any more. But at the same time, it heralds the emergence of a formidable subversion [or noise], one leading to a radically new organisation never theorized, of which self-management is but a distant echo (2002, 5)

and, "every major social rupture has been preceded by an essential mutation in the codes of music, in its mode of audition, and in its economy" (2002, 10).

There are two other possible inspirations for this view of noise that should be mentioned. The first is Zizek's Lacanian interpretation of 'The Real' – the "gap that separates the One from itself" (Zizek 2006, 10) or the murky, unnamed space between signifiers. This primal, irreconcilable no-mans-land is remarkably like Attali's "radically new organisation never theorized...". They are both impossibilities: once named they cease to exist as they did (that is, as impossibilities). The existing impossibility becomes a non-existent certainty. Kristeva's notion of the abject is another an obvious fit. Of the abject she says that it is "on the edge of nonexistence and hallucination..." and like Zizek's gap that "separates the One from itself" it is a "vortex of summons and repulsion [that] places the one haunted by it literally beside himself". Like noise, the abject is "radically excluded" and the "place where meaning collapses" (Kristeva 1982, 1-2).

Most of the following discussions about noise flow from this transgressive theory of noise, basically, that noise ceases to be noise once it is named and accepted, but something will step in to take its place, something that we cannot name.

The Noise And Music Dichotomy

A main problem with current theory seems to emanate from an exaggeration of the role played by the Futurists in the history of sound. This is not to say that their role was minor, just that many of the claims they made in the heat of revolution should, and have, been contested in the cool grey light of day. Even within their writings we can find passages that contest this violent break between a supposed static traditionalism and noise. In 1913 Futurist, painter and non-musician Luigi Russolo wrote *The Art of Noises*, a manifesto calling for the discarding of "violins, pianos, double-basses and plaintive organs" and for the "INFINITE VARIETY OF 'NOISE-SOUND' [to be] CONQUERED" (1970, 76), but interestingly he tempers this bravado with statements such as, "We futurists have deeply loved and enjoyed the harmonies of the great masters. For many years Beethoven and Wagner shook our nerves and hearts" (1970, 76) and "Today music, as it becomes continually more complicated, strives to amalgamate the most dissonant, strange and harsh sounds. In this way we come ever closer to *noise-sound"* (1970, 75). All of this points to a continuation of a dialectical conversation with tradition, but hardly the stagnation that Kelly naively attributes to pre-futurist sound, nor the revolutionary break granted the futurists.

We don't have to look too far beyond Futurism to find useful critiques of it. Some Dada writers (admittedly, keen to make the break between themselves and the past) have

launched into tirades against the futurists, and these manifestos are telling in light of post-digital interpretations of noise. For instance, *Dada Manifesto* by Huelsenbeck stridently claimed that there was a "sharp dividing line separating Dadaism from all earlier artistic currents, and particularly from FUTURISM which not long ago some puddingheads took to be a new version of impressionist realization. Dadaism for the first time has ceased to take an aesthetic attitude toward life…" (Richter 1997, 106). The sound of Futurism (the *impressionistic* sound of Futurism and its *aesthetic attitude*) can be summed up by Russolo's 'noise-organ' 'on which he could conjure up all the distracting sounds of everyday existence' (Richter 1997, 19). Seen as an end in itself, the overtly literal and musical treatment of noise, and the need to manipulate it into a form of the most solemn of Western instruments, the organ, means that Dadaists like Huelsenbeck are at least partially correct in their appraisal of Futurism as a retrograde (or at least static) movement.

Attali is also sceptical about the supposed weighty role of the Futurists:

> Musicology always situates [the] essential fracture back at the entry of noise into music [by the Futurists]. That was indeed when provocation and blasphemy, the cry and the body, first entered the spectacle…it did not, however, translate into a real rupture of the existing networks' unlike with Cage where the disruption is more evident. (2002, 136)

Pitch And Noise

In the late eighties-early nineties I was peripherally involved in Martin Wesley Smith's WATT concerts. I remember watching in awe as the digital music group, OHM (featuring, amongst others, now-prominent composer/performer/academic Julian

Knowles [see Monro, 2001 for more on OHM]), performed their shimmering, crystalline sound. The thing that struck me about their performance was the purity of tone. Even the *non-musical* ambient sound took on an overt musicality thanks to the elimination of any media noise and familiarity through literal repetition. The sound of falling water, for instance, has become an ambient cliché. Perhaps technically unpitched, clear tones and melodic lines do emerge through looping. OHM, and other early digital groups, exploited the ability of the digital to remove any distance between the sound source and the listener. This, combined with early manipulation inevitably comprised of literal, audible looping, quickly led to a reaction against pure pitch, culminating in the emergence of post-digital noise.

This reaction, as embodied by Kelly's understanding of pitch and noise, is understandable but often naïve. It appears to have led to a false dichotomy – that of pitch versus noise (mutual exclusivity is certainly implied). There is a misconception about music with pitched notes, especially written music – that it contains no noise. This, however, must be seen as a post-digital judgement. It comes after the purity of digital. In the digital sequencing and sampling of the eighties, noise was largely eradicated, not just by disappearing the media (bringing the sound source and listener together), but by normalising or 'denoisifying' music. A MIDI sequencer would tell samplers what notes to play and on what 'instrument' to play them, and then the sampler would take a single sample (in most cases) of an instrument and use it to play all notes on that instrument. The fundamental flaw in this model is that acoustic instruments (and many non-digital electronic instruments) play all notes differently.

This difference, I contend, normally referred to as 'expression', is actually noise (it is unpredictable). This is how a violin can play a middle C one hundred times and each time it sounds a little different (verifiable through spectral/mathematical analysis of these notes). To us this seems natural or organic and the essence of acoustic performance.

Therefore, viewing pitch through the homogenising processes of the eighties has given more recent composers and sound theorists a warped perspective concerning the nature of pre-digital, largely acoustic, pitched sound. At this micro level (that of single notes and their more molecular make-up), pitch is rarely noiseless and further, it is this noise that generally creates interest. Julian Henriques writes that "while digital audio and video technologies are efficient and convenient, often it feels there is something missing. Invariably, this 'something' is difficult to describe" (2003, 462). He attributes this "hard-to-define quality missing from the digital [to] the particular sensual bodily pleasures of the materiality of the sonic" (2003, 462). Rather than just leave it as "pleasure" though we need to understand what it is that we find pleasing. I contend that it is the variety attributable to the noise created when medium meets message; when the imperfect materialism of the performer and instrument meet the idealised perfection of the score (whether written or improvised).

To state the obvious, the twentieth century is lined with musical experiments where dulcet 'musical' tones are possessed by the wretched spectre of noise. Barely a single electric guitar has been heard since its invention in the late 40s without distortion, beginning as a tolerated idiosyncrasy of pickup and amplification

technology, becoming (through technological additions) a much prized sound of the stadium rock impresario. Experimental 'noise' based rock, from the Velvet Underground to Sonic Youth, has taken *music* to the brink of all-out *noise* without ever entirely ditching the former. Even Glen Branca's creations, comprised of multitudes of overdriven, dissonant, polyrhythmic electric guitar licks, never discard pitch as a fundamental component of composition. The same can be said for the tone cluster-based compositions of Henry Cowell, Pendereski and Ligetti, and various jazz (and jazz-inspired) idioms, from the free form of Coleman to the mayhem of Zorn – the pitch is carried by the noise, and the noise by the pitch.

Although some of the most obvious examples of noise within music occurred within the later two-thirds of the twentieth century (as outlined above), noise has been a fundamental component of all music, up to certain types of electronic music (such as MIDI sounds, as mentioned earlier). In the late eighties and early nineties there was a backlash against the cold, metallic sound of new digital technologies. Even those that used samples of 'real live' instruments could not get within reach of the 'real thing', argued the traditionalists. Although mainly speaking from reactionary positions, these people were also intuitively recognising an actual phenomenon, the likes of which had not been encountered before – the near elimination of noise from the sounding process.

It is interesting to note an earlier (perhaps subconscious) recognition of the eradication of noise. In the mid 1960s, Steve Reich created two seminal phase tape works, *Come out to show them* and *It's gonna rain*. In 1966 he began exploring with an

instrumental (non-electronic) version of this mechanical phasing. In an article entitled 'Notes on Compositions (1965-1973)' he states:

> I recorded a short repeating melodic pattern played on the piano, made a tape loop of that pattern, and then tried to play against the loop myself, exactly as if I were a second tape recorder. I found, to my surprise, that while I lacked the perfection of the machine, I could give a fair approximation of it while enjoying a new and extremely satisfying way of playing. (1974, 50)

Reich then attempts to justify this change in terms of personal self-control: "I believe there are human activities that might be called 'imitating machines', but which are, in reality, simply controlling your mind and body very carefully as in Yoga breathing exercises" (1974, 53). Eventually he tires completely of electronics (although employing the digital sampler decades later):

> Most of 1968 and more than half of 1969 were spent designing and constructing this device [the Phase Shifting Pulse Gate]…After the device was completed it proved to be musically uninteresting in performance. I felt very clearly then that I did not wish to have any involvement with electronic music again [and that] feedback of ideas from electro-mechanical devices and processes to instrumental music has brought me to think of electronic music as a kind of interlude filled with new ideas for the ongoing history of instrumental and vocal music. (1974, 55)

It is easy to snigger at his predictions such as "Electronic music as such will gradually die and be absorbed into the ongoing music of people singing and playing instruments" (as printed in 'Some Optimistic Predictions about the Future of Music (1970)' [1974, 28]), but Reich was possibly identifying the same *noiselessness* that

post-digital noise artists identify in the digital. Complexist, Pierre Boulez has also identified this phenomenon in minimalism: “phase shifting [is a], technological phenomena, but realized, if you will, by hand, in order to preserve for them an imperfect aspect” (Boulez et al. 1990, 12).

To help make these ideas a little more seamless, it is helpful to reassess the role of pre-electronic and pre-recorded media modes of performance and listening. Non-recorded acoustic music is usually considered to be pre-media arts. That is, to create media from music, mechanical replication technology (such as the phonograph or tape recorder) has been necessary. Thus conventional wisdom would conclude that noise as a result of media (background noise) is only possible once recordings (on recording media) have been made. Acoustic performance is, however, always at least part reproduction (whether of written score or of prescribed knowledge as in improvisation), and this reproduction always grinds against the material reality of performance. This grind reveals the background noise of the human stylus interpreting the score through the instrument and environment. It therefore follows that we can compare the noisiness of acoustic performance with the noiselessness of the early digital and the noise of the postdigital without any compatibility issues.

The flip side to the equation is that what is often referred to as noise in the post-digital (sounds that are, for want of a better word 'natural' or created by accident or incidentally) is comprised of pitch which is usually organised in some way (it is perhaps ironic that to create an unfettered noise takes more organisation of pitch than to make, or find, *natural* noise containing rhythm and pitch organisation). Take Kelly’s

previously mentioned poetic description of cracked media: “cracked lines, lost data, static and hiss, broken signals, chaotic production, earth hum, piercing tones, and digital glitch” (2009, 69) and even more so Cascone’s oft quoted and colourful depiction of post-digital aesthetics: “computer fans whirring, laser printers churning out documents, the sonification of user-interfaces, and the muffled noise of hard drives” (2004, 393). Firstly, there is an undeniable rhythm in these words being conveyed here – an audible constant that defies the unpredictability and the extraliminality supposedly inherent in noise. Literally interpreted, many of these post-digital machines may produce pitch, often clearer and more musical than many *musical* compositions. Kelly’s earth hum, for instance is definitely pitched (50hz in Australia and 60hz in the US), and Cascone’s hard drive is capable of a rich variety of tones all derived from a fundamental.

More than the raw material for all musical composition, the harmonic series is present in just about all *natural* sound, from the howling of wind blowing through pine forests, to the chirping of birds, and in most industrial sound, from the pitched pounding of steel to the ethereal sound of power cables (numerous non-post-digital sound artists have openly used these sounds in ways that don’t try to conceal their incidental processes, including Alan Lamb, Jodi Rose and Jon Rose). We therefore took as our starting point (for our first music), not a complete, uncarved, block of noise, but a highly refined *natural* sound order upon which we imposed (and continue to impose) a vast array of controls and relations. It is these impositions (not our natural sound order) that become music. It is odd, but true, that the majority of the history of human

sound (and foundations for music) took place without humanity present, that from the time of the formation of our atmosphere, the story of how we hear and manipulate sound was being written. Many post-digital composers use the harmonic series (produced through earth hums, whirring hard drives, naturally occurring algorithms etc.), not as a starting point, but naïvely as examples that transcend music. These compositions are often characterised by percussive clicks and pops (that tend to rhythmically drive and punctuate these pieces) with pitched material demonstrating an irrational fear of upper partials (that is, the music is consistently consonant with a continuous use of *open* harmonies). Some of the better examples of this naïve approach to pitched material include Cascone himself (including many tracks on the albums 360A Degrees and Fourfold Symmetry for instance) and US sound artist, Steve Burnett (AKA Subscape Annex, whose works can be found at http://www.subscapeannex.com/ [Burnett 2012]). A mixed collection of examples, most in this style (including some less impressive works that often sound like badly-produced ambient pop), are presented at http://archive.org/details/loop01 as a *cutting-edge* compilation from online music, technology and culture magazine, Loop (Escudero 2006). Artists contributing to this collection include Richard Chartier, Vladislav Delay (AKA Sasu Ripatt) and Cascone.

Dissonance As Noise

Another missed notion is that of dissonance as noise. Perhaps we have Cage to blame who predicted that: "WHEREAS, IN THE PAST, THE POINT OF DISAGREEMENT HAS BEEN BETWEEN DISSONANCE AND CONSONANCE, IT WILL BE, IN THE IMMEDIATE

FUTURE, BETWEEN NOISE AND SO-CALLED MUSICAL SOUNDS" (1973, 4). Thus, it appears that dissonance and consonance (as separate entities) have become irrelevant concepts. A very dissonant piece that still uses *musical* sounds is now in opposition to a work that is noise-based.

Dissonance is an often used, but rarely properly understood, term in sound. The New College Encyclopedia of Music is at a loss to do its job when it comes to defining dissonance, claiming that "the term is incapable of precise definition" (Westrup and Harrison 1976, 168). James Tenney's *A History of 'Consonance and Dissonance'* offers this reason for the reluctance to define these terms:

> There is surely nothing in the language of discourse about music that is more burdened with purely semantic problems than are the terms *consonance* and *dissonance*. A comparison of some of the definitions of these words to be found in current dictionaries, harmony textbooks, and books on musical acoustics indicates that there is considerable confusion and disagreement as to their meaning—if indeed there *is* any meaning still to be attributed to them. (Tenney 1988, 1)

Tenney then goes on to quote from prominent twentieth century composers who offer insight into dissonance. Paul Hindemith writes of the varied and relative definitions of consonance and dissonance, claiming that they have "never been completely explained" adding that for "thousands of years the definitions have varied" (Hindemith as quoted in Teeney 1988, 2). Igor Stravinsky states that "the word dissonance has carried with it a certain odour of sinfulness" that "in textbook

language…is an element of transition…which must be resolved to the ear's satisfaction into a perfect consonance" (resolved, supposedly, as one might be forgiven for sin). But he continues that "nothing forces us to be looking constantly for satisfaction that resides only in repose. And for over a century music has provided repeated examples of a style in which dissonance has emancipated itself" (Stravinsky as quoted in Teeney 1988, 2).

The most insightful comments, however, come from arguably the most controversial pre-Cagean composer, Arnold Schoenberg:

> Dissonances, even the simplest, are more difficult to comprehend than consonances. And therefore the battle about them goes on throughout the length of music history… The criterion for the acceptance or rejection of dissonances is not that of their beauty, but rather only their perceptibility. (Schoenberg as quoted in Teeney 1988, 2)

To Schoenberg, dissonances:

> …came to be placed on an equal footing with sounds regarded as consonances [but] consonance and dissonance differ not as opposites do, but only in point of *degree* … consonances are the sounds closer to the fundamental, dissonances those farther away…their comprehensibility is graduated accordingly, since the nearer ones are easier to comprehend than those farther off. (Schoenberg as quoted in Teeney 1988, 2)

This means that every sound that is not exactly the same as the sound it's compared to is capable of being dissonant if it is perceived as such. In Schoenberg's explanation you have a perfect description of how nature and nurture combine in

music to be perceived as consonant or dissonant. In his critique of atonality Varese agrees, acknowledging a definitive relationship between notes:

> …atonality [or the equal relationship between notes] does not exist; it is a fallacy of thought, for we feel a tonality whether or not we deny its presence. It is not necessary to have a tonic with its third and fifth to establish tonality—for what is this chord but a fundamental with its second and third overtones? (Ouellette 1973, 125)

There is a *natural* benchmark, that of the harmonic series, but music is not just the harmonic series, it is constructed *against* it. What sounds good and bad, right and wrong, depends on our perception.

According to Tenney, this ability to be able to decide how we will perceive sounds (up against the backdrop of the harmonic series) has led to a number of very different conceptions of consonance/dissonance throughout the history of Western music, dating back to 3rd century B.C. Initially consonance and dissonance were terms "used in an essentially melodic sense, to distinguish degrees of affinity" but by the 19th century, 'dissonance' was equated with 'roughness' and this had implications quite different from those of earlier forms" (Tenney 1988, 3-4). (It is of course true that there were many other specific musical traditions that dictated absolute definitions of consonance and dissonance: from the Organum of the middle ages as prescribed in Musica enchiriadis to Ars Nova, Prima Pratica and Seconda Practica [Tenney 1988]. It is also true, however, that these 'absolute' rules of musical engagement are, in retrospect, especially from our twenty-first century vantage point, relative and part of a continuum).

There are at least two other forms (or sources of) dissonance that were discarded in the twentieth century as the timbre of acoustic instruments became consistent and equal temperament was almost universally adopted. In brief many instruments of previous centuries could not provide consistent tone across their entire rage. Pitches that were considered inferior were generally only played in developmental passages. Like dissonant harmonies, these inferior sounds required resolution. With regards to temperaments other than equal temperament, different keys have different sounds. If a key, different to the base key of the instrument, was used, it would sound inferior and most likely require resolution. These *non-harmonic* dissonances added extra colour and noise into the music that we can only imagine. In this way, at least, our last century is missing much of the noise present throughout preceding times.

Post-digital (indeed post-Cagian) noise artists and theorists, to some extent, have donned the emperor's new clothes in declaring *new noise* as both a definitive break with the dead, stagnant past, and a much vaster vessel (or perhaps non-vessel) that has subsumed this same minuscule history. Not only is noise (in the form of dissonance) manifest within history, but, in an ironic twist, this same noise is often missing within post-digital 'noise'. By this I mean that the harmonic content which is naturally present in most noise is ignored as developmental material, leaving it in a 'pure' (and thus non-noisy) state.

Noise As A Creative Generator

This interpretation of noise is perhaps the farthest removed from the sound of noise and refers to any method of composition that utilises processes that are not considered musical (or are differently musical). These processes can be seen to introduce noise into music if the outcome is in some way unpredicted or unpredictable. They exclude solely intuitive methods of composition that arrange known sounds into known forms (but do not not necessarily exclude intuition itself). These frictionless methods of composition produce little noise of form because we have become used to their outcomes and, more importantly, the compositional process is reversed; that is, compositions with *noisy* forms are approached from the point of view of discovering a new aesthetic, or in total disregard to aesthetics: wholly intuitive methods of composition arrange pre-existing material (or compositional methods) in order to make a particular type of sound – an aesthetic.

In reality, most music (perhaps excluding television jingles and the most formulaic of Top 40 fodder) includes some of this noise, but exemplary forms may include serial, algorithmic, indeterminate (chance) composition, phasing and databending. This is not just a twentieth century phenomenon, however: a Bach fugue uses *noisy* processing (including transposition, inversion and retrograding) combined with aesthetically acceptable use of melodic and harmonic material.

Some of the most interesting examples of *noisy* musical arrangements come from early twentieth century composer, Charles Ives. Prior to Futurism, a little known insurance salesman from Connecticut was busy conceptually advancing music in leaps

and bounds, and invoking a meaningful noise in the process. Ives' piece, *Central Park in the Dark,* employs an indeterminate mixing of sounds that one may have heard while standing in the centre of Manhattan:

> Ives superimposes several layers of music, each in an independent meter or rhythm, that represent various sounds coming from many directions. An impressionistic chordal ostinato in the strings represents 'the night sound and silent darkness.' Over this we hear sounds of human society, represented by quoted or paraphrased popular tunes ... A piano enters with ragtime figures ... This begins the depiction of pianolas having a ragtime war in the apartment house 'over the garden wall.' A second piano answers with the 'street beat' drum pattern ... The piling-up of ideas reaches a climax complete with a policeman's whistle in the flute and a fire engine siren in the trombone. (Burkholder 1995, 344-45)

This approach of montaging numerous layers of sound, although seeming a little impressionistic, employs the noise of uncertainty. While the relationship of notes within each layer remains known, the precise way that these layers will mix is not. It is this unknown melding of known elements that places Ives at the forefront of noise in the early twentieth century. In another work, the *Unanswered Question,* Ives has three different groups of musicians spaced out around the performance venue, beginning with a string quartet who play a

> gauzy backdrop of continuous slow-motion pastel harmonies, to be played offstage; the trumpet's disturbingly repetitive atonal interjections, unsynchronized with the strings; and the woodwinds' increasingly accelerated agitated, and raucous response to the trumpet. (Hitchcock 1977, 78)

As Hitchcock notes:

> The two works have in common as unprecedented, visionary realization of space and time in music...This has to do mainly with the elimination of a sense of beat or pulse—even the 'measuring' of time—that had been common to all Western music for centuries. (1977, 78-79)

Ives demonstrated a sophisticated approach to noise (or the mixing of uncertain elements) far beyond the aesthetic, impressionistic noisiness of the Futurists, yet it is the latter that continues to grab the attention of post-digital artists.

Ives' inspiration may have been the town square, but the question of whether public sound is public noise may depend on more than just the sound in question and an individual disposition. Karin Bijsterveld writes about the electro-mechanical sound (primarily from the gramophone and radio) of the first half of the twentieth century. She found that in the Netherlands, intense debates raged within city councils concerning the proliferation of noise due to the loud and inappropriate use of these devices. Rather than this antagonism existing within the communities in which gramophones and radios were most prevalent (overwhelmingly being poor, working class ones), she found that it occurred between the rich and poor. That is, at the margins between rich and poor areas. The working class were more than happy to have this overlapping, ever-present cacophony – it made them feel safe and imbued them with a sense of community, and the upper classes, seeing recorded sound as inferior, continued the tradition of the performance of 'real' instruments as a family oriented activity – one that required discipline and was limited in time (that is, did not

run continuously like electro-mechanical sound could). Thus, like two antagonistic countries that lie side-by-side, border tension manifested in skirmishes where they met. It was here, and only here, as a rule, where *noise* occurred. The rich heard a multitude of mechanical devices that overflowed into the street with abject sound – *noise*, and the poor, in return, heard the uneasy and judgemental strains of indignant silence (that and the heavy hand of the law and the slamming of windows and doors) – to the working class, *noise* (Bijsterveld 2008, 165-171). This is a good example of the subjective, transgressive nature of noise.

When you mention John Cage one cannot help but think of a commotion – a most radical calamity, a disruption that split the 20th century in two. He has, however, been criticised by Douglas Kahn and others in the last decade or so for his blind modernist approach to noise; for his reworking of noise to fit *areferential* musical frameworks: "When questioned from the vantage point of sound instead of music, Cage's ideas become less an occasion for uncritical celebration …What becomes apparent in general is that while venturing to the sounds outside music, his ideas did not make the trip" (1999, 161). Kahn is also critical of Cage for his criticism of Edgard Varese, Cage's criticism being, "In [some] respects Varese is an artist of the past. Rather than dealing with sounds as sounds, he deals with them as Varese" (1973a, 84). Cage's criticism (as Kahn points out) is that of (supposed) self expression: "which he equated most commonly within the German Romantic tradition" (Kahn 1999, 164). According to Kahn:

> This tendency in Cage was a measure of the degree to which he was logged within Western art music and how willing he was to carry further its processes of exclusion and reduction with respect to sound in general. It was as though he could legitimately extend the bounds of musical materiality only by providing an unflinching fidelity to musical areferentiality on its own turf. (Kahn 1999, 165)

It is possible, however, that Kahn fails to understand the nature of Cage's criticism as well as the noise created by the use of extra-musical structuring devices in Cage's music (which Kahn views as *areferential* - an unfair term that neglects to recognise the importance of processes—usually socially based—that were integrally entwined with Cage's output. He wrote extensively about these [for example see 'The Future of Music' in *Empty Words: Writings '73-'78* (Cage, 1979) for an example of Cage's intense social concern] contradicting an overemphasis by friend and foe alike on "letting sounds be themselves" [Kostelanetz 1988, 42]).

In the late thirties Nicholas Slonimsky (a confidante and proponent of Varese) analysed one of Varese's most radical works, *Ionisation* for 13 percussionists on several occasions (see Slonimsky 1967, 7 for instance). His findings were telling. *Ionisation*, he said, was in the traditional Sonata form (a form that dates back to the Baroque but is most associated with Beethoven [Parks 1974, 357-58]), confirming that *Ionisation* was a work with a "profoundly Western logic and structure" (Ouellette 1973, 108). Varese despised talking about his own music and generally discouraged any attempt to analyse it. As Cage has written: "He considers interest in [his life and

work] to be a form of necrophilia; he prefers to leave no traces" [Cage 1973, 83]. But in this case, he has no recorded objection to Slonimsky's characterisation of his work.

When Cage called Varese an "artist of the past" who deals with sounds "as Varese" he was referring to Varese's veiled use of classical/romantic forms that were, in many ways, conservative and seen to be part of a natural order (Kahn's *self-expression* turns to self-restraint in obedience to the normative). It is my contention that Cage (and others) attempted the most radical avoidance of this mysticised compositional approach that entrenched notions of the genius artist and celebrated noiselessness of form as cosmic harmony. Both Cage and Varese are often seen to embrace modernist objectivity, creating at arm's length. The difference is that Varese's arm's length concealed and mystified, while Cage's revealed and illuminated. Cage never attempted to hide anything, while the mythology of Varese is built around his refusal to be held accountable by his peers and audience. It is the nature of composition (whether sound, music or other medium), indeed listening, that "exclusion and reduction" take place. Cage's indeterminate processes allow for the entry of noise into compositional systems in ways many intuitive, mysticised, noise works (such as Varese's) don't. This would apply especially in our current era where the micro (and nano) and the *now* are preferenced over the whole.

Current logic privileges the ability to be able to control smaller and smaller units (sound particles) in a dynamic (or improvised) setting at the expense of a broader perspective which is now seen as little more than a byproduct of the accumulation of these smaller units (pitch, for instance, is labelled "the illusion of tone continuity" by

Curtis Roads [Roads 2004, vii]). It is startling to realise that the outcome of many of these works is a traditionally formed piece (often in sonata or at least ternary form). I offer up my own (failed) experiment as a prime example: *Question/Answer...Interruption,* involving five postdigital performers improvising from a dynamic and randomised graphic score (this work can be heard on TRACK 34 and a compressed 3 minute version on TRACK 35). After the fifty minute performance I analysed this recording. To my astonishment it revealed an almost precise sonata form). Cage's organisational noise (seen as part of a modernist pathological obsession with objectivity) has ironically been exorcised from many post-digital works, replaced by a default return to noiseless classicism.

In the next chapter I elaborate on noise as a creative generator in post-digital practice, looking specifically at how it can be used to create form (as Cage and others have done). I also provide an in depth analysis of *Question/Answer...Interruption,* asking how could I have done things differently in this work that was supposed to thwart conventional notions of form?

The last section of this chapter should be considered an adjunct to what has come before. I cannot, after all, write about noise without writing about its contentious antithesis, silence.

The Silencing Of Silence

Perhaps the only term more contested in sound than noise is silence. Cage struggled and played with the term, generally advocating for silence, but changing the definition somewhat throughout his life. He began (as most people do) with the assumption that

lack of 'noise' equalled or approximated silence: “The opposite and necessary coexistent of sound is silence” (as quoted in Nyman 1999, 32). After his experience in an anechoic chamber where he heard “one high and one low” sound but no silence, he concluded in the early 50s that there could be no such thing: “until I die there will be sound”, or as Michael Nyman put it, “'silence’ is full of (unintentional) sounds” (Nyman 1999, 62). As Kahn points out, for Cage, “loud sounds too could be silence” (Kahn 1999, 163). Silence for Cage then became music on the wind that could not yet be named, that which “previously lay dormant outside the scope of attention [that] becomes a possibility”. It is always “awaiting a crisis of attention” (not dissimilar to how I define noise at the beginning of this chapter) (Retallack 1996, xxxiii). Kahn also identifies a final stage in which Cage “interpolate[s] sound (and thereby music) back onto a seemingly intransigent silence of objects” (1999, 164). New technologies became the key to finding the sound in the silence of objects: “Matter is dissolved as technology denies inaudibility and forbids silence”, according to Kahn. So for Cage, silence was anything but straightforward. Silence was quite capable of meaning its (supposed) opposite and more.

To demonstrate in a practical sense how elastic the notion of silence is (beyond the theoretical manipulation of the wordsmiths), let me give the following personal example. For the first six or so months of my daughter’s life she fell asleep to noise. We had read about how soft static could help with infant sleep, so making a recording of a vacuum cleaner, we all fell asleep (and stayed asleep) to this background static. While the recording played, we generally slept soundly. If the recording stopped we

would most likely all wake within seconds. The noise of the static, becoming normative, had become the 'silence' and the silence, becoming abnormative, was now startling 'noise'. This is of course the same horror that may afflict a city dweller spending time in the country. Even public health experts are not willing to endorse silence as an absolute. The authors of a World Health Organisation report into noise wrote that “there are scientific reports that a completely silent world can have harmful effects, because of sensory deprivation” (Berglund et. al. 1999, 55).

Attali attributes a silencing ability to commercial rock music (and more importantly, the music industry) that mass produces “a deafening, syncretic kind of music…censoring all other human noises” (Attali 2002, 19). He elaborates:

> …the baby boom and the end of the postwar economic crisis produced an enormous demand on the part of the white youth, coincident with the introduction of a syncretic product ready to respond to the demand by using black despair—carefully filtered—to express young white hopes: *rock*.

His gripe is not with the music itself (necessarily) but with the

> radio stations and ASCAP (American Society of Composers, Authors, and Publishers) [that] controlled what the late nineteenth-century music publishers were unable to prohibit. Explicit censorship played a very prominent role, readopted from the eighteenth century…Thus a degraded, censored, artificial music took center stage. Mass music for an anesthetized market. (Attili 2002, 105)

It is no wonder that an exhaustive contortioning of this term has led to the recent publishing of a *Manifesto for Silence* (Sim 2007), a work that quite purposely

ignores and rejects any real toying with the definition of silence as the polar opposite of noise, despite analysing its historic usage in religion, philosophy, the arts, literature and language. It begins: “We live in an increasingly noisy society in which silence is a threatened phenomenon. Noise and silence are locked in conflict in contemporary existence…” (Sim 2007, 1) and rarely veers off its sentimental course. It is something of a call for an absolutist approach to a menace (noise) and its antithesis (silence). Stuart Sim’s *Manifesto for Silence* invokes silence in the same way that Kelly (and Kahn) treat noise. But for me it is too late. Silence has come to mean too much and nothing at all (and everything else in between). Silence as a concrete noun (as a real thing) no longer exists (I think it is fair to say that its use as an adverb, as invoked by Attali, *to silence* and the corresponding verb, *silencing* still has a strong legitimate political usage).

The post-digital legacy for silence should not be its reinstatement (as Sim would hope), but its death with a decent burial. It may live on as a conceptual ghost but all attempts to instate it in a physical sense in the name of nostalgia, whether in urban streets, our homes, concert halls, churches, corridors of power or libraries must be seen for what it is, 'silencing' (in effect, an act of fascism). 'Silence' always has a kick-back to it, an aftershock, an equal but opposite reaction. When an officer of the law gives you the *right to remain silent* you can be sure that the next line will be something about *evidence being taken down and used against you*. *Silence of the Lambs* seems like a nice title for a movie (perhaps a children’s flick?), until you realise that *silence* and *slaughter* are synonymous. From now on there is only noise, questions must be asked only of it.

The inadequacies of post-digital form

In 2009 Kim Cascone asked his .microsound list (started in 2000 to discuss ideas concerning post-digital and other computer-based music) to propose ideas for a paper he was writing on form in microsound (which has subsumed all types of the post-digital sound, including glitch and databending) (Cascone 2009). What became apparent was that participants in this conversation had very different ideas as to its definition.

There were, perhaps, some very loose threads that could be drawn from this list: someone nicknamed *Pereshaped* works at the level of gestures and fragments, developing a lexicon of sounds and working with the 'aural context of the moment'. This is what I would call the intuitive approach. Beginning with a either a grab bag of sounds or a collection of microprocesses and improvising with these as one would with notes on a traditional instrument (minus the harmonic structure).

By far the most common approach was articulated by 'Batuhan Bozkurt who said that "on-stage live coding has its own structural aesthetics especially if one wants to project his/her screen to some place for the (possibly non-programmer) audience" implying a simplification of form, or an aesthetically pleasing arrangement of microsound is necessary for comprehension. He points out some features of live performance including the development of material from simple to complex and the almost-ubuquitous fade-out. *John Saylor*, similarly, works with traditional macrostructures such as 'big blocks for approximate major time divisions' but his attention to detail and use of algorithms as structuring devices increases as scale

decreases. This approach means a *systematic* approach to the micro but a micro-managed macroform – *big blocks* usually predefined by an often subliminal or culturally normative knowledge of traditional form.

An alternative approach – the use of process as an overall, untampered-with generative device is much more rare it seems. All participants use qualifiers in order to demonstrate a *humanising* (or more correctly, a *normalising*) of their compositions. *Paulo Mouat*, while wanting to (paraphrasing Cage) "let the sounds be" (Kostelanetz 1988, 42) admits to 'nudging' for instance. *Justin Glenn Smith* while using "non-linear and unpredictable algorithms" uses "recursively feedback generated data to provide overall shape" to his works, which (one would assume) gives him the responsibility of shaping his compositions above and beyond the cold, hard microstructure.

While I believe that much of what was said in this discussion can be distilled down to these three ways of presenting work (intuitive, traditional/structural and 'nudged'), I don't want to give the impression that this discussion was restricted to my summary. There was a substantive theoretical discussion over new ways of viewing form, from *David Powers* elements of a meta-theory of music to the writings of Schaeffer, Xenakis and Roads. There was also an amount of admitted bewilderment about what constitutes form. But overall it is broad categorisations of form that are of interest here, and the first two ways of viewing form that I have initially outlined (intuitive and use of traditional forms) were definitely overrepresented.

Curtis Roads, Microsound and Time Scales

The dominance of a working methodology that creates a split between the experimental, process driven microform and the *humanised* (i.e. *normalised*), massaged macroform is reflected both in my own experiences of microsound and in the meticulous writings of computer music guru, Curtis Roads.

In *Microsound* (the most comprehensive account of current experimental computer sound usage to date) there are nine time scales attributable to sound – three of which are of particular interest. These are:

> 3. *Macro* The time scale of overall musical architecture or form, measured in minutes or hours, or in extreme cases, days.
>
> 5. *Sound object* A basic unit of musical structure, generalizing the traditional concept of note to include complex and mutating sound events on a time scale ranging from a fraction of a second to several seconds.
>
> 6. *Micro* Sound particles on a time scale that extends down to the threshold of auditory perception (measured in thousandths of a second or milli-seconds). (Roads 2004, 3-4)

Of these, only the micro is totally unfamiliar to (or at least unmanipulatable in) pre-microsound composition, and it is this scale which most interests Roads and (as a rule) microsound composers. Macroform, according to Roads "takes one of two contrasting paths: *top-down* or *bottom-up.* A strict top-down approach considers macrostructure as a preconceived global plan or template whose details are filled in by later stages of composition…By contrast, a strict bottom-up approach conceives of form as the result of a process of internal development provoked by interactions on

lower levels of musical structure" (Roads 2004, 12-13). Roads cites Varese, "Form is a result—the result of a process" (Varese 1971 in Roads 2004, 13). This bottom-up method of working is illustrated with two primary examples: "Serial or germ-cell approaches to composition [that] expand a series or a formula through permutation and combination into larger structures [that in computer music can frequently manifest as a technique that involves time-expanding] a sound fragment into an evolving mass," and the way demonstrated by John Cage and the like that involve concepts of form "arising from a series of accidents—random or improvised events occurring on the sound object level. For Cage, form (and indeed sound) was a side-effect of a conceptual strategy" (Roads 2004, 13).

Roads' preferred option is, however, a compromise:

> For some [Roads included], composition involves a mediation between the top-down and bottom-up approaches, between an abstract high-level conception and the concrete materials being developed on lower levels of musical time structure. This implies negotiation between a desire for orderly macrostructure and imperatives that emerge from the source material. (Roads 2004, 13)

Roads' underlying philosophical approach to sound is a radicalisation of the micro while maintaining business as usual at the macro level. Initially he stresses that the difference between his time scales is not just a matter of scale: "As sound passes from one time scale to another it crosses perceptual boundaries. It seems to change quality. This is because human perception processes each time scale differently" (Roads 2004, 4). This, in turn, means that Roads is able to treat different scales

differently, philosophically and aesthetically. He does note the possibility of the micro impacting the form of the macro:

> The aesthetic of organised sound [as opposed to traditional 'music'] places great emphasis on the initial stage of composition—the construction and selection of sound materials…just as the molecular properties of wood, thatch, mud, steel, and plastic determine the architectural structures one can construct with them, so sonic microstructure inevitably shapes the higher layers of musical structure. (Roads 2004, 328),

but then adds: "After construction at the 'mesostructure' time scale the 'composer may intervene to reshape these structures from the vantage point of another time scale" (Roads 2004, 328).

Roads, like Varese and the Futurists (but unlike Cage), is on one hand endorses a radical rethinking and experimentation with fundamental music matter, but on the other, at best neglects the macro structures of which microsounds comprise, at worst, form is considered something that has to be tamed, beaten into a recognisable shape so as to make smaller structures more palatable – experimentation at this level is restricted. He states:

> Since the start of music notation, it has been possible to manipulate musical materials as symbols on paper, separated from the production of sound in time. Herein lies a fundamental dichotomy…Music, however, is more than an abstract formal discipline. It must eventually be rendered into sound and heard by human beings. Thus it remains rooted in acoustical physics, auditory perception, and psychology'. (Roads 2004, 337)

Roads continues to emphasise this natural order of things (comprised of such elements as acoustical physics, auditory perception, and psychology, and, as we shall see, emotional response). So a formal approach (characterised as *imposing constraints on one's self*) that seems not to confirm to an existing taste (or *natural order*) makes for bad music:

> While formal algorithms enable interaction with a machine, formalism in composition means imposing constraints on one's self. The formalist composer follows a logical system from beginning to end. This logic only exists in an ideal conceptual plan. The plan must ultimately be translated into the real world of acoustics, psychoacoustics, and emotional response. It is in this translation that the game is often lost. (Roads 2004, 337)

Returning to a former quote from Roads about Cage, form (and indeed sound) were not just a "side effect of a conceptual strategy" (Roads 2004, 13), but a way of composing beyond assumed knowledge; a methodology to shake the tree of sound to see what falls out. There is no recognition that these mismatches between a logical plan and our psychological perception (like the inherent faultyness of the glitch) might actually be of interest.

A *game* (as Roads refers to it) needs rules, and a common understanding of these rules. For Roads these include *acoustics, psychoacoustics, and emotional response*. They are, for him it seems, what hold the macroform together. While the microsound is an experimental new world the bigger picture is one that must contain and shape into a recognisable form. While not explicitly stated it is almost as if these

worlds are proportional. The more radical the microform, the more conservative the macroform.

So how does this play out in Roads work?

Roads (like many post-digital artists, indeed many composers before him) does not copy traditional form section-for-section, but he does, probably intuitively, implement the aesthetic intent. He *shapes* the form, moulds it like clay, until it represents the familiar. The content is clipped and filed at as one would a block of marble. In the end we can still claim that our piece is 'all marble', but we can still see the invisible hand of form (producing work that is arguably more formalist than a composer who "follows a logical system from beginning to end" [Roads 2004, 33]).

For example, if we take *Eleventh Vortex* (2001) the formal devices of *fade-in* (at the beginning) and *fade-out* (at the end) are blatant. These are (one assumes) not the result of any specific algorithm or computer process, but a clear attempt by the composer to impose form. Further, there are breaks that indicate a theme one, and a theme two at the beginning (both of which fade in dramatically), a development or waiting passage in the middle which is playful and less directional, and (while not actually a recap) two distinct sections later on that establish the end of the piece (which then fades out over the course of a few seconds).

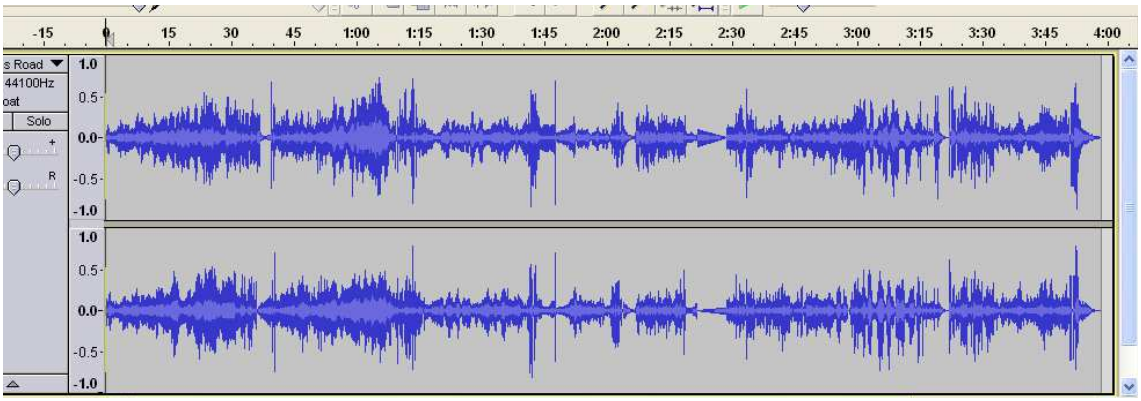


Illustration 2: Amplitude of Curtis Roads' 'Eleventh Vortex' (2001)

In Roads' microsound compositional word, there is room for top-down composing comprised of literal formal arrangement of material, and bottom-up methods which he describes as process oriented composition (and combinations of the two). What is not acknowledged, however, is a type of composition that Steve Reich described as a sounding process – a strict set of parameters which become audible over time. The lineage of microsound is telling with regards to process. Microsound is usually inaudible and obscured by the ferocious chewing through of these minute manipulations, and in this it not only shares ground with the total serialists and complexists, it was, indeed, the holy grail of a number of them (Stockhausen and Boulez to name two [Roads 2004, 71]). Roads, like many microsound composers, does not seem to share the vision of academic obfuscation of the total serialists, but is nevertheless engrossed in methodologies that do not reveal process. The solution is to micro-manage the macro. To *shape* work according to humanistic (read *normative*) values, to make work listenable.

The discussion of form on Cascone's .microsound list, and in Roads' *Microsound* are theorised accounts, descriptions of working methodologies. But how do these really play out in an environment of improvised chaos?

Form "below the level of deliberate signification" (McClary 2007, 16)

In 2008 I organised a performance as part of the Sound of Failure Festival. Called *Question/Answer…Interruption* this work for four (or four groups of) post-digital performers was specifically about thwarting traditional notions of form. The overarching concept was to have an improvised work that removed absolute control of form from the performers. I did this by asking the performers to bring in a graphic score (which could be anything from a single image to a video). These four visual sources (there were three solo performers and one duo) provided impetus for the performers who were asked to only take direction from the images that weren't their own. Further, throughout the performance, each performer was allowed to cover another's image (ensuring intermittent interruption for some of the players). While not imposing strict rules, I was sure that this arrangement would create a composition that could not possibly seem familiar in structure. *Question/Answer...Interruption* was an experiment in thwarting classical and romantic clichés in form in post-digital improvisation (something that I had noticed almost universally as a by-product of this type of composition).

By classical and romantic clichés I mean form characterised by a familiar symmetry, comprising an exploratory, developmental middle surrounded by an exposition at the beginning and a recapitulation of these original themes at the end.

Throughout this form, there is an increasing drive (perhaps with an increase in tempo, volume, texture, and other types of intense build up) leading to a final cadence – an announced, undeniable ending.

Mertens refers to this form as the "traditional romantic-dialectical musical model" (1983, 87) and Nadine Hubbs suggests the terms *climax form*, *narrative curve, strong form,* or even *Coke-bottle form* (1989, 15). She continues:

> the concept is quite familiar to us as Western musicians and listeners. It entails a linear, teleological aesthetic archetype imbedded in and propelling the classical formal designs... Experienced listeners internalize a syntax of structure and pattern (in both tonal and twelve-tone idioms) through which they perceive *direction* and *goals*—that is, teleology—in this music. (Hubbs 1989, 15-16)

During the 18th century, this type of form solidified into sonata form, which followed a specific, refined set of criteria that included two specifically defined themes in the exposition, a development primarily in the dominant key (for works in a major key) and a recapitulation, where the initial themes were reiterated and made final with (generally) a series of perfect cadences. Sonata form, or its ternary predecessors, are embedded within a majority of popular and classical music. Other cultural disciplines do nothing to dispel this convention: narrative literature and Hollywood movies use a similar arrangement of material.

Musicologist, Charles Rosen, places great emphasis on the development of the sonata. According to him prior to the "middle of the eighteenth century, public music

was, with few exceptions, vocal music tied to the expression of words… both religious and operatic" (1988, 8). He continues that from this time:

> pure instrumental music alone could be the principal attraction without the seductions of spectacle, the sentiments of poetry, and the emotions of drama, or even the dazzling technical virtuosity of singer and performer… the sonata was new, above all, in its conception of a musical work as an independent musical object. (1988, 9-10)

In other words, for the first time (with a few exceptions that Rosen sees as being insignificant enough not to spell out) the untranslatable message of the music alone takes precedence over a linguistic one – a message comprised of words with a sentimental accompaniment. The sonata was also formed around an emerging trait – that of an object of capital. Sonata's were a neat closed-form that contained everything that you might want out of piece of art; variety with repetition, with drama but also resolution. According to Rosen, sonata form offered to composers a "chance of selling, not a performance or a copy, but the work of pure music itself directly to the public" (1988, 10). This liberation of music from the binds of literal dramatic action was also seen as an opportunity for the liberation of the composer from the tyranny of servitude. They no longer had to be tied to the courts of Europe as the sonata was an independent musical object – the composer, liberated labour.

As radical as the sonata was, its success as an instrumental form is nevertheless cautiously tied to its linage and our deeply embedded notions of 'proper' musical structure. As mentioned, sonata form is (generally – but not always – considered) a type of extended ternary form. In a rather conservative, textbook (and somewhat

gushing) account of the sonata, W.H. Hadow cites ternary form as the "most complete and logical type of structure which music can employ. It answers exactly to our artistic sense of contrast, it is almost infinite in variety and flexibility, and it is capable, of a very high degree of continuous and progressive development" (1900, 13). According to Arnold Schoenberg, "an overwhelming proportion of musical form is structurally composed of three parts. The third part is sometimes a true repetition (recapitulation) of the first, but oftener it is a more or less modified repetition. The second part is organised as a contrast" (1988, 199).

It is here that we can begin to turn these definitions on their heads. All sonata form music is also ternary form music (if we accept that in just about all cases sonata form implies a three, not two part arrangement as it is sometimes argued), but not all ternary form music can be said to be sonata form music, or can it? The textbook definition of 'sonata' was derived from observational generalisations, principally by Antonin Reicha in 1826, Adolph Bernhard Marx in 1845 and Carl Czerny in 1848 (with the term *sonata form* itself an invention of Marx) (Rosen 1988, 3). All three of them based their theorisations of the sonata principally around Beethoven's use of it. The definition that we glean from their writings (that today survives as *the* definition of sonata form) is a distillation of its wide and varied practical use. Certain observations, solidified into rules, are clearly expendable. The use of two themes (there are monothematic sonatas – a number of Haydn's String Quartet movements, for instance [see Hurwitz 2005]) and textbook harmonic progressions (indeed even the use of harmony itself – Nicholas Slonimsky even showed that the pitchless Ionisation by

Varese was in sonata form [Slonimsky 1967]) are two of them. If we are willing to not ask anything of harmony or not insist on contrasting themes (and the like) then what are we left with? What does a prescriptive sonata look like?

In most cases, like Schoenberg's and Hadow's account of ternary form. They both seem to fulfil the two conditions that I would deem necessary, the first being: sonatas have three parts. The first part is a revelation of compositional material for the first time (I think words such as cautious, measured, solemn, conserved may often go well with this material). The second marks a region of play, where the composer can show off (this can also be seen as a section evolving from performance. The orchestra cannot tightly improvise, as a single performer might have once done, but the composer can – on paper). The third section is to remind the audience where we've been to recapitulate but also to drive the work home . The second condition for a sonata is drive – a sense that the sonata is heading somewhere and does not exist until it is over. This may not seem so startling now that we have the luxury to replay works as many times as we like, but consider the eighteenth and nineteenth centuries, where the end of a performance meant – for most – the termination of the work itself. To find fulfilment, for the work to actually be a work, demanded the ultimate sacrifice – the end of the sound itself. Social musicologist, Susan McClary agrees, injecting a sociological and feminist perspective:

> In sonata, the principal key/theme clearly occupies the narrative position of masculine protagonist; and while the less dynamic second key/theme is *necessary* to the sonata or tonal plot (without this foil or obstacle, there is no story), it serves the narrative function

> of the feminine Other. Moreover, satisfactory resolution—the ending always generically guaranteed in advance by tonality and sonata procedure. (2007, 15)

Given these two conditions, it is possible to see the sonata, not as a specific form belonging to specific eighteenth and nineteenth century maestros, but a general form comprised of two components, an ABA structure and *drive*.

Listening to my work, *Question/Answer…Interruption*, it is easy to get swept up in the texturality of the work and not initially be aware if its form, its structure. In a work of this length, it is easy to get the impression that it, being improvised by four groups of performers who have never played together before who are using visuals as scores along with live interaction, does not adhere to a preexisting, let alone classical, form. So the first surprise upon opening the digital file of this work into a computer is that it is in three distinct sections. The work can be analysed as follows:

After a very quiet and atmospheric introduction there is a passage comprised of low level static – soft, but clearly articulated pointalistic sounds are heard over a bed of even lower level noise. Directly following that, we hear the introduction of pitch, delayed and reverberating, but still intentionally soft, as if a lid is being kept on the performance. The pitches are jazz-derived and hint at seventies-eighties film music. These two passages could be considered the 'themes' of the work – Theme 1 and Theme 2.

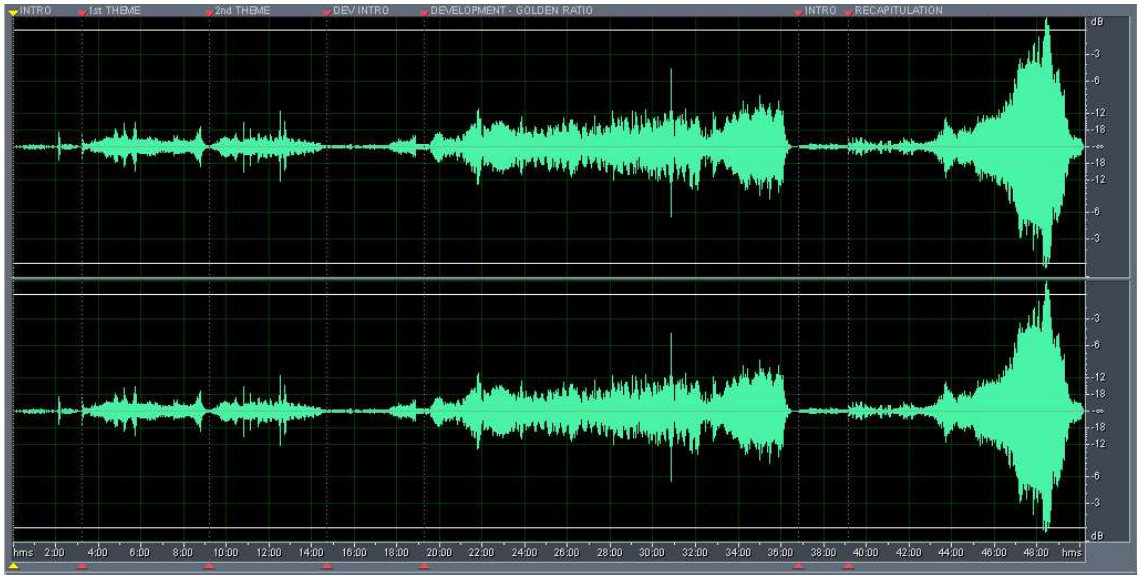


Illustration 3: Sonata form breakdown of 'Question/Answer...Interruption' (2008)

Following immediately is a 5 minute section of sound nearing silence (gaining some volume near the end). This is the delineator between the first and second section – it is the coda for the first and the introduction for the second – a bridge section. The next section takes some of the material from the first two themes and plays with it and adds to it. This section is longer (17 and a half mins) more interactive, playful and louder as a rule. Where the first was solemn and indicative of performers working out how to interact with one another, the second is more confident and at times even cheeky (some of the new material added is in the form of speech which humanises the experience). Following this is another protracted near-silence (which goes for 2 and a half mins – again either a coda for the last section or introduction for the next). The last section includes an extensive return to much of the material visited in the first section (especially the pitched material in the second theme). The

difference, however, is amplification and intensity. Towards the end this section builds into a blistering climax and then fades out in under 2 mins.

The form of this 50 minute work bares a startling resemblance to sonata form. This form was comprised of an exposition where 2 themes were revealed for the first time, a development, where both themes were developed harmonically, rhythmically and texturally, and a recapitulation where the themes return in a similar but more final version (usually driven home using harmony and dynamics). If you remove the necessity for certain harmonic progressions throughout, then *Question/Answer...Interruption* would have to been seen as being in a relatively strict Sonata form. Theme 1 and Theme 2 comprise the Exposition, the middle section is a Development, and the last section sees the reintroduction of original material and an indisputable climax.

The other feature of works in Sonata form (as well as many other works from the last 500 years) is temporal hierarchy, where not all parts of a work are equal despite the form of a work looking symmetrical on paper (Exposition – Development – Recapitulation, for instance). There is a 'rush' in most western music (a phenomenon that became exaggerated in the 19 century) that emphasises the final moments of a work over the rest of it. The entire piece is always building and brooding towards the final cadence – the climax. Paradoxically, there is no satisfaction in the moment – the piece is only fulfilling after its final cadence has concluded.

Question/Answer…Interruption is so hierarchical in its dynamic, textural and temporal range that the listening experience will be greatly diminished unless your

environment is quiet enough, and you listening gear is sufficiently dynamic, to pick up its very subtle beginning. The first section is very quiet averaging around -24 decibels, never going above -10. The middle section averages around -15 decibels, never exceeding -8 (except for one brief moment lasting less than a second). The final part of the last section races to zero decibels before fading off. In other words, this improvised 21st century, post-digital work contains just as much teleological angst as anything that Wagner or Mahler ever wrote.

There is another way that that this work harps back, not just to the 18th century, but to classical Greek mathematics. The Golden Ratio (approx 1.61) became a staple concept in post-medieval Europe. It dictated canvas sizes and defined horizons in art. It also fascinated musicians, such as Bach and Mozart, who may have used it as a compositional tool. Most works that Mozart wrote in Sonata form can be analysed precisely in these terms, with the exposition comprising the smaller part of the ratio and the development and recapitulation comprising the rest (although it is generally thought that this was an aesthetic aberration or approximation rather than any predetermined division) (see May 1996 and Putz 1995).

Surprisingly, this same division using the Golden Ratio is evident in *Question/Answer…Interruption* (the ratio break happening within the silence between the first and second sections). The chances of this occurring within a long, improvised work by accident must be minuscule. The conclusion to be reached from this exercise is that either, the Golden Ratio is an innate natural phenomenon that is built into the human psyche (i.e., that it is part of 'nature'), or that the Golden Ratio is so entrenched

in our culture that we subconsciously use it even when attempting to fight tradition (i.e., it is due to 'nurture').

In a subconscious return (and blind acceptance of) ternary or sonata forms, post-digital composers implicitly come down on the side of nature (Why should we question, critique, deconstruct, even notice something that's inbuilt, natural and against nature to fight? ... they might ask). To take this approach, to not problematise that which is apparently natural ignores much research and writing done in the field of social musicology in the late twentieth century. As Susan McClary sweepingly put it:

> …I have always maintained in my work that music is a socially organized enterprise [and is] "condemned to meaning" [quoting and disputing Roland Barthes' claim that music is not]. Its structures, narratives, semiotic codes, and so on are developed, negotiated, resisted, transmitted, or transformed within a completely social arena. There are social structures at any given moment that attempt to impose propriety over this scary stuff, whether through Renaissance rules of voice-leading, Rameau's codification of diatonic tonality, or narrative principles of sonata procedure. Yet ever since Glarean praised Josquin for disregarding the rules, artists have been socially encouraged to violate the regulations that would reduce music to mere words and dead forms. This vital dialectic between what Jacques Attali calls order and noise has given rise to all of the music we care about, and it always socially grounded. (2007, 34)

If we take at face value that all music is socially organised, then there is nothing natural about sonata form. McClary sums up this compositional tendency (demonstrating that its concerns and ramifications are age-old) with the following:

> These [tonality and sonata form] are features of composition and reception that are taken for granted as aspects of autonomous musical practice, as simply 'the way music goes.' They are usually not considered actively by composers, are not 'intended.' They simply are the elements that structure his or her musical (and social) world. Yet they are perhaps the most powerful aspects of musical discourses, for they operate below the level of deliberate signification and are thus usually reproduced and transmitted without conscious intervention. They are the habits of cultural thought that guarantee the effectiveness of the music—that allow it to 'make sense'—while they remain largely invisible and apparently immutable. (2007, 16)

And this is a problem that goes way beyond a single performance gone wrong. This post-digital amnesia (that excludes ideas raised and debated and indeed applied prior to the 1990s) has led to a type of sound organisation that has the most radical of possibilities, having the most conservative (not to mention uncritically ignored) of forms.

I still have to ask the question though, in spite of the strong pull of the past, how is it that an experimental art movement can ignore such strong recent criticism of its form of choice?

One answer could lie in the perception of the post-digital as being post-musical. While the terms and concepts of *sound* and *noise* are an easy fit, *music* is considered an antiquated term applied to the digital and pre-digital and the overt and artificial organisation of sound. Thus, if you are not making *music* it is surely not conceivably possible to apply a traditional musical form, or to heed criticism of it. Whereas timbre,

texture etc. are carefully created to be unmusical, form becomes a blind spot, traditional structure supposedly an impossibility if everything else is done correctly.

Another reason could be that if, on one hand you are going to radically abandon traditional elements (such as pitch), that other elements (such as form) have to be held onto for dear life so that cohesion is maintained for both performers and audience (There is historical precedence for this. According to Hubbs, even Schoenberg, having "consciously forsaken the relatively microcosmic teleology of functional harmonic formulae at levels from surface to background ... retained, probably less consciously, prebackground teleology in ... compositional macroforms" [1989]). Either way, McClary seems right when she says that they "they remain largely invisible and apparently immutable" (2007, 16).

Lastly (and importantly, given its current prominence), the Schillinger system of composition has been touted by Kim Cascone and others as an antidote to the "prefabricated aesthetic solutions" and the "cookie-cutter approach to music creation" as recently as December 2011 in a special Schillinger edition of the Contemporary Music Review (Cascone 2011, 143). According to Philip DiTullio a simple explanation of the system would be: "a collection of mathematical techniques that can be applied to any artform to compose rhythmic structures and content that impart a sense of movement and narrative" (2011, 188). To Jeremy Arden it is "advantageous because the techniques offered in his system are based on natural patterns such as crystal structures, symmetry and forms of growth—in other words, they are based on the everyday material world" (2011, 127). Cascone adds that it is a "compositional tool

that enables a composer to generate new and unusual structures derived from mathematical relationships such as the Fibonacci series, the Golden Ratio or other mathematical patterns found in nature" (2011, 143).

Joseph Schillinger was a once-prominent composer and music educator who lived in New York City throughout the 1930s and early 40s. He devised a system of composition that was supposedly non-genre specific that became popular amongst such (jazz-oriented) composers such as George Gershwin, Benny Goodman, Glenn Miller, Tommy Dorsey and Carmine Coppola (DiTullio 2011, 187-88). Gaining popularity in the 40s, the system had fallen out of favour by the late 50s due to its complexity and a backlash against scientific and constructivist approaches to art (DiTullio 2011, 189-90).

Cascone has adopted (and triumphed) this system as a way of reigning in what might be seen as his youthful ways; of creating greater sophistication and a sense of planning in his compositions. In an abstract for a conference in 2010, Cascone spoke of the post-digital elephant in the room:

> Most electronic music today makes use of structures borrowed from either pop music or a simple tension-climax-release; narrative using sound files in an improvisational manner.
>
> This approach tends to generate content with an unsophisticated sense of musical motion and development. And much like a cook working without a recipe, improvising with her ingredients and spices, sometimes the meal is good but all too often it is inedible.

(Cascone 2010)

Cascone saw the Schillinger system as offering the discipline needed to create perceivable 'edible' structures with which to fill his post-digital material. His realisation, being that the interest, idiosyncrasy and complexity of this material rarely translates to an interesting, idiosyncratic or complex presentation of the material is on the mark, and his frustration understandable, but does the Schillinger system of composition really solve the problem or just mask it (or worse, systematise and institutionalise it)?

The beauty about post-digital processes is that they create sublime, uncanny raw material. By this I mean that they turn the known (possibly the mundane and everyday) into sounds and structures that are strange, but not necessarily alien to us. Like uncovering Egyptian hieroglyphics for the first time, we are confronted with undoubtedly new material, but it is arranged in such a way that we do not turn off; we are intrigued and drawn in.

An initial glance at the Schillinger system is not promising. Philip Di-Tullio's summary stating that this system imparts "a sense of movement and narrative" (2011, 188), is reminiscent, not of an experimental, outward looking methodology that would do the ethos of post-digital processes justice, but of one that harps back to the basis of an instrumental form discussed previously – sonata form (itself an attempt to add sophistication and drive to binary/ternary forms). Despite its claim to be non-genre specific, and Cascone's enthusiasm concerning its plasticity, Schillinger's system is undeniably didactic and prescriptive.

Of the authors who have contributed to Cascone's special addition of the Contemporary Music Review, it is perhaps Jeremy Arden who does so most enthusiastically. His appeal to biology and information theory as justification for the revival of Shillinger's ideas warrants mention here. Most authors in this journal edition mention 'nature' as an influence on Schillinger, but Arden takes the idea of what is *natural* (and indeed *normal*) further, claiming that "processes of the Schillinger system tend to remain within the boundaries set by the listener's normal cognitive capacity [meaning] the whole process of listening to and understanding music" He concludes that:

> Drawing on information theory, which deals mathematically with the communication of information, it can be inferred that if music exceeds the listener's cognitive threshold, then there can be no experience based on an assessment of probability; this may explain the very limited popularity of certain styles. (2011, 128)

This is a point that he drives home to the extent that his article become repetitive:

> If musical experience provokes rapid cascades of hypothesis and expectation, based on the probabilities associated with style, then it follows that music, which challenges all the norms of the cultural mainstream, risks excluding potential listeners. This is not just a question of waiting for an audience to learn the features of a new style... (2011, 129)

And again (this time raising the possibility of music that may be accessible, but also lacks interest):

> The consequences for music [of increasing atomisation] have, in general, been growing complexity or, by contrast, its sharply drawn antithesis; a simplifying aesthetic...it is

> worth considering whether some developments in music go beyond the normal pushing of cultural assumptions to a point that in fact overwhelms the cognitive capacity of the listener...Music that aims at sparseness, on the other hand, may avoid information overload, but, by contrast, fail to provide enough stylistic depth and variation to prevent the listener from feeling underwhelmed. (2011, 129-30)

Arden triumphs the Schillinger system for its ability to exclude that which may be too complex to perceive (as dubiously justified by an overarching concept of *cognitive capacity* – his failure to recognise that what may appear beyond the "listener's cognitive threshold" on one listening, may be perceived on subsequent listens is one such obvious flaw. There is also the very real possibility that Arden is being disingenuous, that his pseudo-scientific concept is a stand in for 'taste'), as well as that which may bore (less time is spent on this as there really is no supposed biological marker to cross indicative of boredom).

If Arden's portrayal of what the Schillinger system offers is correct then future music has much to fear from it. He is asking for nothing short of the obliteration of experimentation in music, of an occupancy of the safe middle ground, the mainstream. In his own words: "for the composer, observing the analogies between music, probability and information may avoid the danger of oppressing the listener with music of low redundancy [too much information with little repetition] or boring them with its opposite" (2011, 140). With one fell swoop everyone from Webern to Boulez, and Cage to Eno is dispensed with because they have little chance in his popularity

contest. What Arden is really calling for is a tailoring of music to taste. Surveying acceptability, and appeasing it.

If neither Schillinger, nor sonata provides much interest for the restless post-digital composer, then how do we move on? If Cascone is right when he calls most post-digital compositions 'inedible', then how do we appease our upset stomachs? In the next chapter I look at some tasty solutions that treat form, not as a pre-defined vessel to fill with the creative stuff, but as something that is an inseparable part of that creation. In the final chapter, I show I how my work has tried to be guided by process instead of output – sometimes even successfully.

Minimalism, indeterminacy and post-digital composition

Minimalism

When I began creating music in mid-1980s, computers for most composers were at the periphery of most compositional processes. I, like many of my contemporaries, spent most of my time trying to write unconventional music, using conventional means. Computers were great toys. I remember playing with crude scoring and playback systems, equally crude samplers/sequencers (all-in-one machines such as the Fairlight CMI Mark I) and inflexible FM MIDI synthesisers (such as the then ubiquitous Yamaha DX-7). We had an inkling that they were the way of the future, but 'serious' composition required instruments of the past. (In 1984 I unwittingly experimented with sounds and methodologies of the/my future – the post-digital embedded within the digital, but more on this in the next chapter).

My genre of choice was the minimalism of Steve Reich (and eventually La Monte Young and the early works of Phillip Glass), but I was also increasingly frustrated by the divide between minimalism and the complexism that had pervaded academia for some decades (and certainly dissuaded from minimalism by most of my academic masters). It did occur to me that this divide was artificial and did not recognise the complexity already within minimalism, nor did it understand the benefit of ignoring new minimalist conventions and letting in a little more complexism (as well as randomness).

In short, I had a hunch that the radical musical movements of the twentieth century had more commonalities than divisions and that these similarities are centred on

'process' (and when process is not at the centre of these practices the radicalism turns quickly to convention). From time-to-time I tried to demonstrate this in my own practice, but reliance on performers and established forums limited possibilities. This was until digital and then post-digital practices offered new ways of doing things.

This chapter is about going back over some of the history and locating points at which innovation and experimentation was halted by convention (whether old or new). I consider my post-digital practice to be minimalist in nature and thus see music of the last half a century through this lens. I will talk a lot about the compatibility of other art movements, but it will be while standing under a minimalist umbrella. Minimalism had an attraction that most other types of twentieth century composition were missing, for it,

> proposes form-building principles that diverge in unique ways from those of linear teleology. That is, minimalist formal structures beget and are begotten of an alternative aesthetics, arguably one of the few viable alternatives proposed against the dominant aesthetics of teleological organicism in music. The minimalist aesthetics often is characterized, in broad terms, as an aesthetics of process rather than product, economy over expansiveness, and fluctuating stasis versus metamorphic growth. (Hubbs 1989, 16).

It may be possible to view this in other ways, to place other methodologies and philosophies at the centre, but for me (and current post-digital practice, I think), this way works best.

But first to minimalism as arguably first mentioned by Michael Nyman in 1968 (and discussed at length in Nyman 1974), and practised (more or less) by La Monte Young, Terry Riley, Steve Reich and Phillip Glass (the *big four* - all Americans) amongst others from the late 50s and 60s (but, for reasons that will be explained, excluding many works composed by these composers beyond the sixties). In truth, it is difficult to satisfactorily name common constituent elements of all minimalsim (and harder to offer definitions based on these elements), although many have tried.

I should point out at this stage that I intend to take a rather generalist approach to my influences, painting in broad brush strokes so as to make some substantial points about connections between movements as they relate to my practice, rather than trying to nit pick. To this end, in this chapter, when speaking of minimalism, I have decided to concentrate primarily on the *big four* (actually three of them – Riley interests me less than Reich, Glass and Young). I have excluded 'smaller' American minimalists, including Pauline Oliveros, Tom Johnson, Charlemagne Palestine, Phil Niblock and Europeans including Michael Nyman, Henryk Górecki, Arvo Pärt and Louis Andriessen on the grounds that they are non-representative, have post-minimalist tendencies (without ever really having been minimalsits), are primarily of another movement or genre, or can only problematically be considered minimalists. On these same grounds I am excluding the latter (generally post-sixties) works of Reich and Glass.

Some reasons for excluding composers from my framework include:

- Phill Niblock's work that, although resembling Young's drones, is different because: 'Niblock's approach has little to do with theory; it's completely intuitive: "I completely don't use any sort of tuning system. So whatever tuning system there is, is just made up"' (Quoting Niblock, Oteri 2010). Intuitive works cannot by definition include unhindered processes, and further, because the composer can't and doesn't articulate his methodology, whatever loose processes that might exist are obscured;
- Charlemagne Palestine who creates works that, although drone based, are created almost solely through improvisation – again employing intuition (Strickland 1991, 198);
- Pauline Oliveros, inventor of 'deep listening' likewise has always composed intuitively through improvisation, employing meditative techniques in performance: "She sang and played on her accordion long tones and kept them sounding until they changed her perception, and she translated the breath rhythms and slow natural motions of Tai Chi into her solo improvisations" (Feisst 2002), and;
- Tom Johnson who uses (increasingly) complex mathematical permutations to compose his music. While using permutations doesn't automatically rule him out as a minimalist (this is, after all, how Glass began), complexity (to the extent that hearing processes become near impossible), might (McAlpine). Admittedly, in the end, Glass just got there first and is better known. I will not be using examples from Johnson in this chapter for the main reason that (for my purposes) Glass renders him redundant.

Why I don't use European minimalists in my examples is best summed up by the practice and writing of Micheal Nyman who is unashamedly representational and post-modern and has, "consistently and explicitly based his works on pre-existing materials" (Cenciarelli 2006, 2). For instance, "Mozart's presence, even just on the basis of statistical considerations, had a prominent position, rising well above a case of occasional reference or circumstantial convenience' in Nyman's compositions" (Cenciarelli 2006, 2).

Nyman outlines why, as a rule, European minimalism is very different from American minimalism:

> One of the major differences I've always drawn as a critic and as a composer between the European minimalists and the American [is that] our tradition is European, and I get all my musical kicks and ideas from the European symphonic tradition… my clothes are Mozart. (Nyman, quoted in Schwarz 1996, 197 [as requoted in Cenciarelli 2006, 2])

I could also quote Robert Fink (as to why he focussed on three of the big four minimalists – admittedly excluding Young) in *Repeating Ourselves*: "If we are interested in minimalism as a cultural practice, we will be drawn not to its purest, most uncompromising instances, but precisely to where minimalism is most 'famous,' where the cultural practice is widest and most significant" (2005, 20). The widest and most significant cultural practice for me exists in process music that has adopted minimalist aesthetics; early works that have left their mark in history.

Three of the 'big four' minimalists have traits in their earlier works that I'm interested in. At this stage they were all interested in perceivable processes; Reich in

‘sounding’ ones – primarily phasing, Glass in permutations of material, and Young in spatial and temporal process manipulation. Early on, they all had a belief in experimentation, constructing a situation (perhaps subjectively and intuitively) and then allowing it to run its course without interference, without the possibility of a *known* sound imposed (beyond that implied by the subjective choice of the initial material).

Reich's sounding processes

Steve Reich was one of the first to articulate *rules* for his version of minimalism (a term that was never used by Reich or any of the big four, and one that is considered something of an irritant by most “minimalists”). Reich famously wrote in his essay 'Music as a gradual process' in 1968 that

> The distinctive thing about musical processes is that they determine all the note-to-note (sound-to-sound) details and the over all form simultaneously. (Think of a round or infinite canon)... I am interested in perceptible processes. I want to be able to hear the process happening throughout the sounding music... (Reich 1974, 9)

Further, “Though I may have the pleasure of discovering musical processes and composing the musical material to run through them, once the process is set up and loaded it runs by itself...” (Reich 1974, 9).

I am going to spend some time picking over Reich's seminal text 'Music as a Gradual Process' (1974) (and other writings), not because it applied to all of the minimalists, but because it became something of a manifesto, a manual of mantras for the movement that dared not speak its own name. The simple, initial premise, that

music that unfolds over time, teasing out a process (or processes) as it meanders, has a lot to offer (it is this that I bring to my own practice, and advocate for in my vision of the post-digital), but other, somewhat reactionary, elements have muddied the waters, dooming minimalism as it was understood in the 60s before it even really got going.

Sounding process versus hidden and delayed processes

In this text, Reich differentiates his works from his contemporaries: “John Cage has used processes and has certainly accepted their results, but the processes he used were compositional ones that could not be heard when the piece was performed... The compositional processes and the sounding music have no audible connection. Similarly in serial music, the series itself is seldom audible” (Reich 1974, 10).

Reich places a lot of emphasis on *sounding processes*, but what does this really mean? How do these differ from other processes and why does it matter? A sounding process, as Reich saw it, was music that instantly (or over a not too prolonged period of time), gave you insight into its construction – it was (for all intents and purposes), viewed as unmediated. A hidden or delayed process did not: it occurred away from creation of the sound itself (whether due to an algorithm, throwing of a dice or some other generative process) – it was mediated. This division, as claimed, had two consequences. The first was that it established a break with the immediate past (at least in *serious* music). Serialism and chance music (which had dominated the academic discourse) were cast as yesterday's news by Reich. The second was that it

laid ground rules for future minimalist composers, who should not introduce processes that were in any way convoluted.

In drawing a line in the sand at sounding processes, Reich makes some pretty big assumptions. The first is that there is such a thing as a sounding process that is universal (surely we hear on varying levels: what one person picks up, another will miss). The second is what he assumes to be in this category. This list would include a natural understanding of:

- modal/tonal scales
- harmonic progression (used increasingly as minimalists moved from modality to tonality)
- temperament (generally equal)
- English in some works (*Come Out*, *It's Gunna Rain*)
- repetition
- elongated temporalality (the unfolding of a musical process over a prolonged period of time)
- the (so-called) Eastern approach to musical form (induction of *stasis* as opposed to the driven ABA structure of much Western music)
- rhythmic development (phasing for instance)

Analysing these features, geographically and historically, it is highly questionable as to whether everyone has access to knowledge to decode Reich's music. All music is highly

mediated by definition (through its writing, realisation, performance, recording, listening and interpretation): the music of Reich is no different.

Today, this is probably more obvious than in the pre-digital era. Computers have reduced (or even annihilated) the difference between revealed and hidden processes as every process is highly mediated, and thus concealed from view. This, in a way, allows us to reassess history and conclude, perhaps, that it has always been this way. Technology (whether computer, tape or score and instrument), along with compositional devices such as scales and intonation, has always intervened making an unmediated (or direct) experience, unadulterated by cultural artefacts and understanding, impossible.

Kyle Gann wrote that “minimalism and serialism are but opposite sides of the same coin, as notable for their similarities as for their differences. One can imagine some 22nd-century musicologist lumping them together as part of the same phenomenon...” (2006, 147); a radical statement to make in 1987, but one that is beginning to ring true. Wim Mertens binds *sounding* and *hidden* process music even more tightly: “repetitive music [or minimalism] can be seen as the final stage of an anti-dialectic movement that has shaped Eurpoean avant-garde music since Schoenberg, a movement that reached its culmination with John Cage” (1983, 87) (although I will later take issue with Mertens obsession with areferentiality) and “no matter how consistently composers of repetitive music have spoken out against the intellectualism of the avant-garde … they cannot escape its influence” (1983, 87).

Compositional processes can only be heard in Reich's music by those who are trained to hear them, just like any other sort of music. Inversely, those who are aware of serial techniques, or indeterminate methods may be able to hear these compositional devices in these types of music. Finally, the idea of using compositional processes (whether immediate, as minimalism claims to, or staggered, as serialism and chance do) is to make sense out of the disorder of infinite audio possibilities. All three of these options (at least in minimalism's original incarnation), have attempted to do this in such as a way as to transpose ideas that are not preconceived musical cliches onto, or into, music creating new ways of listening.

Tonality

One of the features implicit in Reich's sounding process is tonality (or modality, or *pseudo-tonality*). According to Edward Strickland, it was Terry Riley who introduced tonality (or the tonal centre at least) into early minimalism (Strickland 1993,133), which was followed by Reich, who predicted that the “concept of clear tonal center will re-emerge as [a] basic [source] of new music” (Reich 1974, 28). Tonality is one of those elements that crept up on minimalsim. Initially composers were indifferent to it, attempting to avoid both the sentimentalist gushing of the neo-romantics and the elite mathematical atonality of the serialists (as well as Cagean notions) which were seen to be too far removed from the actual process of listening and musical comprehension. Bernard, in an article entitled 'Minimalism, postminimalism and the resurgence of tonality' ponders at length the path to fully-fledged tonality:

> Why tonality?... What *is* worth remarking upon is that most of the composers [both minimalist and postminimalist] have become... tonal composers... Was this inevitable? At first glance, one might think not—surely minimalism's highly original aspects could have evolved in other ways—and yet, perhaps it was the radical *simplicity* of the original minimalist vision, coupled with the inability of American compositional practice to throw off the institutional influence of tonality, that determined minimlism's ultimate path... This resulted in a gravitation to consonant harmonies... which in turn may have suggested a more definite harmonic basis for structure. (Bernard 2003, 130-1)

Forgoing many, many other possibilities for the arrangement of pitched material (including polytonality, free chomaticism, *exotic* and non-Western scales such as the *wholetone*, *pentatonic* and *octatonic* scales, mathematical permutation of compositional material, including serialism, and perhaps unthought of ways of pitch arrangement), dogmatic insistence on the simplicity of modality, then tonality (and then something even less spectacular and attractive that has been referred to by Bernard as “simplistic pseudo-tonality” [2003, 131]), minimalists composed themselves into a corner. From the early seventies, to the present, this has been the legacy of minimalism; neo-tonal music based around a handful of repetitive motifs per composition.

Pulse

Another fundamental of Reich's was a constant rhythm, or pulse. As Bernard points out

> pulse, despite its prominence, was never an absolute *requirement* of minimalism; it has never featured much at all in La Monte Young's work, and other composers who have worked from time to time in a minimalist vein, such as Alvin Lucier an Pauline Oliveros, have had little or no use for it". (Bernard 2003, 122)

But ideas of pulse are seductive and are best summed up by Kyle Gann's shared repulsion to the lack thereof: "What passes for rhythmic subtlety with Elliott Carter and his followers is a mishmash because their music never articulates the grid against which complexity can be perceived" (Gann 2006, 128).

Bernard traces the pulse in minimalism to Riley's *In C* as a necessity to "organize the ensemble's semi-improvised activity." He then notes that Reich's tape pieces effectively create their own pulse through phase-shifting (Bernard 2003, 122). Bernard also writes that in late minimalism/post-minimalism that the pulse

> became nothing more than a steady beat—the sort of thing one might find in, say, dance music... at this point that one can declare the special meaning of pulse for minimalism to have been effectively absorbed into the larger, developing neotonal practice of the late twentieth century". (Bernard 2003, 122)

Process, stasis, repetition and eternal art

The most representative minimalist works (such as *Music in Fifths,* by Glass, Reich's *Violin Phase*, or Young's *Dream House*) conceptually extend (or appear to extend) beyond their physical temporal borders in both directions, into the past and future. Defined by their processes, they can be rewound or unravelled indefinitely, for they are each a single phenomenon that only exists in time for our listening pleasure,

but out of time by their very definition. Unlike a sonata that is comprised of very definite parts (themes one and two, for instance), a minimalist work is always a 'whole', so that (like the rhizomatic mushroom or DNA) even a given part of it is representative of its entirety – it is demonstrative of the process that calls it into being (minimalist temporality and some of its problems and contradictions are discussed at length by Bernard 1993, 121-123) .

Roger Sutherland (in an article on Reich) identifies another feature of very early minimalism, being "repetitiveness or stasis. Their works contain little or no variation of pitch, tempo, dynamics or timbre. Certainly, their work exhibits virtually none of the characteristic concerns of traditional Western music, such as harmonic movement, key modulation or thematic development" (1992). Work defined by process does not progress in the same way as traditional Western music does. If we take minimalist works to be (theoretically) eternal, extending forever in both directions, then following a Western trajectory would be senseless. Instead, they rely on the induction of stasis, often through repetition. Bernard has referred to this stasis as the "eternal present" (Bernard 1993, 107). Mertens says of La Monte Young's work that he,

> has removed finality, the apocalypse, from his music, and what is left is mere duration and stasis, without beginning or end: eternal music. In fact, Young has said that his *Dream House* project is a permanent, continuous work that has no beginning and goes on indefinitely.
>
> The conventional idea of the musical work as a totality is no longer valid... (Mertens 1983, 89)

It is the necessary feature of stasis in minimalism that led Reich to write: “The distinctive thing about musical processes is that they determine all the note-to-note details and the over all form simultaneously. One can't improvise in a musical process – the concepts are mutually exclusive” (Reich 1974, 11). Improvisation as was practiced in the jazz and rock music of the sixties almost definitely implied harmonic direction. Even the most psychedelic tracks of this era (the instrumental solo in *Light my Fire* by the Doors comes to mind), although very similar to minimalism in use of repetitive bass lines, static modal harmonies and even small periods of phasing, were usually overlaid with an improvised melodic track that drove the song home, relegating all below it to accompaniment.

It is interesting to note that the post-minimalists did not have the same shyness when it came to melodic overlays. In a review of (post-minimalist) composer John Adams (and a not-so-veiled swipe at traditional minimalism), Kyle Gann wrote in 1987:

> The danger with minimalist textures (as the narrated parts of the new *Akhnaten* recording evince) is that they can sound like background to a melody that won't show up. Fine, says Adams. Put that pedestal in the pit where it belongs, bring the bust back onstage; the sung libretto will be the melody minimalism has been waiting for. Scales rise, the chorus starts singing, and before you can say “phase shifting,” what the '60s glorified as *process* is relegated to the more modest (and thoroughly defensible) role of *accompaniment*. Why hadn't anyone thought of it before? (2006, 219).

By relegating *process* to *accompaniment*, composers turn an underlying methodology (and perhaps even philosophy) into a stylistic element, a 'texture' as

Gann calls it. While some of Reich's other *rules* turned out to be red herrings, this one seems rather sensible in retrospect and gets to the very simple, but fundamental nature of minimalism.

Definitions of minimalism

I have written about how in, 'Music as a Gradual Process', Reich laid down concepts (tonal centre, audible processes, and pulse), along with other necessities for a new music (including that it should be influenced by ethnomusics and cannot contain any improvisation as rock/pop music might). While not being applicable to all styles that Nyman may have considered minimalist, they did serve as a strong template for the next generation of minimalists and post-minimlaists.

Johnathon Bernard has defined broader criteria for minimalism (as quoted by Strickland) that take into account the *pulseless* compositions of La Monte Young amongst others: "(1) the minimization of chance or accident; (2) an emphasis upon the *surface* of the work...; (3) a concentration upon the whole rather than the parts" (Strickland 1993, 122-23).

Bernard's definition is less gung ho and more scholarly than Reich's, but, at the same time it is careful not to challenge it while including a broad church of minimalists who may not necessarily rely on pulse. It does a good job, however, of implicitly excluding those are seen as outsiders. "Minimisation of chance or accident" excludes John Cage, Morton Feldman and popular music traditions. "An emphasis upon the *surface* of the work" leaves out Cage again, as well as all serialists (including Webern

who is been such an influence on certain minimalists that he is often included retrospectively into the broad church).

Surface must be seen as a loaded term – one that can be seen as a historical "rear-guard action against interpretive pollution" (as Fink puts it [2005, 16]) and as such a euphemism for a music that has a tonal centre, is tonal or is modal (as well as containing a sounding process), and in this regard has a flawed connotation. It is taken for granted that tonality (etc.) is 'natural' and requires no explanation – that it comprises *the surface*.

Merten dedicates several pages of his book *American Minimal Music* trying to convince us (and perhaps himself) of the areferential (or anti-dialectical) nature of minimalism; quoting Ernst Albrect Stiebler: "nothing is being expressed: it stands for only itself" (1983, 88) and: minimalism's "function is not to represent something outside itself but only to refer to its own creation" (1983, 89) and yet again: "The music exists for itself and has nothing to do with the listener" (1983, 90). We are, in a sense, being asked to suspend disbelief for the sake of ideological purity, neglecting the social and political construction of tonal and harmonic movement and form, intonation and general context of composition and performance that have been built up over centuries and are still present in minimalism (albeit, sometimes in a in fragmented form. See Susan McClary's points regarding tonality in my chapter on form). By normalising this dialectical content, a rich, multi-faceted and much-contested history has been flattened into the surface, into *that which is familiar*. Bernard is on safer ground with his last point. If there is one thing that unites all early minimalism

and excludes late- and post-minimalist works, it is the “a concentration upon the whole rather than the parts”. In my work this is one feature that I've tried to emulate and expand on.

Curiously, a public correspondence between two composers (on the Microsound list) reveals a different way of thinking about minimalism (one that could only be considered after the dust had settled between Cage and the minimalists). Ian Andrews identified three types of minimalism, as he saw them, to Julian Knowles (summarised by Knowles), being:

> 1) Self reflexive minimalism - process, systems, externalisation of structure
>
> 2) Boundary minimalism - tones, silence
>
> 3) Aesthetic minimalism - the 'look and feel' of minimalism, a more peripheral engagement with the ideas (Knowles 2004)

Knowles replied, more-or-less agreeing with Andrews' first category (and presumably the third), but splitting 'boundary' minimalsim into two (more traditional) categories:

> 2) minimalst in form/texture and content (stasis, minimal change, simplicity in content) - 'Perceptual musics' or music which invokes 'active listening' - music where the listener needs to change their perception of the sound or relationship to it in order to elicit a sense of change. Music which interacts with acoustic spaces could also sit in this area... Tones and drones here.
>
> 3) minimalist in sound content (minimal dynamic, quiet music. silence, emptiness, approaching no content) - 'Threshold musics.' Cage's silent works etc... (in effect your category 2). (Knowles 2004)

I find this interesting, because the debate has shifted from whether Cage (and others such as Morton Feldman) can be considered a minimalist to what kind of minimalist is Cage? In Andrews' case, Cage and La Monte Young are one type of minimalist (boundary) and Reich and Riley, another (self-reflexive). (This is in contrast to historical divisions; Reich, Riley, Glass and Young in one corner, and Cage in the other).

One last thing about Andrews' and Knowles' categories; boundary minimalism is defined at length by Andrews' who says it:

> ...seeks to map the limits of music by asking the question: 'how much content can be removed from a the work before the work ceases to be a piece of music?'... Boundary minimalism by definition, should always be short lived. Once it has established its limits it really has nowhere else to go. Its continuation along a linear trajectory veers toward essentialism. It attempts to occupy a position which is both at the extremities and at the origin. I find this type of essentialism - of 'pure art' - which finds its voice in the writings of Greenberg, Fried, et al. - extremely problematic. (Andrews' 2004)

This definition relates to a misconception, that all *tones, drones and silent* music is about getting close to, or pushing perceptual boundaries, instead of about process. I have talked about this misconception in my chapter on noise. Like the phase works of Reich, or the pieces involving permutation by Glass, works by La Monte Young and Cage can be seen as the exploration of process, thus lifting this essentialist, modernist cloud that often enshrouds these works. I have argued previously that Cage was (by the time he wrote *4'33"*) interested in the exploration of silence (which is, as

both a concept and a physical phenomenon, anything but silent) and not getting as close as possible to actual silence (which, by now, simply did not exist for Cage. How is it conceptually possible to get close to something that isn't there?).

Boundary minimalism as Andrews describes it may explain, however, why a lot of post-digital works that are of a minimalist nature, fall flat. In effect (melding boundary and aesthetic minimalism together), aiming for sounds that near boundaries is an attempt at nothing more than a consistent aesthetic (loud, soft, noisy, silent, shocking) – like a child engaged in prolonged screaming these are attention-getting moments stretched to an eternity; acts of bravado and ego, but ultimately sound and fury signifying nothing.

I will talk about Andrew's last category, aesthetic minimimalism, later, with regards to the post-digital.

Indeterminacy, Cage and Feldman

Another influence on my work is John Cage and his specific ideas of chance developed in the 1950s and 60s, and announced in his Darmstadt lecture, 'Composition as Process' (reprinted in his book, 'Silence' [1973]).

There are many who look back at Cage and minimalism and (in hindsight) see little difference between them. As previously mentioned, Ian Andrews has placed much of Cage's work around silence within his category of *boundary* minimalism (that also includes La Monte Young [Andrews 2004]). Julian Knowles groups him in a separate minimalist category ("minimalist in sound content" [Knowles 2004]). Those practising minimalism, however, saw cage as belonging to a more *objectivist mindset*

that abstracted music too much from its sounding processes. Among their differences (and these are primarily articulated by Reich, but also by Riley, Glass and others), the creation of the music did not directly resemble its sound, there was no tonal centre (which made it difficult to comprehend) and there was no pulse. (For his part, Cage "was disturbed by the idea of literal repetition" [Gann 2006, 131]. Gann interestingly adds, however, that "He responded to minimalism by writing one of the minimalist masterpieces, *Hymnkus"*). Another composer who worked not dissimilarly was Morton Feldman. Edward Strickland has written about what differentiates Feldman from the minimalists, essentially *variety*:

> Since his death Feldman has frequently been referred to as a Minimalist. There is some justification for so classifying him in the very restrained dynamics and the spare texture of much of his work.
>
> ...Despite its innovative character... [his work] derives from the Cageian aesthetic
>
> ...what most distinguishes Feldman's work from Minimalism is its greater eventfulness and unpredictability in its acceptance of constant but irregular harmonic and dynamic change within a given composition. What is minimal in Minimalism is not merely the number of notes but their relationship, which is normally static harmonically and regularized durationally...The embrace of the evanescent in Cage and his followers is alien to the more strictly rejective and rigorously controlled structures of Minimal music. (Strickland 1993, 122-23)

While not untrue (there are certainly differences between the works of Feldman and Cage, and the minimalists), there is a conceptual similarity between minimalism and indeterminacy that is often overlooked. In his Darmstardt lecture,

Cage referred to his earlier works as having “beginnings, middles, and endings. The later [indeterminate] ones do not. They begin anywhere, last any length of time...” (Cage 1973, 31). This is precisely the same as minimalism's stasis and infinite extendibility. Despite their differences, this shared treatment of time is surely not insignificant.

Another feature of Cage's works, indeterminate process, is seen as not being strict or rigorous enough (or too open to variety) to be considered minimalist (indeed, chance and sounding processes are often seen as mutually exclusive). My next section challenges this notion.

Precision in minimalism

I have employed Cage's chance in my own works by injecting human, mechanical and digital faltering and failure into processes that can otherwise be viewed as precise. In reality (as I've already mentioned at length in my chapter on noise), some of this lack of precision has always been important and unavoidable to (a pre-digital) minimalism. Reich complained about the coldness and disinterestedness of early electronic instruments:

> Most of 1968 and more than half of 1969 were spent designing and constructing this device [the Phase Shifting Pulse Gate]. During this time I remained preoccupied with the necessary technology, far away from any instrumental music making . After the device was completed it proved to be musically uninteresting in performance. I felt very clearly then that I did not wish to have any involvement with electronic music again. (Reich 1974, 55)

It was this dissatisfaction that led him to attempt *mechanical* experiments (up until then played out with tape and electronics) with real people (for instance *Piano Phase* and *Violin Phase*). He identified the human element as being important to highlighting the tensions between the phasing parts, but only in so far as it was more of a challenge than watching machinery perform. He said: “Everything is worked out, there is no improvisation whatsoever, but the psychology of performance, what really happens when you play, is total involvement with the sound; total sensuous-intellectual involvement” (Reich 1974, 52). It is my contention (also covered in my noise chapter) that the minor imprecision inherent in human performance (a type of noise) played a necessary part in its interest, and in a sense, is not so different to Cage's use of indeterminacy as a generative device. In my own work (as discussed at length in the next chapter) I often embed the element of chance within minimalistic processes.

Serialism

While serialism per se has not been a huge influence on my practice, it is interesting to note its often obfuscated relevance to minimalism. At first glance, they appear to be on opposite sides of the fence, rendering serialism useless and hostile to the *sounding processes* of minimalism. But as Strickland points out: “The spare figures of Minimal Music would very likely not have emerged but from the intricate ground of academic Serialism” (1993, 121). Cynically, this could be read as an indication of minimalism’s reactionary nature; of its youthful and simplistic revolution against its

elders (that is, repugnancy at serialism caused minimalism). This is not, however, what Strickland means.

He points to the break between serialism and minimalism as being “far from sudden” citing La Monte Young’s first known minimalist work, ‘Trio for Strings’, which remained “strictly Serial in its exposition” (1993, 121). Young made the link explicit, describing this work as “like late Webern [an early serialist composer] in augmentation” (Young quoted in Strickland 1993, 126). The difference lies in scale and perceptibility: “what for Webern would have taken a few minutes, for me takes about 52 minutes”, thus making “the Serial technique synonymous with the audible structure of the work”.

Strickland does ponder whether *Trio* really is minimalist: “It is arguable, admittedly, that even Young's Trio does not qualify as Minimal music, first of all, on the basis of its dodecaphony [serialism], which a priori excludes the harmonic stasis theoretically afforded by tonal organization” but decides that the “effect of Young's long tones, held for a minute or more, is to reduce harmonic, or any, movement to the point of stasis...” (1993, 123) and is probably not excluded from the minimalist canon by its serial contaminants.

Interestingly, Strickland claims that a “more serious theoretical obstacle to considering *Trio* the first Minimal composition is its [Cage-inspired] silences” (1993, 123). Whether this is the case or not, it is curious that what is considered by most scholars to be the first minimalist composition contains, quite knowingly, both serial

organisation and the indeterminacy of John Cage, perhaps disproving the notion that these three distinct conceptual movements are mutually exclusive.

While not dismissing the differences between serialism and minimalism, Strickland goes further than suggesting that they may coexist within the same composition, linking them to a common interest in repetition and stasis:

> In Minimalism ... stasis is achieved by means of the extreme deceleration of harmonic movement or its total elimination, the rejection of dynamic nuance... the relative paucity of pitches employed, and most of all the repetition or extension of those pitches in the form, respectively, of modules or drones. Serialism is generally much more harmonically complex, texturally rich, and dynamically inflected, yet the principle of repetition is not only inherent in but fundamental to the concept of constructing the work from a single component, the tone-row, which is relentlessly repeated, albeit in continual variation by means of inversion, retrograde, retrograde inversion and transposition (Strickland 1993, 126).

Post-minimalism and other possibilities

Minimalism (as described idealistically by Reich and as lived by the 'big four') did not last for long. According to Rockwell, by the early to mid seventies, rigorous minimalist processes, and a modality that resisted outright tonality, had begun to give way to more interventionist ways of working (114-115). Reich is said to embraced harmonic motion in 1970 with *Four Organs* (Potter 2008, 9) and Glass in 1974 with *Music in Twelve Parts* (Rockwell 1984, 115).

Numerous theorists who have shared a fascination and an optimism about minimalism have been disappointed with post-minimalist options (including those from the 'original' minimalists). Jonathon Bernard, for instance is almost scathing:

> ...anyone already inclined to take a pessimistic view of the situation would see, in what minimalism has largely led to [culminating in the post-minimal] – the loss of its impulse in simplistic pseudo-tonality on the one hand, a confusing range of rather cultishly received repertoires on the other—some markedly discouraging evidence against the resilience of our art-music traditions, against their capacity for perpetuation through self-renewal. (Bernard 2003, 131)

He goes on to say that Steve Reich and John Adams "represent a retreat that is in some ways disappointing, suggesting as it does that minimalism and its offshoots have failed after all to live up to their initial promise radically to reinvent American art music" and Glass and Torke present "another and sadder story altogether, in which simple (sometimes extremely simple) harmonic patterns repeat over and over without anything like the rigorous rhythmic structures to motivate them: a true triumph of manner over substance" (Bernard 2003, 131).

In my own practice, I find myself asking whether it may have been possible for (post)minimalism to take a different route. What were the possibilities beyond a popular classicism that triumphed manner over substance? The seventies and eighties saw a call from artists and philosophers for the reassertion of subjectivity in creative works (for instance, Kyle Gann writes about "rescuing subjectivity from bad faith"

[2006, 148]) while objectivity was labelled a positivist construct – an “establishment serving hoax” (Gann 2006, 131).

It was in this environment that minimalism joined a broader church of neotonalists and any possibility of a mature, process-driven music was lost (at least temporarily). The rise of the post-digital has offered new hope for those interested in process-oriented composition, but it has also has its dangers.

Glitch and databending as new minimalism

Metaphorically and materially, there are a number of similarities between glitch and databending, and the major (process-oriented) movements of the twentieth century. Minimalism is an obvious predecessor. Without any direct reference to the movement itself, Manon and Temkin assert that “To glitch is to repeat. The greatest weapon glitch art holds in its war against hegemony is not ingenuity, but a goalless repetition which seems to mutate of its own accord...” (2011, 52). We have repetition (claimed as natively glitch). We also have mutation “of its own accord” – process: actions set in motion that vary gradually without interference (or, yes indeed, 'music as a gradual process').

Manon and Temkin also refer to the disruptive power of repetition (of which there are two variations). The first is a violent disruption – the “battering ram” (perhaps more rock and dance music than glitch). The second is “the passive aggression of sequences, which, in some pointed or high-profile way, inertly refuse to vary. In this second sense, glitch practice takes place not on the order of desire, but on the order of *pulsion*, drive, and therein lies its radical potential” (2011, 53).

Both minimalism and glitch are created from drive-based, not desire-based production. This has to be the same radical potential of early minimalism which was not shaped by the comfort of previous form, nor by the cerebral coolness that compelled complexist composers.

There is an uncanny similarity between Manon and Temkin's words and Robert Fink's comments on repetition in minimalism:

> repetition is prized precisely for its ability to dissolve traditional formal dialectics, unleashing strange and unpredictable surges of intensity; as Fluxus composer Dick Higgins once noted, implicit within extreme boredom is extreme danger, and thus extreme excitement … repetitive music is valued precisely for its refusal to route musical pleasure through the symbolic order, for its self-negating regression to a pre-subjective space that Lacanian psychoanalysis calls 'the Real.' (Fink 2005, 6)

Minimalism and glitch (at their best) are the result of a subtle, relentless drive (that is, paradoxically, rendered static), and it is indeed a radical force.

Finally on repetition, Manon and Temkin claim that “this inertia—this irrepressible compulsion to *keep on glitchin'* – constitutes glitch art’s real force. Were it to lack this disturbing potential for sameness, the disruptiveness of glitch would be strangely diminished, perhaps fatally so” (2011, 54). Thus it is glitch's minimalistic constituency that imbues it with its uniqueness (and perhaps it's a nod to its infinite temporarily).

The early glitch of Oval (and others who used skipping CDs – the classic *glitch* sound) bears a remarkable aesthetic similarity to some of Phillip Glass's earlier works,

in particular, *Music in Fifths*. The relentless permutations of a simple sequence of rising and falling notes (what Glass has called “gradual accretion of musical material” [quoted in Bernard 1993, 105]), frequenting jarring the listener by skipping, jumping unexpectedly is the defining feature of this early minimalist work. Its effectiveness lies in its simple, quick, homophonic movement of notes, and its defiant thwarting of expectations (and in its ability to bring on a kind of motion-sickness). It skips, all at once, as a glitchy CD might, always returning to the same place, but at seemingly unpredictable intervals. But is this the same thing? Glass's compositions contain highly contrived processes. You are supposed to be able to hear what he is doing with these permutated sequences (plus one note here, minus another note there) even if it takes much concentration. It is, after all, one of the basic tenets of Reich's minimalist manifesto, that one be able to hear the process at work. Glitchy CDs, however, do not really reveal their processes. They occur in an in camera conversation between the laser and a rapidly spinning disk. What we hear sounds random, and if there's any logic at all to this process, it is lost before we hear it, surely.

However, Glass's processes are hardly transparent. As mentioned, you really have to be paying attention to get it. If you are not sure what you should be getting then the process will not reveal itself to you – it will not be a sounding process. Conversely, random is never really random. Glitches caused by a faulty CD are based on the physical properties of the CD itself (and the corresponding equipment). There is a logic there and perhaps to some, what a glitchy CD might do next is not necessarily

mystical. All of this really just reiterates a previous point: the difference between sounding and non-sounding processes is overstated, and a false dichotomy.

Perhaps randomness, or indeterminacy should be the next paper tiger to fall, and after that, tonality. If we are to now introduce databending into the minimalist tent, then fall they must. At its core, databending is laterally similar to Cage's approach to the melding of art forms, in particular, his use of an unsynchronised soundtrack overlayed onto dance (usually that of the Merce Cunningham Dance Company). The impact of sound on movement and movement on sound changed the interpretation of each to the extent that they were both radically altered: “The most famous and controversial of these [collaborations between Cage and Cunningham] concerned the relationship between dance and music, which they concluded may occur in the same time and space, but should be created independently of one another” (Merce Cunningham Dance Company 2009). Perhaps created independently, the process of them coming together necessarily results in a different understanding of each. No matter what form they presented separately, together they forced chance to intervene.

This is not dissimilar to databending (in fact, it's the same interaction, the bringing together of known constituents to produce unknown consequences). As previously quoted:

> The interchange of digital information (text becomes image becomes sound becomes…) has been exploited by other artists in similar ways, thanks to the availability of (in)appropriate software tools. These interchange-abilities allow one to manipulate

> sound files in an image editor, or text files in a wave editor, enabling new forms of production and aesthetic effects... (Thompson 2004, 212)

Further, databending's processes are highly mediated, they do not have sounding processes, and aesthetically, the sound is neither tonal, modal, nor even-tempered (computer data was never designed to be heard, thus it adheres to no formal musical conventions).

But, I contend, databending (along with other glitch) is possibly the rightful heir to the throne of early minimalism. Repetition is inherent in data (whether used aesthetically, or, as I contend it could and should be, as structural material). At both the micro and macro levels, binary, hex and ASCII representation is comprised of limited material, resulting (when chewed threw as sound data is chewed threw) in a highly focussed, dynamically limited, selection of available sound. Non-sound files, when converted to sound, are not usually that long, mirroring the length and type of material that most early minimalism began with. Most importantly, I keep coming back to process. Databending (as discussed at length in the first chapter), is fiercely about process, as was minimalism (and as was the work of Cage). In all of my influences process is equal, or more important that the outcome (which can often be classed as a mere remnant).

Problems in opening the minimalist floodgate - 'Aesthetic minimalsim'

There is a negative side to the post-digital's appropriation of minimalism, in, what Ian Andrews has termed aesthetic minimalism. The *malleability* and *appropriateability* of the glitch aesthetic is quite often its downfall. According to Janne

Vanhanen glitch's "conceptual underpinnings have too often been ignored, thus resulting in empty formalism… [and] it seems that the glitch aesthetic has been appropriated in a way not dissimilar to the methodology of dance music producers: as an effect or a signature sound" (2003: 46).

Cascone also has problems with (aesthetic) post-digital minimalism: "I find minimalism to be an aesthetic dead end … The minimalist sinewave/clicks and cuts/glitch movements are folding in on themselves because the work is too self-referential (in terms of genre) and it can't evolve in an entropic cultural environment..." (Turner 2001).

Julian Knowles sees an inherent problem with *aesthetic minimalism* which he talks about at length on the microsound.org list serve (the majority of which has been repeated here, due to its insightful nature and temporality of list serve listings):

> ...[T]here seems to be a serious lack of thinking in relation to ideas around composition (in particular) and form. It is very common for an act to take to the stage with some earth hum, or a simple drone, noise, or a sine tone or whatever and for very little of consequence to unfold over the set... I find it baffling when people talk about 'new minimalism', in relation to this work, when the word itself implies a focussed compositional framework... Thirty to forty years on, we need to have something to add to that body of work... I see this being a potential problem of 'aesthetic minimalism' which allows positions which can be sustained on a more superficial level... It raises the question, can you have a non-specific, peripheral engagement with these ideas? Does it work? Minimalism in one sense, screams 'discipline', 'precision'. and 'form' (2004).

Having heard much post-digital performance of the last decade, it is sadly difficult to disagree.

There is a minimalism-influenced *techno*, represented by such practitioners as Alva Noto (AKA Carsten Nicolai) and Ryoji Ikeda, that warrants mention here as differing from the hollow *aesthetic* minimalism so derided above. Knowles himself writes about Alva Noto being influenced by Lucier, Young, Niblock, Reich, Reilly and Glass (2006, 18). Although indeed "building on existing concepts of both perceptual and pattern-based minimalism" (Knowles 2006, 18) these very interesting developments tend to play second fiddle to the demands of the genre: "pulse, regular bpms and meter" (Knowles 2006, 17). Devices such as phasing are usually (but not always) relegated to background phenomena; something behind the beat to pick up if know what you're looking for. Harmonic material (to the extent that it exists) often alludes to modality (there is very little, pitch wise, that could ever be labelled objectionable).

There is a cleverness to this music that makes it quite attractive, but in the end it is straddling two worlds and there are compromises made in both. In a sense it is more post-minimalist than minimalist: process is indeed important, but not as important as a coherent, digestible, structure.

My Practice

[Practical examples of my own works fall into two categories in this section; those that were composed before 2008, and are thus unexaminable and for reference purposes only, and those that were composed between 2008 and mid-2012 during my candidature. I have clearly marked which is which next to where I list each track number. All of these works can be found on the included DVDs. The first DVD contains high quality (where appropriate) computer files (tested on Windows Media Player and iTunes). Please use this disk if possible. The other disc will work in any household DVD player, but all files are compressed, reducing quality (it is included for back up purposes).]

My own practice draws on the material in previous chapters for technique, concept and inspiration. In this section I will give some indication as to how I have applied these ideas. My sound practice is influenced by a number of key movements in music. To reiterate, they include:

Phase minimalism: developed (as previously discussed in detail) by Steve Reich (see, for instance, Reich 1974), but used by me as a rigid process without the baggage of tonality (although some do have a tonal centre) and the necessity of a *sounding process*. For me it is a generative device and not just a style or sound (as it became) for later minimalists and post-minimalists.

Minimalism comprised of permutations: similar to Phillip Glass' compositions in technique (see Obendorf 2009, 46-48), but also allowing in chance (after the glitching CDs of Oval and the like. These were aesthetically similar, and not altogether

that different if random, chaotic and unpredictable processes can be rigidly explained by chaos theory and other recent mathematical discoveries). Phasing and permutations can be used together to create intricate processes. Also see indeterminacy.

Long tone minimalism: pioneered (in this last century) by La Monte Young, but having a long history dating back to liturgical chants and ancient folk music of many different types, including Celtic and Indian (see Johnston 1995 and Floyd 1980 for instance). In the tradition of minimalism, drones are not just used to provide a foundation for the more lively, more important material (as they might be in psychedelic rock and other popular and folk traditions). Long tones in this school of thought alter perceptions of time and space (and indeed can mute the drive of tonality and render harmony unimportant. See Young's *Trio for Strings* and Strickland's writings on Young [1993, 121-126]).

Minimalism (as a whole): The binding commonality between all of these minimalisms is their ability to be able to induce stasis; to freeze sound and make it of the moment. Conceptually, this has the effect of extending these works in either direction – they have no beginnings and no endings. It is this which interests me most about minimalist processes. If you alter the process at any stage (to create sections, movements or narratives) you nullify it (see Hubbs 1989, 16, Bernard 1993, 107, 121-123, Mertens 1983, 89).

Complexity/serialism-based/set theory/algorithmic: If *sounding processes* are not necessary, or indeed impossible (as I believe) then processes that are non-

sounding cannot be excluded merely on those grounds. I have used mathematical ways to process my material (as if phase minimalism itself is not a mathematical process). In a cautionary nod to Reich, however, I would, on grounds that are more a matter of degree than anything else, not compose in a way that was absolutely incomprehensible. To do this would seem to be an act of mysticism, of a reassertion of the genius artist (as repugnant as claiming that tonality is transparent and universal) and of no interest to me.

Indeterminacy: Strongly in the tradition of John Cage, chance plays a major role in my works, and unlike Reich, I assert that indeterminacy can be included in a process. This is because there are traits and trends within chance (based on probability) that, over time, reveal themselves. I have already noted how Reich's tape works probably would not have emerged if tape looping were a precise art (it is the fallibility of tape, its refusal to 'sync up' precisely that causes phasing). I will give examples of how the insertion of chance into minimalist processes cannot only work, but breath new life into an ageing movement.

Conceptual/process based: Cage (amongst others) is credited with founding the conceptually-based art that Fluxus and many post-modern artists were to make their legacy (it should come as no surprise that a number of key New York Fluxus figures, such as Al Hansen, Allan Kaprow, Dick Higgins, Jackson Maclow and George Brecht, were keen students of Cage at the New School for Social Research in the late 1950s [Ryan 2009, 204-05]). The use of instructions-as-art, or *event scores* (often open ended and absurd) became a common device amongst Fluxus artists who often preferred

process to any sort of outcome at all (a common practice was to write an instruction so ridiculous, violent or nonsensical that it could exist as only as a concept – a process that had begun by the mere act of writing, but one that could never conclude or have an *outcome*. Yoko Ono's *Walk Piece* comes to mind: *Stir inside of your brains with a penis until things are well mixed. Take a walk.* and *Blood Piece*: *Use your blood to paint. Keep painting until you faint. (a)* \ *Keep painting until you die. (b)* [Strickland 1993, 141]).

Glitch and Databending: I have covered both of these in detail throughout my thesis so I will just add that the way that I have begun to use them is rather unique. Rather than celebrating the *noisy noise* in my later works and experiments, I have begun to use them as ways to organise other material, as a creative generator. Although I have experimented substantially with these processes, I feel that there is still a long way to go before possibilities are exhausted (if, indeed, this is possible).

My work can generally be divided into four periods/types, being, early minimalist work, (noisy) databending experiments, minimalism that incorporates elements of indeterminacy, and use of databending as a creative generator.

Early minimalist work

In 1988 I wrote a solo flute work, *Clock Canon*, that was to typify my approach to composition for quite some time. It was based on some very simple processes. The first was that it was to be an exploration of dissonance and the harmonic series in a systematic way. I would begin on the flutes' lowest note, middle C and then work my way up the harmonic series, gradually. If the top of the flute range was reached, I

would jump down to a lower register and continue. I would (for convenience and effect) use equal temperament which increased the dissonance as the piece wore on. The second process was one to ensure momentum and interest. A metrically phased minimalism, where a four bar figure was overlaid with a three bar one, was reduced into a single line that a flute could play, effectively creating a minimalist counterpoint. In 2008 I reworked this piece slightly, turning it into canon for up to six flutes.

Although I rigidly stuck to my processes, it could not have been considered a minimalist work by the 1960s' Reich on one major account, by the end, it had become quite dissonant as the result of development (and it is arguable as to whether it was following 'sounding processes' as the harmonic series is as much a mathematical concept as a musical one). Neither would it probably have been considered post-minimalist, as it stuck too rigidly to its processes.

TRACK 1) Clock Canon [REFERENCE ONLY]

Unsure of what I had created (and dissuaded from further ventures in near-minimalism by my peers) I abandoned this approach for a while. This flute piece had not been my first play with minimal material. Years earlier, as a teen, I mastered the art of the cassette tape. While everyone from Boulez to the Beatles had taken razors to high-fidelity ¼ inch tape, I indulged in the cheap and noisy practice of cassette mutilation. I constructed short tape loops and made a primitive multi-track tape recorder by joining two cassette decks together and bouncing every track (known as “ping-ponging” this was surely this was the bedroom studio of its day). The resulting recordings were definitely comprised of short repeating fragments, but were often

unrestrained, noisy and and not so minimal. It is possible that these early experiments gave me a taste for repetition, but also for the possibilities beyond tonality, consonance and an adherence to rules for the sake of rules. Needless to say, none of this work survives today.

My interest in minimalism later extended to the visual (I saw possibilities in transferring the audio technique of phasing into the visual realm). New video editing technologies allowed me to overlay visual material in ways that allowed for complex interaction between layers (these techniques have, in turn, encouraged me to search out new ways of mixing audio – but more on this later). This way of mixing small fragments of video so that they mix in new and unexpected ways, to my knowledge, was an original use of the software (I have not seen anything similar since). I should also note that although experienced visually, I still saw this as a musical process – I was processing visual material, musically. A couple of these works existed as part of larger installations (that included sound). The Burger Repeats (Sleazeburger) was an installation at Alpha Gallery in 2005. The main components being a video of a sliding, phasing cheeseburger (then three years old) and a soundtrack comprised of four phasing tracks (recordings of a broken, rather sleazy-sounding, saxophone). This was one of my early experiments with this visual technique. Interestingly, I used the video feature on a still digital camera to record the footage. Being of low resolution and highly compressed, it began my interest in the post-digital, in exploiting the inadequacies of consumer-model digital equipment.

TRACK 2) Burger Repeats (minimalist phasing video from the installation) [REFERENCE ONLY]

TRACK 3) Burger Repeats (minimalist phasing four channel sound from the installation) [REFERENCE ONLY]

Soon after this work I created another installation called *Beauty/Terror* using similar techniques. While most of the components of this work were unremarkable, the following intense (but highly banal) clip of someone crossing the road (and phased with a slightly shorter version of the same clip) I found to be quite compelling. Accompanying it is an equally intense soundtrack synced precisely to the video and comprised of phased snippets recorded from a road crossing. This video increased my interest in the post-digital as the interplay of pixels between the phased versions is as (if not more) interesting than the interaction between the clips themselves. I mark this as the beginning of my interest in glitch-based minimalism.

TRACK 4) Beauty/Terror (minimalist phasing video/sound from the installation [REFERENCE ONLY]

Before moving on, there is one more experimental piece that's worthy of mention here. In 2007 I created an installation with Kylie McKendry at the Addison Road Gallery in Marrickville (I primarily created the sound, while McKendry composed the imagery). The most prominent soundtrack of the work comprised of a reworking of perhaps the most iconic work of the nineteenth century – the first movement of Beethoven's Fifth Symphony. Chosen because of its popularity as well as its power to represent the *Sturm und Drang* (or 'storm and stress') school so prominent in this era

(a notion repugnant to both the minimalists and Cage), I manipulated this work in order to try to remove its relentless direction. Firstly, taking a MIDI version of it (comprised of just 'note' information such as pitch, length, dynamics etc.) I quantised this work into bars of single length notes. Thus, if there were six different note events occurring originally, these got squashed into six notes occurring simultaneously, all occupying the entire bar. In a nod to La Monte Young's *Trio for Strings* (as already noted considered the first minimalist work by many) and drone minimalism, I then elongated this piece ten-fold. The idea was that by processing this work in this way that all the original direction and tension would be lost. This new track was then divided amongst four speakers. While succeeding to some extent, some of these elongated bars developed a new tension, arising from the relationship between these newly-formed mega-chords, that didn't really dissipate over time. The following recording represents a small portion of this work (reduced from four to two tracks. Note the timbre – an eighties *synthesised strings* sound may seem less than ideal for such an experiment, but it does provide the homogenised, sterile, 'normalised' sound that I was seeking).

TRACK 5) Being to Becoming (four track sound) [REFERENCE ONLY]

Databending experiments

Glitch and databending in my practice were initially approached from two different directions. In 2007 I began composing using material sourced from files from my hard drive. This resulted in a series of compositions that I collectively call *Ulysses* (as they represented a journey through my computer). In retrospect, these early

experiments were post-minimalist in nature, not foregrounding process and rather weak in comparison to my other works (both before and since). I did use minimalist processes to compose sections of them, but on the whole, I constructed them to sound like music. Not quite a failure, I see these pieces as my attempt to come to grips with the vast, 'inhuman' digital underbelly that confronted me (the sublime as Whitelaw [2004, 7] or Manovich [2002] might put it). I attempted to *humanise* (or *normalise*) this material, turning it into something familiar (the *anti-sublime* again in reference to Whitelaw and Manovich). These are therefore quite personal pieces, not ones to be proud of, but rather demonstrative of my coming to terms with this post-digital stuff. I include some of this material here for reference purposes.

TRACK 6-7) Ulysses fragments 1 and 2 [REFERENCE ONLY]

In 2009 I was invited to join, and co-curate, the Memory Flows project by Norie Neumark. Memory Flows was to be a series of works and exhibitions that were centred around rivers and their social histories. My work was titled *In Memoriam* and was based (in its first incarnation) on the banks of the, much-maligned, Cooks River. It became an exercise in what may be best described as bent sonification (a combination of databending and data sonification, minus the [digital] data in both cases). For *In Memoriam* I created numerous sound sculptures that I placed alongside the Cooks River from Tempe to Dulwich Hill. Many of them used items that I had found, and painstakingly removed from the toxic mud in the river. It is hard to make a work about the Cooks River without alluding to the devastating impact of industry on it. Implicit in this work is an environmental critique of this waterway. Salvaging and scavenging from

the river has become an important part of the work itself, and some of the documentation of it was shown at the UTS site of the Memory Flows project in 2009.

TRACK 8) In Memoriam documentation video [FOR EXAMINATION]

Most of these works took some facet of the environment (wind, brightness etc.) and turned them into sound, which was then broadcast through FM transmitters. (These signals were then picked up and mixed by a boat travelling down the river). One work for instance was comprised of large leaves that had light dependent resistors (LDRs) embedded in them (see Illustrations 4 and 5). Hanging in the speckled light under a large tree, the input to these leaves was an intertwined combination of wind and available light (the more light that registered upon these windswept leaves, the more the current trying to go through them was blocked). These connected to several 556 timer circuits and other circuitry which outputted a single signal – a primal, sawtooth sound of roughed-up pitch. As mediated as this sound was (it would have been impossible to dissect it into any discernible single sources at this stage), there was one surprise left. My bespoke circuitry combined with commercial FM transmitters to create a new range of pitches and noises. This work illustrates well my approach to creative processes. Once I had chosen the elements of this work, I allowed it to run unhindered. The results were unpredictable and irreversible, but with an inherent logic (this is most certainly a paradox, but one that I can quite readily embrace).

Illustration 4: Light Dependent Leaves from In Memoriam

Illustration 5: Leaves In Situ from In Memoriam

Some of the works were less technical and more transparent than the leaf piece, but the output of each didn't really veer away from that approach to process. The 'cone work', in a homage to Reich's *Pendulum Music* (his 1968 work that most approaches my creative methodology), was comprised of two microphones embedded in 'witches hats' (or safety cones) which were left to swing (or be pushed) over two speakers at ground level (see Illustration 6). There are two major differences between

Reich's work and mine. Firstly, mine was pitched. The conical structure of the pendulums created varying notes, providing interest beyond the foggy drone of low feedback. Secondly, the structural nature of the work relied on unpredictable elements, such as the wind and the willingness and enthusiasm of passers-by to manipulate the cones. It is this difference that is really indicative of a fundamental divergence of philosophies. My swinging cones are open to chance-like elements that may alter their mechanical trajectory (Reich's were left alone after being set in motion). Arguable a third distinction would be that this was not a complete work, only a single sound source in a more complex array.

Illustration 6: Cone Work from In Memoriam

Another work consisted of an existing iron bridge that had contact microphones placed at strategic locations (not dissimilar to sound artist, Jodi Rose's, methodology). The input from these microphones was mediated by sensitive switches that reacted to vibration. Like a number of my sculptures there was very little to look at beyond the existing landscape, but the devil was in the detail. Other pieces, such as the portable record player with hand made record and tape loop piece used material

prerecorded from the river's edge in an interactive way. One final work worth mentioning comprised a 'wheely' (or garbage) bin found previously in the cooks river (see Illustration 7). I turned this bin into a giant stylus that could 'read' the ground, transcribing topography and texture into sound. Passers by were encouraged to trace their own trail with this bin (in an aside that speaks to the occasional profundity of making location an inherent part of works, a local family taking a bike ride alongside the river recognised this bin as their own after it had gone missing months before). One can imagine an aerial view of the river, this bin making circuits in the same way styluses go round a record. Extending the comparison, the bin always returns to a similar, but never the same, location in the same way that a stylus moves fractionally, but progressively into the record.

Illustration 7: Wheely Bin from In Memoriam

As already mentioned, most of these sound sculptures were not making sound themselves; they were broadcasting it via FM transmitters to a receiver on a boat. This deferral and displacement of the expected works metaphorically on at least a couple of levels. Rivers themselves are mechanisms for delay – time machines in a sense. Water (and everything else that is swept up with it) that makes it to the ocean begins its journey, probably from a variety of sources, minutes, days, weeks ago. Like the final sound, these sources cannot be easily separated and distinguished, but they are reminiscent of a displaced history and phenomena. Secondly, the river that we have today, with all of its pollutants and toxic sediment, results from decisions made and actions taken up to two centuries ago. Correspondingly, any clean-up initiated today will without doubt take years or decades to complete. Finally (although, somewhat

tangentially), this treatment of rivers (and our separation from 'nature' in general) comes from the Judeo-Christian belief that it is the afterlife that matters and that we are not really of this world. In this belief system, nature (including the Cooks River) is subservient to us, as we are to the next life. All pleasure, happiness, etc. is deferred. This also corresponds to the social analysis of sonata (and other traditional) form as putting off the climax to near the very end – there is a deferred sense of relief and even understanding.

On the weekend of this exhibition I sent a small boat capable of carrying three people down the river. The boat was steered by visitors through the installations. They alone were responsible for navigating their path through the sound sculptures which they could listen to through an FM receiver. This boat picked up and transcribed these harsh, 'staticky', competing signals to digital recorder. The transcription, however, was not usually obvious, and far from reversible (while something that was happening on the river was turned into sound, this sound was just too idiosyncratic, so misinterpreted and mediated, that no *original* data was extractable from it).

It became what it was; too mechanically interpreted to be inspired or impressed by the environment, too interfered with by intrusive media to be a mere faithful translation of nature. This became my digital analogue; a databending to aspire to. It was deeply flawed, but unlike Ulysses, this work was about process and how the interest from a work emanates from misinterpretations in translation (and not the ability to be able to massage these translations back into some acceptable form).

<u>TRACK 9-11) In Memoriam sound sculptures, three examples [FOR EXAMINATION]</u>

The recorded remnants of *In Memoriam* were then revived for a Memory Flows exhibition at Carriage Works (see Illustration 8 and 9). This show then employed recorded fragments from the boat trip itself, dispersed throughout the large cavernous space and placed next to the idle sound sculptures (now functionless remnants). Visitors were invited to borrow an FM radio and (again) create their own journey through this landscape of FM transmissions. I was not entirely convinced by this phase of the project (which was done more as a contractual obligation). For me, the pinnacle was the Cooks River installation and this was a less interesting reorganisation of it.

This incarnation, however (and the showing of the documentation at UTS), does illustrate an interesting facet of my work; that of documentation-as-work. Norie Neumark identified this in an essay she wrote about a later work of mine:

> Shapley plays performatively with documentation and events – documenting that does rather than describes. For him the making of the works involves performative events, some of which he documents as events, some of which become the work. Shapley is interested in the materiality of the process of making work, more than any single destination – and the focus in the material moves in and out of focus on process and material... performativity disturbs documentation... (Neumark 2010)

Illustration 8: Guitar Work from In Memoriam (Carriage Works)

Illustration 9: Record Player Work from In Memoriam (Carriage Works)

There is one last chapter in this meandering adventure. The Memory Flows project had its final exhibition at Newington Armory in May/June 2010 (this time

curated by Norie Neumark, Deborah Turnbull and Sophia Kouyoumdjian). For it, I produced a much more basic work; reduced and abstracted. Based on material from *In Memoriam* and a pending solo show: *Un/shore: A beach denied*, *In Memoriam: Downstream* explored the flow of the Cooks river, from my initial point of departure (at Marrickville/Hurstone Park in Sydney's inner-west) to the point at which it reaches Botany Bay (see Illustration 10). Conceptually it was about the connection of these two areas via a meandering conduit which itself impacts the message. The river became more than just a method of transport, it created meaning and noise and established a dialogical relationship with everything that came in contact with it.

The work itself consisted of an old record player that played a home made record of a single word. These were transferred rather weakly through a cardboard conduit to a euphonium (used for no other reason than it provided a verbose method of non-electrical amplification). A large speaker (acting as a microphone – as all speakers do) would have picked up this sound and carried it down a long speaker cable to absolutely nowhere (the signal would have just ended without fanfare ten metres from where it had began). A second component was a cassette player that played a single 30 second loop through an FM transmitter to a receiver that was outside of the building. To expand on this work and what I have always seen as it's problematic nature, I have included the following from an artist talk I gave:

> I had an increasingly large pile of possibilities, from field recordings, to interviews and landscape photos to Google earth images, but nothing seemed to work. The literal nature of the material seemed to focus, too narrowly, what I was trying to do. So I

scrapped it. All that remains in this work is the notion of trace – a very flawed trace. Rivers carry water of course, but they also carry all manner of other things. People, sewerage, fish, disease, goods, industrial contaminants, civilisation, and uncivilised notions of colonisation and conquering. A river is of course not just a trace – a groove in the landscape that happens to carry water and other materials. A river is a trace that is carved and created by the contents it carries. Put like this a river is a paradox. Armed only with the notion of trace I set about making a much simpler, more abstract piece... Taking an old, wind up gramophone and some acetate I made a recording of a single groove that joined with itself to make a continuous loop of the word flo---at (stressing the flo---w within however).

This was an illustrative, but disturbing, process. I would start this clunky technology, place the needle on my makeshift record and start yelling into the horn. Within a second I would always be caught off-guard by my own mediated voice coming back at me. All the more disturbing was the fact that for a brief moment I didn't recognise it. This groove that I was cutting served as a good metaphor for rivers whose content, or message is inseparable from its form, or media...

I say 'floa---t' onto [the] continuous loop tape [as well], but the 't' is almost undetectable as I run out of breath. I found that during this process breath was a good metaphor or substitute for the water within a river... (Shapley 2010a)

In retrospect, this work also marked my last Memory Flows breath. I had simplified and abstracted my materials and concepts to such a level that very little existed, and it is with some hesitation that I have even included it in this thesis (There

is no media to accompany this work, except for the catalogue photo. There was never any recorded).

Illustration 10: In Memoriam: Downstream

My second path to glitch and databending (referred to earlier) involved a continuation of my low resolution video experiments. I have written about my processes and influences for this work in an article entitled 'After the artefact: Post-digital photography in our post-media era' published in the Journal of Visual Art Practice (Shapley 2011). In this article I specifically talk about a video installation I created in 2009 for Inflight Gallery entitled *In My Front Yard*:

> This piece is comprised of six, 10.5-inch digital picture frames, each one showing a ten minute clip of a person standing in their front yard... I approached strangers in their front yards and asked if I could take 'a few snaps', during which time I'd take a short video instead. For this to work I needed to use a ... cheap consumer model camera. This, combined with the formatting restrictions of consumer model digital picture frames,

> inevitably invokes the post-digital (in the same way that the 16mm Warhol films [Empire (1964) and Sleep (1963)] bring us closer to the media).
>
> The final aesthetic has all the 'worst' hallmarks of impenetrable digital technology, made fallible by the need for cost-cutting and portability. Although all movement is slight (as the subjects are all trying to 'hold a pose') the compression artifacts dance to their own beat, demanding their presence be felt as legitimate graphic elements. The colour is highly distorted, the camera sensors unable to deal with harsh contrasting afternoon light. In at least two of these videos violet streaks inexplicably run down the screens from blown out areas of the imagery (we can only hazard a guess as to why this is – more sensor-related distortion, bizarre compression artefacts, or something else?)...
>
> Time in these clips only serves to prolong the sense of agony showing up faults in both the media and the ability of the subjects to strike, and hold, a perfect photographic pose. (Shapley 2011)

This work was a post-digital experiment in *video-as-still-photography*, but these videos can also be seen as visual drones. It may not be so evident, but I have processed these clips in much the same way as I might a tone I wanted to continue forever: I have placed a clip, and then pasted an identical, but reversed clip following it, thus creating a seamless, continuous loop when both are repeated without a break. Note for this compilation I have included an extra video that was not used in the exhibition.

<u>TRACK 12) In my Front Yard [FOR EXAMINATION]</u>

Finally, I was recently asked to create a number of small video works which were shown as part of the St. Jerome Laneways Festival in Sydney. These may seem

less significant than my other works, but nevertheless serve as interesting examples of the same technique (phasing) applied to both the audio and visual at the same time (with the exception of *Little Things* where I have taken more poetic licence with the imagery).

TRACK 13-15 Small minimalist video/sound works created for the St Jerome's Laneway Festival – Little Things, Train Tripped and Ghost Train [FOR EXAMINATION]

Minimalism and indeterminacy

Classic minimalism is supposed to exclude the "chance or accident" (Bernard quoted by Strickland 1993, 122-23) according to Reich and theorists such as Bernard. In my work I explicitly challenge this notion. I contend that as long as chance is part of process, then it has a place in minimalism. Further, since the precision of the digital has rendered repetition a virtually flawless process, explicit chance is needed within any new minimalist works in order to put back the interest removed by the digital.

I began my experiments with indeterminacy in minimalism in 2006 with a work entitled *Blemish/Colour,* written for three electric guitars. The idea was to use brutally simplistic material (brutal in that the average person could easily comprehend the harmonic material without a musical education) that explored notions of timing and human frailty. Whereas traditional minimalism supposedly relies on precision, this work required that everyone be different and incapable of having the same (or a universal) concept of time. Three amateur guitarists were given two simple chords each to play. Wearing headphones (that played static in order to block extraneous noise), each player would hold these chords for what they considered four seconds

each, and play for as long as they could. Over the course of the work initial concepts of time, fatigue and error would reveal three different linear processes, resulting in a work that would be near impossible to replicate with a precise machine. This to me, is an example of a generalist post-digital glitch work. I have written straightforward instructions that in theory (assuming our competence) should result in a perfectly boring, repetitive piece that is of little interest. Embedded within my instructions is an expectation of failure, and it is this failure that creates the interest.

TRACK 16) Blemish/Colour (live sound recording) [REFERENCE ONLY – note: the DVD containing files has the entire performance of this work. The DVD formatted for DVD players only contains an extract]

In 2009 I was commissioned to create some works for a children's contemporary art exhibition at Albury Museum called 'Retro-Machine'. One idea that I developed involved three (mildly) circuit-bent 80s casiotone keyboards and their toy-like auto accompaniment functions. I set them up so that each one played a rhythmic accompaniment comprised of two notes, the tempo of which could be effected by shading light sensors (the work itself doesn't start until visitors enter the room) (see Illustrations 11 and 12, and http://www.alburycity.nsw.gov.au/www/html/1725-retro-machine-exhibition.asp). It was effectively a phase minimalist piece with a twist. These variations in tempo created an unpredictable element, almost a type of improvisation that was capable of creeping into an immutable process and, by subtlety varying it, substantially changing the outcome (a little like the butterfly flapping its wings in the Amazon).

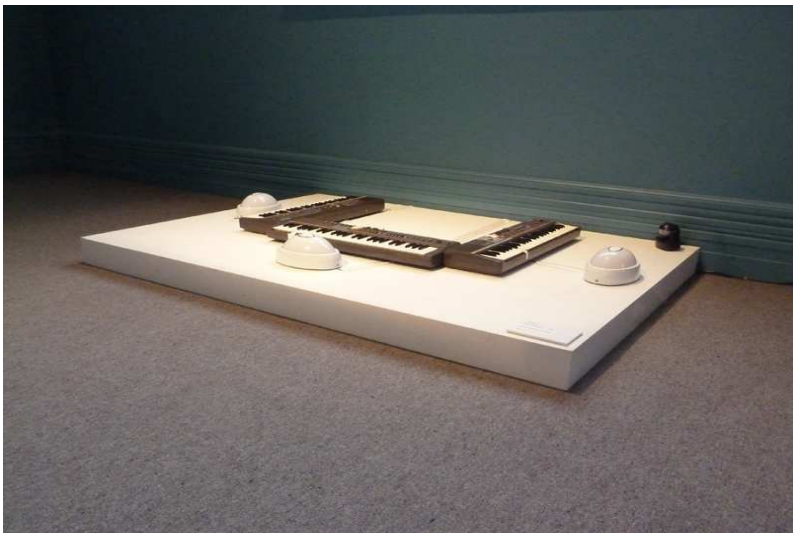


Illustration 11: Retro-Music-Machine

Illustration 12: Retro-Music-Machine

What I eventually did with this work (installed in Sydney Non-objective Gallery [or SNO – a space for non-representative art] as *Min-Mach-Mus*) was to present it in a more spatialised way, processing the output from the keyboards (instead of just using the sound from them directly), and having more of a controlled environment so that tempo changes were more subtle. Each output went through different effects processors so as to vary the homogenous sounds of these consumer keyboards. They were then relayed them to powered speakers in front of each keyboard. Also different

from the original was the choice of notes (initially using relatively consonant quartal/quintal harmonies, chosen for their acceptability in a public place). The more complex octatonic/diminished scale was used which gave it a more dissonant quality.

Conceptually, this work draws on Steve Reich's M*usic as a Gradual Process* (Reich 1974), gaining interest from slight differences in tempi. Unlike Reich's early works (such as the tape piece *Come Out to Show Them* and the instrumental work, *Piano Phase*), visitors made subtle interventions into the work, slowing the speed by varying the light entering the sensors and altering the mechanised phasing process. Again (like in Blemish/Colour), the chance of Cage enters a minimalist process without destroying it. It is also inspired by the classic minimalist installation, La Monte Young's *Dream House* and the idea of an architectural sound, where presence (and in this case subsequent movement of the audience) within the space effects what is heard. This architectural presence was particularly important for the reworking, where the sound was more distributed and worked into its environment. I took considerable care to move the speakers (six in all) away from keyboards and to massage them into the nooks and crannies of the the gallery. (SNO is in an old wooden building comprised of an eccentric collection of rooms and so is perfect for this type of work). I think this paid off (although it is difficult to hear in the recording); visitors have to move around to get the full effect of the work, stopping now and again to appreciate the colourful live mixing reflected off the walls of a colourful old building. I noticed that visitors would stop in certain locations for minutes at a time – trance-like, deers in headlights, and then move on until they had found the next sweet point.

TRACK 17) Retro-Music-Machine (live audio recording) [FOR EXAMINATION]

TRACK 18) Min-Mach-Mus [FOR EXAMINATION]

This next work, *David Lynch's Hands* (actually featuring David Lynch's hands), was conceived while watching the special features DVD on David Lynch's *Inland Empire*. In an interview given for this release Lynch's hands moved around, rhythmically and hypnotically, like they had a mind of their own. They took over from what Lynch was saying, becoming the entertainment and a kind of non-sounding musical information.

I filmed directly off the screen using the video function of a cheap, consumer model still camera, layering the steady rhythm of interference lines over the top of Lynch's dance of hands. I decided to show three screens, each with the same material, but each a few frames longer than the last.

The result may not have been music, but it was definitely musical. The idiosyncratic, but rhythmic, hands mediated by the regularity of the interference lines, and formed into a multi-screen phase, I found to be compelling. In a way, this harps back to my early visual minimalist experiments: the element of chance is not immediately apparent as each clip is a precise length. Within these clips, however, there are three things occurring: the unyielding number of frames in each that repeat precisely ad infinitum, Lynch's hands and fingers that dance rhythmically but to their own beat, and the interference lines that have a consistent, but independent rhythm. All combined, the results are, indeed, predictable, but at the same time very difficult to predict.

TRACK 19) David Lynch's Hands (compiled video) [FOR EXAMINATION]

In G was a small work, that I constructed for a group exhibition. The task was (using a ridiculous toy) to mechanically overlay classical music that was far from mechanical. I wanted to set up a tension between precision and music that was driven by traditional formal aspects. Another aim (as it was an installed piece) was to add a performative element. I began by circuit bending some flashing party lights so they would trigger small amplifiers. I had three CD players feeding different classical tracks (all in the key of either G Major or g minor) into this set up. The resulting cacophony sounded as one might expect a musical interference pattern to sound. The effect of having them all in a key of G was not as harmonious as the concept might suggest as classical symphonic works do contain harmonic development (i.e. they change key). Mechanical/electrical precision is not digital precision, thus although there are apparently two lots of precise devices at play here (the lights and the CD players), the theoretically exacting nature of this work is thwarted by the imprecision of the electronic mechanism in the lights (electronic, but not digital) and the mechanical nature of the CD player (especially when repeating). Another consideration is the relative precision of even these mechanical/electrical devices as compared with the tempi of the music on the CDs themselves (that slows down and speeds up as all acoustic music with expression tends to do). This difference produces a noticeable clash.

TRACK 20) In G (studio audio mix) [FOR EXAMINATION]

TRACK 21) In G (video) [FOR EXAMINATION]

Finally, another work that uses perception to appear imprecise (in much the same way that *David Lynch's Hands* does) is the soundtrack to the installation, *Un/shore: a beach denied,* a show presented at Mori Gallery Sydney in May 2010 (the catalogue that includes two essays, one by Professor Norie Neumark and the other by myself, can be found in Appendix 4). Other elements of the show (including video loops) also feed on or into minimalist processes. This work is also deeply post-digital (although not in an obvious way).

Prior to the show I held the "Picnic of the Damned, On the Beach of Ghosts", an event that provided much of the footage I was to use for the exhibition (see Illustration 13). The text for the invitation/media release read in part:

> Kyeemagh beach, at the mouth of the Cooks River, Botany Bay, has never been a Bondi or Manly, but recently, this small, working class beach has simply disappeared. A victim, not of rising tides and climate change, Kyeemagh beach succumbed to the NSW Government's desalination juggernaut (whose pipe runs from the plant itself at Kurnell, under Botany Bay to Kyeemagh). **On March 6, 4pm, there'll be a picnic to commiserate this disappearance, next to this ghostly strip, outside the perimeter of the security fence marking the no-go zone. Bring a picnic basket and blanket, and come dressed a la Picnic at Hanging Rock.** (Shapley 2010b)

Illustration 13: Picnic of the Damned

This picnic was publicised in the local paper (St George Leader [Papadakis 2010]) and attracted a modest amount of attention in the area. On the day about twenty picnickers (mainly friends) turned up to eat, drink and perform for the camera. In keeping with the "Picnic at Hanging Rock" ambience, we had old fashioned party games (sack, egg and three legged races) and the soundtrack to dancing was provided by a wind up gramophone.

Illustration 14: Picnic of the Damned egg and spoon race (Super-8)

Illustration 15: Picnic of the Damned sack race (Super-8)

This might have all looked just a bit eccentric if it hadn't been for the backdrop – ominous fencing, industrial drilling equipment and a devastated beach. The idea was to juxtapose the ghost of beach picnics past with a dead (murdered?) beach. I filmed from two video cameras and on black and white Super-8 movie film (see Illustrations 14 and 15). The idea for this picnic and the exhibition was explained in my catalogue introduction:

> It had been a while since I visited Kyeemagh. Lodged between the workers' holiday resort of Brighton Le Sands and perhaps the most filthy river in Sydney, the Cooks, this suburb is little more than a series of conduits – carrying waste and desalinated water, heavy vehicular traffic, bikes and aircraft. If you have never heard of Kyeemagh, or thought it was a place on the south coast with something called a 'blow hole' there is a very good reason for this – no one ever does travel to Kyeemagh, we travel through, and then away, from it (generally, as fast as possible). For some reason that now escapes me, one day I decided to break with convention and stop, instead of continuing through. My visit to Kyeemagh's beach was not to be, however. It had vanished. Fenced off and

dug up, it had succumbed to the state government's desalination juggernaut (whose pipe runs from the plant itself at Kurnell, under Botany Bay to Kyeemagh).

Kyeemagh beach has never been the cleanest of beaches. Near the mouth of the Cooks River in Botany Bay, you would never go into the water within three days of heavy rain due to the sewerage overflowing into the river at two-dozen different locations. But for the working class families that line busy General Holmes Drive, for decades the netted baths at this flawed beach have provided necessary relief in the sweltering heat of summer.

I stood there for ages just taking in the scene. What struck me were the surreal juxtapositions – the best laid plans of mice and men thrown together like some gaudy patchwork quilt. The Cooks River (diverted to build Kingsford Smith Airport), the airport itself, the incessant General Holmes Drive and the M5 motorway, the reclaimed land comprising Port Botany and now the desalination construction site all collide in or near this most ravaged of suburbs.

If there's a place representative of our times this must surely be it. Here the Christian (perhaps more broadly, the religious) ethos of striving for the afterlife is expressed in the incessant development, the never-ending construction, the permanent revolution, that reaches for some suburban perfection that will never be. This type of development rarely makes a place known. There's no time for happy snaps, or to pull over to admire the scenery. It is a place on the way to other, better, places (again we can draw comparisons with our religious ethos). (Shapley 2010c)

Illustration 16: Un/shore... video still

In this piece of writing, I mention four pillars (or exploration of ideas) upon which this exhibition is based. Three of them are as follows:

Firstly, there is the destruction of the environment (both on the Kyeemagh beach and across the bay at Kurnell, where the pipeline for desalinated water begins). It is not hard to guess what is at stake here – sensitive sand dunes have been bulldozed, sedimentary layers of toxic waste laid down over the last two hundred years in the bay have most probably been disturbed and the thermal pollution created by the plant itself will have a lasting impact on marine ecosystems.

Secondly, there is cultural vandalism. Christmas day, Boxing day and New Year's used to see this part of the bay swell with tanning working class bodies (not the six-packed show ponies of Bondi or Manly). These were damaged and shapely figures that had been knocked about by the brutal materiality of life. They waddled awkwardly on the sand

> like paranoid penguins in ill-fitting, gregariously coloured, modest swimming costumes until hitting the water with visible relief. Over the last few years there has been intensified interest in this area – not as a destination, but as a thoroughfare. What once was a small suburb built on a busy road has become an impressive series of LA style motorways edged by an increasingly odd bunch of defiant abodes that now resemble the family home in the movie the 'Castle' or Woody Allen's childhood home in 'Annie Hall', under the roller coaster at Coney Island.
>
> And [thirdly] there is the disconnect of government and bureaucracy, and the 'real' world. So what drives a government to destroy a beach? When English tourists trash an Eastern suburbs beach in a flood of alcohol, festive cheer and sunburn it's classed an international disgrace – tabloid columnists call for blood and laws are passed. When those 'Westie Arabs' move in on our Southern Beaches it's cause for riot – shock jocks are once against enraged and the heavy hand of the law descends. When a stubborn state government has a plan for water, a plan which was formulated on a computer, designed, tested and propagated within the confines of an environmentless environment, it must go ahead ('computer says yes…'). The destruction of a working class beach is a small price to pay to realise the perfect plan. (Shapley 2010c)

The other idea explored is the post-digital nature of this landscape. This post-digitalism is not exactly the same as that of Cascone et al. In their book *The Postdigital Membrane: Imagination, Technology and Desire*, Robert Pepperell and Michael Punt use the term to refer to an informed scepticism with regards to the digital. Whereas Cascone can be seen to quarantine his critique of the digital (thus his post-digital is worked back into the digital), Pepperell and Punt apply theirs much more broadly:

> Far from subscribing to [a] general diagnosis [of this century being defined in terms of the 'digital age'], we argue that the intellectual restrictions of the digital paradigm are now becoming unavoidable not least since it insists on the reduction of continuous reality into discrete binary units. [...] The term postdigital is intended to acknowledge the current state of technology whilst rejecting the implied conceptual shift of the 'digital revolution' – a shift apparently as abrupt as the 'on/off', 'zero/one' logic of the machines now pervading our daily lives. (2000, 2)

While not being as sceptical and pessimistic as Perrerell and Punt, I have taken post-digitalism beyond notions of cultural production and into the social, environmental and political realms with this work, inventing a new term to refer to incongruities within and between projects that are conceived digitally (these unplanned in-between areas forming the post-digital):

> ...there is something that, in a way, incorporates the entire environment, something that I've called *digital dismorphia*, which leads to a (dysfunctional) post-digital landscape. To put this picture together it is almost necessary to take a walk around this area, confront the fence on the beach and observe the increasingly estranged abodes. This series of disjunctures, between the past and the present, the (so-called) natural environment and technological construction, and utilitarian progress and the compulsion to impress one's individuality on the landscape in the form of 'home', has become stark in the last decade.
>
> There are probably a number of reasons why this is so, but there is only one that I want to identify. The one that has caused a post-digital landscape (in this case, a landscape ridden with *digital dismorphia* – the discrepancy between digital utopia of the graphics

> user interface and what is produced, and the inability to truly be aware of the processes at hand). So then, how has this post-digital landscape become manifest? This phenomenon is a result of an atomisation of the landscape. The result of a series of 'perfect' projects colliding in the most awkward way. The digital computer has removed chaotic, living environments from their moorings, petrifying them in a binary Petrie dish in which total sterilisation ensures that nothing grows, nothing clashes, nothing's a problem and there's nothing to see here… These perfect machines from dead cultures, transplanted into the 'real' world soon become infested with it, their perfect proportions, now ugly and angular in comparison. (Shapley 2010c)

In the catalogue essay she wrote for this show, Norie Neumark sums up my approach to the post-digital nicely:

> Shapley's project is to explore these shores of memory and forgetting as part of his ongoing investigation of postdigital aesthetics… to undo the promised, if impossible certainties of digital aesthetics. He is interested in the juxtaposition of incongruous elements – in the postdigital world. Each element has its own logic but through Shapley's work we can see the incongruity of contiguous well laid plans. Real life is messier than computer programs would promise, he suggests. While CAD programs might render plants and pipelines as easily occupying the shores of an existing beach, actuality renders picnickers displaced, swimmers dispersed, and fish sickened and dying. (Neumark 2010)

So how did this post-digital reality manifest itself in my work? Neumark sets the scene:

We enter a room full of fencing, inviting and forbidding our movements around the installation space. A room full, too, of media, of projections, disturbing us with their incongruities, their disparate rhythms and temporalities. In the foreground of one video, a fence again, appearing at first glance as a pipeline… is it part of the massive structures of desalination around what was once Kyeemagh Beach? Beyond the fence something is blurred – something that feels powerful but out of our perceptual – and political – grasp. And then in the background, a light blinks on and off, but illuminates nothing. This is a moving image, yet it has an eerie stillness, haunted [see Illustrations 17 and 18]. What is happening in this place? What has happened to the shores of Kyeemagh Beach? Greg Shapley's Un/shore, which sounds when spoken like unsure, makes us wonder. In an exhibition full of images where mostly not much is happening, we have a growing sense of how much happens out of sight and sound, leaving us unsure of why and how. Beaches come and go. Rivers get diverted. Pipelines and politics have their way. (Neumark 2010)

Illustration 17: Un/shore... video still (distant light low)

Illustration 18: Un/shore... video still (distant light high)

This use of moving imagery that is almost still (blink and you will miss the action) is a repeating theme in my work and was the subject of an article I had published in the Journal of Visual Art Practice entitled 'After the artefact: Post-digital photography in our post-media era' (Shapley 2011). It is integrally linked to minimalism (being reliant on repetition and stasis) and other compatible movements and works (such as Fluxus films and Warhol's 'anti-film'). Linking back to my chapter on form (and the thwarting of Aristotelian structures), in my work “Sparseness, through a sort of stretching of two-dimensional and three-dimensional material, thwarts the narrative that one can often read into photos and films, and disorients the viewer with regard to expected signifiers and visual resolution” (Shapley 2011). In this work I strive not to tell a conventional story with a beginning-middle-end, for I am not interested in such a story (which, to be honest, would look very conventional. It would begin with an intact, well-loved beach, followed by a two year stretch of upheaval and suspense, eventually to be resolved when the restored beach is re-opened). What interests me is the moment of horror. The ends never justify the means for people must live through the means. My work relives the experience, again and again, without the resolution. It places the audience in the midst of chaos, with little in the way of a map or a key. Most important to my thesis, however, is the soundtrack. In contrast to the myriad of imagery, the sound comprised of just two phasing tracks of varying lengths. The source material for them (after trying many other ideas) came down to just two spinning tops that elicited a primal windswept sound – part pitched, part otherwise. Despite the precise nature of the phasing (and like the actual hands and interference patterns in

David Lynch's Hands), the speed-up and slow-down of the top gives a much more organic, random perception – a feeling of indeterminacy. Linking image and sound are a number of devices that I consider stock and trade. These include repetition, phasing, indeterminacy, a grinding down of materials to their most basic form, the induction of stasis where possible, and all not to the exclusion of a sense of play.

TRACK 22) Un/shore: a beach, denied (soundtrack) [FOR EXAMINATION]

TRACK 23) Un/shore: a beach, denied (video compilation) [FOR EXAMINATION]

TRACK 24) Un/shore: a beach, denied (Super-8 compilation) [FOR EXAMINATION]

Databending as a creative generator

Ideas and critiques of form have run through this thesis. The implications of formal arrangement have been the driver behind much of my practice. Problems of form (as revealed so far) include the:

- unwitting use of traditional forms (ternary and sonata form especially) in experimental written or 'composed' composition;
- unwitting (and somewhat uncanny) revealing of traditional forms in improvised post-digital composition (such as in my own *Question/Answer...Interruption*);
- purposeful arrangement of chaotic/algorithmic 'micro' material using traditional 'macro' forms (as suggested favourably by Curtis Roads [2004, 337] as a way to organise materials of different scales);
- implementation of 'objective' systems (such as the Schillinger method of composition) to conceal traditional forms. (see Cascone 2011)

In this collection of experiments, I've been concerned with using the unpredictable form of the post-digital as a way to organise and carve out other sound material. I have been inspired by the way layers can be mixed in imaging and video programs, such as Photoshop and AfterEffects, using varying blending modes ('hard light' for instance). I have made much use of these in my minimalist video pieces, which in turn, were inspired by minimalist music techniques (especially phasing). (See Tracks 12-14 for instance). This exchange of ideas between media, to the extent that one may even be working metaphorically in the other medium is a critical part of my practice. Indeed, working between media (for instance, invoking phasing between a car blinker and a differently-phased car alarm) is one area that remains under-explored. I intend to take this up in the future, although the following works are primarily sonic in nature and these references remain metaphoric.

In a number of works I have experimented with different types of audio mixing (amplitude modulation, frequency modulation and effects from them, principally, vocoder) that correspond somewhat to blending modes in visual programs. (I have also attempted to databend literally using blending modes in visual programs to mix audio files, but have so far had little success in creating works that are distinctive).

In the following examples I have used the vocoder in order to overlay two tracks. The first is part of a databent file, and the second is an affected version of the nursery rhyme, Twinkle, Twinkle Little Star (a work in ternary form and a Mozart-derived composition). I began by using the unaffected song, but found the lyrics and cliched tune stuck out. The form was strongly implied by knowledge of these elements.

To muddy the waters I flooded this track with reverb and reversed it, basically keeping the form (albeit, in retrograde), but obscuring common knowledge of it by removing elements that instantly give it away.

I have processed these tracks in two different ways. The first is to process the song using the databent fragment. The second is to reverse this relationship, processing the databent fragment using the song. Although interesting, I feel that these works are not entirely successful. If the former (the song processed using the databent track) were to work as expected, the original form should be almost totally lost. Traditional harmony, however, establishes such a strong relationship between notes that even when tampered with, the conventional relationships still survive to some extent. The later example (in theory) should behave in the opposite manner: with the harsher databent track pulled into a more traditional form. Again, this underestimates the power of the harmonic content (this time dissonant and combined with a very distinct timbre). These are, nevertheless, interesting works that do go part of the way to creating hybrid forms.

TRACK 25-26) Twinkle, Twinkle processed by databent track example 1-4 [FOR EXAMINATION]

TRACK 27-28) Databent track processed by Twinkle, twinkle examples 1-4 [FOR EXAMINATION]

I had become slightly frustrated with the time it was taking to render each example in this process, so in an effort to create more quickly I created a number of small experimental works using a dedicated vocoder (so the results are instant and I

can change parameters as I work until I settle on one – albeit all in glorious mono). To create them I connected a computer playing repeated databent samples and an old Casiotone keyboard that outputs rhythmic accompaniment (not quite an overarching form like *Twinkle-twinkle*, but a series of bass/rhythmic/arpegiated cliches that are reworked in this process). This is, of course, referencing the source material used in Retro-Music-Machine and Min-Mach-Mus. Although I haven't done it here, it would be possible merge these earlier works with these current experiments, exposing a performative 'way in'. This suggests a path for future experimentation. My aim in these pieces was to use traditional harmonies (from the Casiotone), but in a way that would not be so distracting (in a sense weakening harmonic relationships). I think these are more successful in this aim than TRACKS 25-28. TRACK 29 is a compilation of these casiotone/databent experiments.

TRACK 29) Live Casiotone and databent mixing experiments [FOR EXAMINATION]

I have also tried this experiment overlaying the first movement of the Mozart composition, *Eine Kleine Nacht Musik* (in sonata form and a tune familiar to all of those at a base level of music study) with databent fragments. Although in most cases the strident tune pokes through, I was impressed by the way it was thrashed about by the intervention of the databent material (the obviousness of the form is actually concealed at least partially).

TRACK 30-31) Live Eine Kleine Nacht Musik and databent mixing experiments [FOR EXAMINATION]

Finally, I created a perpetual databent mixing machine, comprised of 89 databent fragments that have been duplicated and randomised (these are fragments that I have derived from files on my hard drive over time). These two randomised feeds are then entered into the vocoder in real time. This moves away from using one familiar feed (*Twinkle, Twinkle...* for instance) and the harsher databent material, but the results are interesting, especially as an idea for a installed or performed composition machine. It may be possible to take this concept much further, introducing multiple randomised, or aleatoric feeds that feed into and play off one another. A performance could be comprised of two parts; establishing the work (connecting and testing different configurations) and then the playing-out of the process without interference.

TRACK 32-33) 89 Bagatelles (databent machine) randomised mixing of databent material [FOR EXAMINATION]

These examples are still raw, and although serving as the endpoint to the practical element of my thesis, I sense they are only the beginning of my own experimentation with such combinations. There are many other possibilities for these processes, including using more live material, feeds from networks, further manipulation of both databent and acoustic (or other) material, and the use of multiple combining processes.

Finally, in key areas throughout my thesis I have talked about *Question/Answer...Interruption* a piece that I conceived and directed to thwart traditional form (in vain). I have included two versions below. The first is the entire

fifty minute performance as it was meant to be heard, the second is a version that I have squashed down to three minutes in order to hear the structure more clearly (a process that has greatly diminished the quality). *Question/Answer...Interruption* was performed by Roger Mills, Peter Newman, Shannon O'Neill, Chris Caines and Jessica Tyrrell.

TRACK 34) Question/Answer...Interruption (full version audio) [FOR EXAMINATION]

TRACK 35) Question/Answer...Interruption (3 minute reduced version audio) [FOR EXAMINATION]

What of the Future?

In conclusion, despite feeling like this entire process has led somewhere satisfying, I am still coming to terms with how to evaluate my employment of databending. Although traditionally, writers on databending have made much out of process, the final judgement is often reserved for an (admittedly highly contextualised) output. At its extreme the question asked is - is it tolerable? Or - how far can you push tolerance before it becomes intolerable? (for instance, applicable to the oeuvre of Lucas Darklord [see http://www.myspace.com/lucasdarklord]). At the other end of the spectrum is the question - how musical is it – how palatable can it be made? And further, how good is it as an accompaniment (to screen action for instance)?

When databending in a sense becomes more abstracted as a shaper of form (and it is not just about the *noisy noise*), how then do we evaluate it? This is the same question asked of John Cage's work and the art of Fluxus participants. Any answer seems fraught. The beginning of a process is surely dictated by a combination of

material circumstance and intent. Perhaps these can be scrutinised but from what vantage? There at the beginning (when there is no knowledge of the unfolding or the output)? After the event (when what we are really judging is the output)? In the midst when it would cause an altering of the process and thus a negation of it (if we are to be true to unhindered processes)? Evaluating my approach to databending philosophically throws up irreconcilable dilemmas.

I can, however, offer practical constraints to the choosing of databent material (before submitting it to the combining process). This will be deeply flawed advice as it does entail an aesthetic judgement of sorts, but it does not necessarily dictate overall form and is thus the best I can do. When selecting databent material, a high degree of perceivable contrast is ideal. Too little contrast (a constant drone for instance) may mean there will be nothing to alter the carrier wave in the combining process. If the contrast is so high as to be imperceptible (effectively creating white noise), the output will be the same – the carrier wave will not be altered (or altered uniformly).

I should also put to rest a charge that could be levelled against my processes (for glitch, databending and minimalism); that I am attempting to resurrect the modernist ghost of objectivity in my work – that I am outsourcing my creativity to processes beyond my reach. As well as being an impossibility (the subjective always creeps back at some point, even is it's during interpretation), this is a misrepresentation of my intent. Reliance on personal context, knowledge and emotion (both overt and subconscious) for creative purposes is something that's inevitable and welcome. Normalising these, not holding up to scrutiny, refusing to throw them

against the unknown (as Jackson Pollack might paint against canvas) is to deny these factors, as they are rendered in music, have a social grounding. Like a hand moving over a wee-gee board, intuitive compositions come from what we know, from ingrained social practices. As quoted previously (about sonata form and tonality), these elements

> are features of composition and reception that are taken for granted as aspects of autonomous musical practice, as simply “the way music goes.” ... They simply are the elements that structure his or her musical (and social) world. Yet they are perhaps the most powerful aspects of musical discourses, for they operate below the level of deliberate signification and are thus usually reproduced and transmitted without conscious intervention. (McClary 2007, 16)

My use of relentless minimalistic process and glitch/databending is an attempt to throw the cat among the pigeons. By introducing the unknown into the known (or by combining multiple knowns in unknown ways), I hope to (at least in part) place my own creativity in new light, less weighed down by the normative musical practice of the past.

This 'normative musical practice of the past' ironically pervades experimental (and post-digital) musical practice of the present. Practitioners involved in The Now Now Festival and groups like the Splinter Orchestra in Australia often reinforce the notion (elaborated upon in my chapter on form) that experimentation most critically occurs on the micro and event level (the 'now'). Improvisation is used unwittingly as a cover for a coherent, pre-existing form. As we've seen there is little resistance offered

by Cascone and Roads who (although pondering form) still preference experimentation in the micro over the macro.

This is not just a musical (or even artistic) phenomenon. Social, political, and environmental (computer-driven) atomisation can lead to a slightly different form of post-digitalism (one inferred by Perrerell and Punt 2000). I have investigated this at some length with my work 'Un/shore: a beach denied' and by implication in my 'In Memoriam' works. In these contexts, I have explored how these 'perfect' elements of the landscape (all the result of Computer Automated Design) interact strangely when placed side-by-side (often to the detriment of society). This is a type of post-digital interaction.

An outtake from my introduction to the 'Un/shore' catalogue reads:

> The landscape is riddled with then. Perfect plans gone awry. Major and minor construction projects that were perfect works of abstract art now look (and function) like some obscene piece of postmodern irony, albeit without the irony. But why post-digital? Surely delirious plans (and planers) existed prior to the popular rise of computer simulation? The difference lies in the possibilities of modelling. Analog modelling (the use of an analog simulation in an attempt to anticipate all possibilities) is a frustrating, time-consuming and often inaccurate science. Digital modelling is, by comparison, quick, apparently extremely accurate and very neat in its implementation (that is, usually requiring no ‘physical’ model it can all take place in the environment of the graphics user interface – in a cyber environment, often making use of pre-existing software). However, digital modelling is contingent on borders; on defining areas beyond which it is impossible to go. Not just outer borders (everything has limits) but situations that are

> impossible to figure in. Analog modelling is frustrating because inexplicable things can happen – things that must be confronted. Digital modelling can build in 'work-arounds' in order to ignore the inexplicable, the sublime, the baffling. If a>b then a=b – problem solved…
>
> Digital modelling may also construct a secret club amongst which information may be passed. Just as writing is a possibly secretive code of language, so Computer Automated Design is a oblique shorthand for the world in which we live (which some call reality). A highway or desalination plant can be passed from engineer to planner to government minister without it ever having to leave the similacrus world of our computer desktop. It never has to meet us, or its neighbours. It never has to confront anything that its authors hadn't thought of. So these discrete, self-righteous units appear on the landscape and begin to interact in ways never conceived of. (Shapley 2010d)

What these two types of post-digitalism have in common is that they are often the result of preferencing the micro or the event, over the totality. Computer Automated Design and digital simulations presuppose perfect conditions beyond that which is in focus, just as composers focus on the macro and event levels of composition to the detriment of the overall form of works. What of the future? How am I to utilise notions of process to further reroute post-digitalism into something more meaningful (both at a sonic and social level)? I have two future projects that explore the post-digital in different ways.

The first is an expanded live version of my studio experiments using varying sources and automated mixing processes. This is initially going to involve gathering together a variety of sound sources, primarily databent and post-digital in origin but

perhaps also including live music and broadcast/networked events. Each of these would then be channelled through multiple (perhaps dozens of) vocoders and the like so that they effect each other in profound ways. This channelling would be almost rhizomic in nature, with each source acting as both sound to be effected, and effect to add to sound. In this way, the form (and content, which become inseparable) would be utterly unpredictable, but never actually random. These performances would take be made up of two stages. The first (which could last for an extended period of time) is the connecting and routing of this equipment. The audience will be privy to the entire compositional process – warts and all. The second stage is the running of this process, which would be done without interference. This work could run for hours, or even days. This approach is my way with dealing with subjectivity/ objectivity (or perhaps palatability/ experimentation) in art. It allows for a large amount of control over the initial material, but then (once decided) ensures the process runs unhindered (even though this process may contain erratic elements that appear, themselves, to interfere).

The second piece, conceived by artists Verena Heirich and myself, we've called 'The Australia Engine'. One outcome will be a large stringed instrument ('The Distance Instrument') that will trigger mythological artefacts (derived from a cultural stereotyping of the landscape). This is, by all accounts, going to be an epic work with multiple phases. So far these include:

- 100 random journeys across Greater Sydney on foot by the artists (a la the *dérive*) which will be noted on a map;

- this map of Sydney and these psychogeographical journeys will be overlaid onto a touring map of Australia;
- the national map will be used as a guide for road trips (featuring 100 destinations) to source 'strings' and stories from across Australia. This process of finding journeys is neither arbitrary, nor contrived. It imposes a sense of coherence, without preconceiving destinations in the same way that databending or other post-digital practices may be used to inform larger structures.

So far our project looks something like this:

> For Australia, the colonial meta-mythology is one of vast, desolate spaces: the uninhabitable terrain that destroyed Burke and Wills. 'The Australia Engine' explores how this overarching vision imprints itself on our cultural artefacts (focussing primarily, but not exclusively, on music, imagery and performativity), simultaneously challenging the reductiveness of this colonial vision...
>
> 'The Australia Engine' will begin by mining cultural artefacts seen to best represent Australia. These will then be constructed into an interactive exhibition, the centerpiece of which will be a large, modular, harp-like instrument – the 'Distance Instrument'. Comprised of strings collected from extensive journeys across the country that criss-cross the frame like highways over the landscape, it can be taken apart, re-conceived and played by the audience...
>
> 'The Australia Engine' works on two fronts. Firstly, it critiques popular, simplified notions of Australian-ness by reducing cultural artifacts to their contrived 'essences'... These altered artifacts then become playable on the 'Distance Instrument'...

> Secondly, we investigate how the collective identity of nationalism is formed through sound, popular myth and culture, and geography. We will spend six months visiting rural and regional communities collecting items to be made into strings for this instrument. These strings won't always be literal, they can be artefacts from these journeys such as barbed wire or sheep's gut... The exhibition will present two contrasting Australia's: a primarily urban one - comprised of the affected artefacts, and a more nuanced one - made up of physical artefacts. (Shapley and Heirich 2012)

This project may not seem explicitly post-digital in nature, but it's methodology is not dissimilar to my treatment of such material as a generator of form and it fits quite well with the concept of a generalist post-digital (see chapter 1). Our overlaying of local journeys onto Australia will provide the structure of the unfolding work. Further, (after Pepperell and Punt) the digital has come to define the nation in ways that don't necessarily reflect rural, regional and outback realities (almost in a binary fashion: there's 'them' – the outback, and 'us' – the urban). Digital media and mapping technologies (sat navs, GPS units and Google Maps/Earth for instance) concentrate on where populations are centred. In Australia, this overwhelmingly results in an urban bias. Non-urban mappings are often shown in lower resolution, with less detail and are sometimes even blatantly wrong (for instance, Apple Maps recently made news headlines when it was reported to be showing the regional centre of Mildura in the middle of a national park [Lowe 2012]). This is not simply a matter of non-urban areas being a bit sketchier than the rest of Australia. Increasingly convergent media means that these areas are excluded from a conversation that includes human and physical

geography, culture, politics and commerce (for instance geotagging of images or restaurant review tie-ins with interactive maps).

This project illustrates how the identification of the post-digital can be used by artists beyond simply a critical “intensification of the digital” (O'Neill, 2006) to make profound social commentary. While I am continually intrigued by glitch and databending, failure and post-digitalism inherent within can be identified in the social, cultural, political and environmental and applied to aspects of all art making. We could say that in glitch, failure is harnessed; in social art making, it is exposed. Either way, post-digital failure is surely one of the most potent creative engines we have at our disposal. Artists who strive to ignore it (in the search for slick error-free work) are condemned to be confronted by it again and again. My advice to these artists is to go with the flow. Use failure as a way of interrogating your methods, materials and society, for nothing will be absolutely debugged any time soon.

Appendices

1) Literature summary

The literature surveyed for my thesis can be divided into six main categories (of course much of it breaches my neat pigeon-holing, but this summary should be understood as only a generalised account of my research). These are; post-digital sound, minimalism, glitch (including visual arts and general theories), historical music/sound references (including Cage, serialism/complexism and Futurism, but not minimalism which is a separate category), noise and form.

Post-digital sound

My starting point for this entire project was Kim Cascone's oft-cited essay, 'The Aesthetics of Failure: “Post-Digital” Tendencies in Contemporary Computer Music' originally published in the Computer Music Journal in 2000, this ground-breaking essay summed up a practice that was, by then, around a decade old with practitioners such as Yasunao Tone and Oval long since having used faulty or mutilated CDs in their works. Taking his cue from Nicholas Negroponte who stated: "The digital revolution is over" (1998), the beauty of Cascone's essay is to take glitch (the main category, if not a non-historical name for the post-digital) and turn it into a historical movement that hijacks failure as its engine – its dynamo. Its weakness is to get carried away with the sound of failure – the audible noise *itself,* as well as an obsession with the technical, where the the uncontrollable post-digital has the potential to be ploughed back into the digital (summed up in catch-phrases like: “The medium is no longer the message in glitch music: the tool has become the message” [Cascone 2004, 397]). My interest,

however, in the post-digital concerns what I see as the first of Cascone's weaknesses – the focus on a very literal interest in noise ('noisy noise' as I refer it it), a trait that he shares with many, including Caleb Kelly and Douglas Kahn (who I critique in my chapter on noise).

The post-digital is a fairly young, and somewhat marginalised, area, so it's not surprising that there's not a great deal in print about it (at least in comparison to minimalism or John Cage). Two names that do appear frequently in writings about the post-digital are Phil Thompson, who explains with clarity the historical genesis and practice of granular synthesis, glitch and databending (2004), and Mitchell Whitelaw who has been writing consistently about the practice, theory and problematics of microsound for at least a decade. I found Whitelaw's earlier writings to be helpful when thinking through conceptual implications of the post-digital (especially concerning the alleged modernist trait of media purity), but found some of his later writings to be pessimistic and almost argumentatively circular (and thus less useful to me as a practitioner) (Whitelaw 2003, 2004, 2006). During my discussion of Whitelaw's work, I also briefly cover ideas by Lev Manovich (the *anti-sublime* [2008]). Manon and Tempkin recently published a list of broad-based ideas regarding glitch that were both insightful and engaging (2011). I found them invaluable to highlight certain points.

As expected, much of the action regarding the post-digital takes place online. I made occasional use of Cascone's Microsound list, and glitch blogs, such as stAllio!'s instructional pages (2008, 2009). There are numerous others who I cite briefly specifically about the post-digital, including Bolter and Grusin (on the double logic of

remediation [1999]), Ian Andrews (on the definition of the post-digital [2002]), Freidrich Kittler (on the obfuscation of hardware by software etc. [1995]) and, Jonathan Sterne and Greg Milner (on digital sound technologies [2006, 2009 respectively].

Minimalism

The second most important body of literature to my thesis appears mainly in Chapter 4 about minimalism. My initial point of departure is Steve Reich's minimal manifesto, 'Music as a Gradual Process' as published in his 1974 collection of essays: *Writings About Music* (Reich 1974). This piece in many ways set the tone for most writings about minimalism since (as evidenced by the 389 pages Google lists as containing Reich's catch-phrase: "The distinctive thing about musical processes is that they determine all the note-to-note (sound-to-sound) details and the overall form simultaneously" [Reich 1974, 9 and Google 2012]). Arguably, the first mention of minimalism (or *minimal music*) in writing is by Michael Nyman in 1968 (restated in his book, *Experimental Music: Cage and Beyond* [1999] in 1974). A number of important texts have been cited, including Wim Merten's *American Minimal Music* (1983) and *Repeating Ourselves* by Robert Fink (2005), but the two writers who's ideas have proved most useful (perhaps because they both share a cross-media interest – they've written extensively on minimalism in the visual arts as well as music), are Edward Strickland (especially *Minimalism: Origins* [1993]) and Jonathan Bernard who has written a number of influential articles ('The Minimalist Aesthetic in the Plastic Arts and Music' [1993] and 'Minimalism, Postminimalism and the Resurgence of Tonality in

Recent American Music' [2003] amongst them). Strickland and Bernard (but especially Bernard) demonstrate a critical understanding of music minimalism's place in history, lodged between modernist complexity and post-modern post-minimalism (and other neo-tonal movements). I share their frustration with what minimalism became and found their (sometimes bold) analysis and commentary to be invaluable to my thesis. Fink agrees, at least about Bernard, writing that he "has been the only theorist to push past 'the music itself'..." (2005, 18).

Kyle Gann is a music journalist, academic, post-minimalist (or more precisely *totalist*) composer and co-convenor of the *Second International Conference on Music Minimalism* (which I presented at) held in Kansas City, Missouri, 2009. His writings for the Village Voice in New York City during the eighties, and later blog entries, added some provocative spice to the mix (he asserts, for instance, that future historians will see little difference between hard-nosed serialism and minimalism – they are all ultimately modernist [2006, 147]), although ultimately, Gann is a soft critic and admirer of the (post)minimal discourse that he is very much embedded in. Other influential texts were John Rockwell's *All American Music* (1997), a book that took a critical look at a large spectrum of of composers (from Milton Babbitt to Steve Reich and Laurie Anderson) from the latter half of the twentieth century, and Keith Potter's writings and presentations (2008). These last two writers were critical in locating and exploring the divide between minimalism and post-minimalism. Nadine Hubbs, in a conference paper put into words something that I had been thinking about for a long time: the link between minimalism and radical notions of form that are absent in most

contemporary or recent music. Her fairly minor work has provided a hinge on which to rest my own practice, and a position from which to critique the post-digital. On minimalism and the post-digital, I found very little written on this combination that was positive. The (public) correspondence between Julian Knowles (2004) and Ian Andrews (2004) was typical of the disdain expressed over certain post-digital performers who create long, empty works in the name of a new minimalism. *Aesthetic* and *boundary* minimalism (as their correspondence terms it) has gained a reputation for wearing the emperor's new clothes and Knowles and Andrews made some astute comments about these compositions.

Glitch Art (and general post-digital practices)

Besides glitch in music, there were a number of other texts about glitch in new media and the visual arts that I found useful. Foremost amongst them is Hugh Manon and Daniel Temkin's 'Notes on Glitch' (2011), little more than a numbered list of ideas that gave them the freedom to make elegant and sophisticated pronouncements without constraining links to a single argument. On at least a couple of occasions there was an uncanny synchronicity between our ideas. In 2009 I spoke at the *Crisis? Networks, Resilience, Disorder* conference at the University of Technology, Sydney and stated that:

> Through wax cylinders to shellac and then vinyl records, from crude recordings on wire to noise-reduced multitrack tape, sound yearned (like all other media) to reach an idealised state, a noise-free nirvana ... A hundred year old search for audio perfection, it appeared, had at last been realised by the digital age [but]

> Like the mythical quest for the fountain of youth, once reached we discover that it's not all it's made out to be. (Shapley 2009)

Compare that with Manon and Temkins words soon after:

> As years pass, it is easy to forget that the era of analog, especially in the mid to late twentieth century, was the era of noise reduction… Yet today, in the era of high resolution noiselessness, there exists a latent desire for the noise of old. Lo-fi music and photography are part of this perverse impulse to reintroduce noise… (2011, point 46)

I have made ample use of their insight throughout the first chapter in my thesis. The LAPS Project (Baker-Smith 2012) and the stAllio! Blogs (2008, 2009) have all contributed to a fuller picture of the glitch scene, but they also begin to point to its limitations, as a type of art that is a bit too concerned with surface noise.

Historical

There are a number of historic influences on my practice besides minimalism that are mentioned (although for this thesis they are secondary). The indeterminacy of John Cage is important to me and is represented by a number of references to *Silence: Lectures and writings* (1973) and *Empty Words: Writings '73-'78* (1979), and citations of a number of writers, including, Douglas Kahn (1999), Jacques Attali (2002), Kim Cascone (2004), Kyle Gann (who wrote his obituary for the Village Voice) (2006), John Retallack (1996) and Hannah Higgins (2002). I talk about the indeterminacy in the works of Charles Ives for which there are two main sources; Peter Burkholder (1995)

and Wiley Hitchcock (2007) who give adequate analysis of Ives' works and influences. Boulez (1990), Schoenberg (1988) and Varese (Ouellette 1973, Parkes 1974) are also briefly discussed or quoted throughout my thesis (usually in relation to minimalism or Cage and often as an indication as to the animosity between 'rival' compositional outlooks).

Noise

My chapter on noise begins with a brief analysis of a recent book by Caleb Kelly called *Cracked Media* (2009), which takes a look at the aesthetic of failure since the mid twentieth century, claiming to extend upon Douglas Kahn's *Noise, Water, Meat* (1999). I found this a good pad from which to launch an interrogation into noise and its perceived meanings, and a way to begin to suggest alternative, more marginalised ones that begin to impact form. James Tenney's *A History of Dissonance* proved to be just what it claimed, providing a wealth of historical information, with which to extend the definition of noise. Cage and Varese (see 'Historical' above for references) entered the debate as pawns in Douglas Kahn's (and subsequently my) discussion regarding noise as form and silence. Jacques Attali's classic text, *Noise: The political economy of music* is employed on a couple of occasions to add substance to my arguments. Its insight into noise as something other than a type of sound was very helpful to this chapter's development.

Form

I use numerous references to a discussion on Cascone's .microsound list (2009) concerning musical structure to begin to talk about the problem of form in post-digital

composition. Taking these specific, but idiosyncratic accounts of structure, I turn to Curtis Roads' bible on the subject, *Microsound* (2004), to make more general statements about how macro form in post-digital composition operates. I then look at an example – my own creation – in a critical way, concluding that this improvised, post-digital work is, in fact, in a traditional form. This conclusion is reached after an investigation into sonata form (and other traditional/natural structures) using sources such as *Sonata Form* by W.H. Hadow (1900), *Sonata Forms* by Charles Rosen (1988), *Minimalism and Macroform* by Nadine Hubbs (1989), writings on the golden ratio by Mike May (1996) and John Putz (1995) and Slonimsky's analysis of Varese's *Ionisation* (1967), and critiqued with the help of the writings of social musicologist, Susan McClary (2007).

Finally, I take a breif look at Cascone's supposed panacea to the problem of form in the post-digital, the Schillinger method of composition (2011), citing Phillip DiTullio and Jeremy Arden who also advocate for that particular method.

2) Details regarding my own work cited

[Practical examples of my own works fall into two categories; those that were composed before 2008, and are thus unexaminable and for reference purposes only (section i), and those that were composed between 2008 and mid-2012 during my candidature (section ii). All of these works can be found on the included DVDs. The first DVD contains high quality (where appropriate) computer files (tested on Windows Media Player and iTunes). Please use this disk if possible. The other disc will work in any household DVD player, but all files are compressed, reducing quality (it is included for back up purposes).]

i) for reference only

TRACK 1) *Clock Canon* (for 6 flutes)

Originally written in 1988 as a solo work, it was later rewritten as a canonical work for six flutes. All parts for this recording were played by Shaun Barlow in 2010.

TRACK 2) *Burger Repeats* (minimalist phasing video from the installation)

TRACK 3) *Burger Repeats* (minimalist phasing four channel sound from the installation)

Tracks 2 and 3 formed part of an installed exhibition called *The Burger Repeats (Sleazeburger)* involving four channel sound, projection and sculptural elements. It was installed at Glint Gallery (Alpha House), April 2006.

Press:

Drum Media, Listed as the 'Best piece of arts in town' by (article), page 57, April 25, 2006.

Sydney Morning Herald, *The Yarts* (back page column), April 20, 2006.

The Glebe and Inner Western Weekly, *Cheesy grin back by request* (article), page 3, April 20, 2006.

TRACK 4) *Beauty/Terror* (minimalist phasing video/sound from the installation)

Three video and four channel sound installation at New Space, Rozelle, entitled *A Thing of Beauty, An Act of Terror*, March 2006.

Press:

The Brag, *A Thing of Beauty, An Act of* Terror (article), page 30, March 13, 2006.

TRACK 5) *Being not Becoming* (four track sound)

Multi-channel sound and video installation created with Kylie McKendry and installed at the Addison Road Gallery in March/April, 2007.

Press:

MX News, *Hang on, happiness is on the way* by Chris Pavlich *(*photo and caption), page 2, March 2007.

TRACK 6-7) *Ulysses* fragments (post-digital sound) 1 and 2

Limited edition EP CD.

TRACK 16) *Blemish/Colour* (live sound recording)

An experimental endurance performance by three amateur guitarists: Brendan Penzer, Kurt Sorenson and Greg Shapley. New Space Gallery, May 2006. [note: the DVD

containing files has the entire performance of this work. The DVD formatted for DVD players only contains an extract].

Press:

Sydney Morning Herald, *High Culture* (back page column), May 15, 2006.

2006 Village Voice, *Experimental music that tests endurance* by Luke Jones (article), page 45, June 6, 2006.

ii) for examination purposes

TRACK 8) *In Memoriam* documentation video

Installed in the University of Technology foyer as part of the Memory Flows exhibition in July 2009.

TRACK 9-11) *In Memoriam* (sound sculptures), three examples

The first part to this project was a site specific exhibition along the banks of the Cooks River, Marrickville, involving 10 site specific broadcasting sound sculptures and an audio tour boat.

Press:

Sydney Morning Herald, *Where there's muck there's art* by Louise Schwartzkoff (article), June 16, 2009.

TRACK 12) *In my Front Yard* ('drone' videos)

Six screen work installed as part of *Map...Ground...Grain* at Inflight Gallery, Hobart, July/August, 2009 – collaborative show curated by Greg Shapley. (Videos are shown back-to-back).

TRACK 13-15) Small minimalist video/sound works created for the St Jerome's Laneway Festival – *Little Things*, *Train Tripped* and *Ghost Train*

Commissioned for/screened at the St Jerome's Laneway Festival, Sydney College of the Arts on February 5, 2012. Publicity at:

http://sydney.lanewayfestival.com.au/news/brand-new-art-event-at-sydney-laneway/

TRACK 17) *Retro-Music-Machine* (live audio recording)

Interactive *circuit-bent* installation of Casiotone keyboards and light sensitive panels, commissioned by the Albury City Council and installed at the Albury Art Gallery September/November 2010.

Press:

ABC Radio (Goulburn/Murray), *When game consoles were big* (radio story/review) by Allison Jess, September 21, 2010.

TRACK 18) *Min-Mach-Mus* (live audio recording)

As above, but installed in SNO Gallery Marrickville in November 2011.

TRACK 19) *David Lynch's Hands* (compiled video)

Three screen phase minimalist work installed at Don't Look Gallery, Sydney, February/March 2009.

Press:

Real Time, *Expanding the Cultural Zone* by *Gail Priest* (interview about *Don't Look Gallery* and *David Lynch's Hands*), page 36, April/May 2009.

TRACK 20) *In G* (studio audio mix)

TRACK 21) *In G* (video)

A circuit-bent sound (and light) work comprised of toy disco lights, three CD players and three speakers amps, installed at Chrissie Cotter Gallery as part of the Sound of Failure Festival, August/September 2008.

TRACK 22) *Un/shore: a beach, denied* (soundtrack)

TRACK 23) *Un/shore: a beach, denied* (video compilation)

TRACK 24) *Un/shore: a beach, denied* (Super-8 compilation)

Un/shore began with a picnic (*Picnic of the Damned)* next to Kyeemah beach which had disappeared due to the imposition of government infrastructure. It concluded with an installed exhibition at Mori Gallery, Sydney, May 2010, involving a number of video and film loops, sculptural elements and a soundtrack.

Press:

St George & Sutherland Shire Leader, *Un/shore of an end*, Marianna Papadakis, May 27, 2009.

St George & Sutherland Shire Leader, *Picnic to lament beach mess*, Marianna Papadakis, March 5, 2009.

TRACK 25-26) *Twinkle, Twinkle* processed by databent track

TRACK 27-28) Databent track processed by *Twinkle, Twinkle*

TRACK 29) Live Casiotone and databent mixing experiments

TRACK 30-31) Live *Eine Kleine Nacht Musik* and databent mixing experiments

TRACK 32-33) *89 Bagatelles* (databent machine) randomised mixing of databent material

TRACK 25-33 are all studio experiments that were recorded in the latter half of 2011 and 2012. They should be listened to as works of experimentation.

TRACK 34) *Question/Answer...Interruption* (full version audio)

TRACK 35) *Question/Answer...Interruption* (3 minute reduced version audio)

TRACK 34-35 was a post-digital experiment in form performed by Shannon O'Neill, Jessica Tyrrell, Chris Caines, Peter Newman and Roger Mills on August 27 2008, at the University of Technology, Sydney Performance Space.

3) Un/shore: a beach, denied

i) catalogue essay by Norie Neumark

Un/shore: tracing unsure terrains

By Norie Neumark (for the exhibition *Un/shore: a beach, denied* by Greg Shapley)

We enter a room full of fencing, inviting and forbidding our movements around the installation space. A room full, too, of media, of projections, disturbing us with their incongruities, their disparate rhythms and temporalities. In the foreground of one video, a fence again, appearing at first glance as a pipeline… is it part of the massive structures of desalination around what was once Kyeemagh Beach? Beyond the fence something is blurred – something that feels powerful but out of our perceptual – and political – grasp. And then in the background, a light blinks on and off, but illuminates nothing. This is a moving image, yet it has an eerie stillness, haunted. What is happening in this place? What has happened to the shores of Kyeemagh Beach? Greg Shapley's *Un/shore*, which sounds when spoken like *unsure*, makes us wonder. In an exhibition full of images where mostly not much is happening, we have a growing sense of how much happens out of sight and sound, leaving us unsure of why and how. Beaches come and go. Rivers get diverted. Pipelines and politics have their way.

Videos of fences projected on a fence in the foreground of the space produce a sort of destabilizing *mise en abyme* … making us unsure of stable shores. Giving us *Un/shore*. The installation evokes the netting of Kyeemagh Beach baths, which have given way to the netting of construction fences. Fences are the literal and figurative

motif that hold this exhibition together – a site for projection. Fences surrounded the construction site that once was a beach – both a reminder that there is something we don't see, even through a meshed fence, something that has been taken away, covered over. For two years, an extended moment in time, something was taken away that was integral to the daily lives of locals: a beach was closed, bulldozed, to be reconstructed afterwards. If we go to this place in a year's time, when the fences have been removed in order to be forgotten, the memory of the disruption and ravaging will remain only buried within the sand. Except they will continue to haunt the uncanny shores of Shapley's *Un/shore*.

Un/shore traces a place on the edge of the familiar …most of us have travelled on General Holmes Drive on the way to the airport. But we are so entranced by the weird proximity of the planes arriving and departing into and out of their global flows, literally taxi-ing on top of our heads, we forget that the Cooks River once ran nearby, before it was diverted for the airport. How logical to locate a desalination plant in that disturbed environment, already so enmeshed with state government and Macquarie Bank machinations. Most of us don't miss a beach we never knew about when we passed by, even though it meant a lot to the people who lived nearby, as Shapley recalls.

Shapley's project is to explore these shores of memory and forgetting as part of his ongoing investigation of postdigital aesthetics… to undo the promised, if impossible certainties of digital aesthetics. He is interested in the juxtaposition of incongruous elements – in the postdigital world. Each element has its own logic but through

Shapley's work we can see the incongruity of contiguous well laid plans. Real life is messier than computer programs would promise, he suggests. While CAD programs might render plants and pipelines as easily occupying the shores of an existing beach, actuality renders picnickers displaced, swimmers dispersed, and fish sickened and dying.

To make this artwork, Shapley does not focus on any particular medium. Instead, to a certain extent, he engages in what Maria Miranda has called the *uncertain practices* of media artists who use a variety of media and working strategies to make work which is "difficult to place within the existing categories of media and contemporary art. They seem to exist between or outside current categories of art." [i] "[T]hese 'uncertain' practices often employ low-tech strategies with little use for spectacle or high-end computing power, rather, through strategies of playful intervention and humorous situations they test the cultural logic of everyday life to peel back hidden layers of significance."[ii] Like other uncertain practices, Shapley's work often harks back to Fluxus, with their blurring of art and life, blurring of sound, blurring of image, blurring of performing and documenting. For instance, for Shapley the flashing light in one his videos bears flashback memories to John Cale's Fluxus police car – like Shapley's, it was an image that hardly moved, that came out of nowhere and went nowhere and whose meaning hovered between the humorous and the unnerving.[iii]

Another video, *Picnic of the Damned*, documents an unsure event on these un/shores of Kyeemagh Beach. Why are these people dancing – is this dancing? – in this

desolation? A surreal feeling of ghostly slow motion in front of a fenced off construction site. Dislocated memories of picnics past, on beaches past. As in previous works, such as his "In Memoriam" in *Memory Flows*,[iv] Shapley plays *performatively* with documentation and events – documenting that *does* rather than *describes*. For him the making of the works involves performative events, some of which he documents as events, some of which become the work. Shapley is interested in the materiality of the process of making work, more than any single destination – and the focus in the material moves in and out of focus on process and material. That performativity disturbs documentation is especially important for this exhibition where memory is at stake. Philip Auslander has argued for such a reading of the relation between performance and documenting, asking us not to think of the event as preceding and authorizing its documentation: "I am suggesting that…the act of documenting an event as a performance is what constitutes it as such."[v] We could see Shapley's documenting of the picnic of the damned as haunted or shadowed by the 'performance' itself and the elusive performance as haunted by the ghostly traces of documentation which would 'follow' it.

Un/Shore finds Greg Shapley turning more to the visual than sound, unlike his previous work. Or perhaps he is using a different sonic palette. When so many of the memories and forgetting are silent, silence is an important part of the sound in this exhibition. Stillness and silence, eerie haunted images – are apt for a meditation on an event which, once it's over, once the beach is 'back', who will know or care? But this forgetting is important, Shapley's work reminds us.

While political decisions and social consequences haunt the un/shores of Kyeemagh Beach, *Un/Shore* works aesthetically by enacting and making evident, rather than representing or expressing. Its affect and effect are thus understandable in the politically aesthetic mode that Jacques Rancière analyses, where artworks make the inaudible audible (and the invisible visible), rather than serving a social or political agenda – though of course the results throw light on the place of economics and politics in digital culture.[vi]

If we were to look for a social reading of Shapley's work, I would turn to Bruno Latour's Actor-Network-Theory (ANT), where "[s]ocial is *nowhere* in particular as thing among other things but may circulate *everywhere* as a movement conning non-social things"[vii] – and its 'actors' might be fences and sand dunes, as much as politicians or bankers. To trace the transient and performative networks and flows between these actors, Latour calls for new sorts of texts, thickened texts. Media art works like Shapley's, I would suggest, answer that call. Shapley's interest in the disjuncture of elements in a postdigital landscape provoke artistically what Latour is interested in sociologically – the way "the social is…detected through the surprising movements from one association to the next."[viii]

Shapley's *Un/shore* works with two years in the life of Kyeemagh Beach, as a moment not to be lost, but to continue to haunt us, even if uncertainly, unsurely. While Shapley is deeply engaged with the social and political, his work maintains the unsureness and complexities that art opens up. Through the open meshwork of his fences, we are left room to wonder about our own relations to un/shores.

i Maria Miranda, *Uncertain Practices, Unsitely Aesthetics*, PhD Dissertation, Macquarie University, 2010. p. 2

ii Miranda op cit, p. 5

iii John Cale, "Police Car: Flux Film 37" *Ubuweb,* http://www.ubu.com/film/fluxfilm.html, accessed April 22, 2010.

iv *Memory Flows: Rivers, Creeks and the Great Artesian Basin*, Exhibition at Newington Armory, May 14-June 20, 2010.

v Philip Auslander, "The Performativity of Performance Documentation" *PAJ: A Journal of Performance and Art*, (Volume 28, Number 3, September 2006) p. 5.

vi Jacques Rancière, *The Politics of Aesthetics,* Transl. Gabriel Rockhill, (London and New York: Continuum, 2004) see pp. 12–34, 49.

vii Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford: Oxford University Press, 2005) p. 107.

viii Latour op cit, p. 247.

ii) catalogue introduction

[Originally written as an introduction to my exhibition, *Un/shore: a beach, denied* this writing heavily invokes a type of post-digitalism referred to by Robert Pepperell and Michael Punt in their book, 'The Postdigital Membrane: Imagination, Technology and Desire' (2000). It is somewhat distopian, and (despite overlap) differs from Cascone's computer-centric notion of the post-digital.]

Cooks Filthy Mouth

Catalogue introduction for *Un/shore: a beach, denied* (Mori Gallery, Sydney, May 2010)

It had been a while since I visited Kyeemagh. Lodged between the workers' holiday resort of Brighton Le Sands and perhaps the most filthy river in Sydney, the Cooks, this suburb is little more than a series of conduits – carrying waste and desalinated water, heavy vehicular traffic, bikes and aircraft. If you have never heard of Kyeemagh, or thought it was a place on the south coast with something called a 'blow hole' there is a very good reason for this – no one ever does travel *to* Kyeemagh, we travel *through*, and then *away*, from it (generally, as fast as possible). For some reason that now escapes me, one day I decided to break with convention and stop, instead of continuing through. My visit to Kyeemagh's beach was not to be, however. It had vanished. Fenced off and dug up, it had succumbed to the state government's desalination juggernaut (whose pipe runs from the plant itself at Kurnell, under Botany Bay to Kyeemagh).

Kyeemagh beach has never been the cleanest of beaches. Near the mouth of the Cooks River in Botany Bay, you would never go into the water within three days of heavy rain due to the sewerage overflowing into the river at two-dozen different locations. But for the working class families that line busy General Holmes Drive, for decades the netted baths at this flawed beach have provided necessary relief in the sweltering heat of summer.

I stood there for ages just taking in the scene. What struck me were the surreal juxtapositions – the best laid plans of mice and men thrown together like some gaudy patchwork quilt. The Cooks River (diverted to build Kingsford Smith Airport), the airport itself, the incessant General Holmes Drive and the M5 motorway, the reclaimed land comprising Port Botany and now the desalination construction site all collide in or near this most ravaged of suburbs.

If there's a place representative of our times this must surely be it. Here the Christian (perhaps more broadly, the religious) ethos of striving for the afterlife is expressed in the incessant development, the never-ending construction, the permanent revolution, that reaches for some suburban perfection that will never be. This type of development rarely makes a place known. There's no time for happy snaps, or to pull over to admire the scenery. It is a place on the way to other, better, places (again we can draw comparisons with our religious ethos).

Rather than to try and dissect or explain my own art work relative to this scene, I'm going to try to describe the four pillars upon which this exhibition is based (Norie

Neumark has written an excellent piece about the show which you can read elsewhere in this catalogue).

Firstly, there is the destruction of the environment (both on the Kyeemagh beach and across the bay at Kurnell, where the pipeline for desalinated water begins). It is not hard to guess what is at stake here – sensitive sand dunes have been bulldozed, sedimentary layers of toxic waste laid down over the last two hundred years in the bay have most probably been disturbed and the thermal pollution created by the plant itself will have a lasting impact on marine ecosystems.

Secondly, there is cultural vandalism. Christmas day, Boxing day and New Year's used to see this part of the bay swell with tanning working class bodies (not the six-packed show ponies of Bondi or Manly). These were damaged and shapely figures that had been knocked about by the brutal materiality of life. They waddled awkwardly on the sand like paranoid penguins in ill-fitting, gregariously coloured, modest swimming costumes until hitting the water with visible relief. Over the last few years there has been intensified interest in this area – not as a destination, but as a thoroughfare. What once was a small suburb built on a busy road has become an impressive series of LA style motorways edged by an increasingly odd bunch of defiant abodes that now resemble the family home in the movie the 'Castle' or Woody Allen's childhood home in 'Annie Hall', under the roller coaster at Coney Island.

Thirdly, there is something that, in a way, incorporates the entire environment, something that I've called digital dismorphia, which leads to a (dysfunctional) post-digital landscape. To put this picture together it is almost necessary to take a walk

around this area, confront the fence on the beach and observe the increasingly estranged abodes. This series of disjunctures, between the past and the present, the (so-called) natural environment and technological construction, and utilitarian progress and the compulsion to impress one's individuality on the landscape in the form of 'home', has become stark in the last decade.

There are probably a number of reasons why this is so, but there is only one that I want to identify. The one that has caused a post-digital landscape (in this case, a landscape ridden with *digital dismorphia* – the discrepancy between digital utopia of the graphics user interface and what is produced, and the inability to truly be aware of the processes at hand). So then, how has this post-digital landscape become manifest? This phenomenon is a result of an atomisation of the landscape. The result of a series of 'perfect' projects ('the best laid plans of mice and men') colliding in the most awkward way. The digital computer has removed chaotic, living environments from their moorings, petrifying them in a binary Petrie dish in which total sterilisation ensures that nothing grows, nothing clashes, nothing's a problem and there's nothing to see here… These perfect machines from dead cultures, transplanted into the 'real' world soon become infested with it, their perfect proportions, now ugly and angular in comparison.

And lastly there is the disconnect of government and bureaucracy, and the 'real' world. So what drives a government to destroy a beach? When English tourists trash an Eastern suburbs beach in a flood of alcohol, festive cheer and sunburn it's classed an international disgrace – tabloid columnists call for blood and laws are

passed. When those ‘Westie Arabs’ move in on our Southern Beaches it’s cause for riot – shock jocks are once against enraged and the heavy hand of the law descends. When a stubborn state government has a plan for water, a plan which was formulated on a computer, designed, tested and propagated within the confines of an environmentless environment, it must go ahead (‘computer says yes…’). The destruction of a working class beach is a small price to pay to realise the perfect plan.

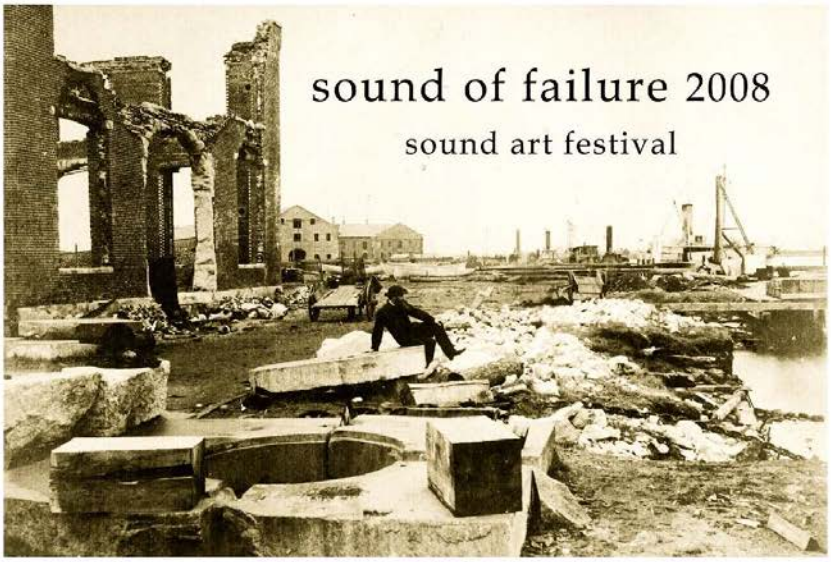
[Out-take from the Catalogue]

The landscape is riddled with then. Perfect plans gone awry. Major and minor construction projects that were perfect works of abstract art now look (and function) like some obscene piece of postmodern irony, albeit without the irony. But why post-digital? Surely delirious plans (and planers) existed prior to the popular rise of computer simulation? The difference lies in the possibilities of modelling. Analog modelling (the use of an analog simulation in an attempt to anticipate all possibilities) is a frustrating, time-consuming and often inaccurate science. Digital modelling is, by comparison, quick, apparently extremely accurate and very neat in its implementation (that is, usually requiring no ‘physical’ model it can all take place in the environment of the graphics user interface – in a cyber environment, often making use of pre-existing software). However, digital modelling is contingent on borders; on defining areas beyond which it is impossible to go. Not just outer borders (everything has limits) but situations that are impossible to figure in. Analog modelling is frustrating because inexplicable things can happen – things that must be confronted. Digital modelling can

build in ‘work-arounds’ in order to ignore the inexplicable, the sublime, the baffling. If a>b then a=b – problem solved…

Digital modelling may also construct a secret club amongst which *information* may be passed. Just as writing is a possibly secretive code of language, so Computer Automated Design is a oblique shorthand for the world in which we live (which some call reality). A highway or desalination plant can be passed from engineer to planner to government minister without it ever having to leave the similacrus world of our computer desktop. It never has to meet us, or its neighbours. It never has to confront anything that its authors hadn’t thought of. So these discrete, self-righteous units appear on the landscape and begin to interact in ways never conceived of.

4) Sound of Failure Program



Following on from the (ironic) success of last year's festival, Sound of Failure 2008 brings together over forty local and international sound artists in numerous venues to surprise, challenge and entertain. Many of these artists have attempted to transcend the small rectangular screens and the latest Microsoft releases, opting instead to look at unintended consequences of technology – when it 'fails', misbehaves or just gives up the ghost.

Sound of Failure Festival calendar at a glance...

August 19, 6pm, Aug 20-Sept 7 Sound of Failure Festival, main exhibition opening: Chrissie Cotter Gallery	**August 30, 7pm** Sound of Failure Festival, main performance night Factory Theatre
August 20, 6pm, Aug 21-30 Rococo Vortex by Wade Marynowsky Don't Look Gallery	**September 3, 6pm. Sept 4-13** Sound of Re-use Reverse Garbage
August 27, 6pm Question/Answer... Interruption UTS performance space	**September 4, 8pm** Closing Party Hollywood Hotel
August 30, 3pm SoundOff Picnic Enmore Park, Marrickville	☺

Sound of Failure Festival, main exhibition opening
Chrissie Cotter Gallery, Pidcock St, Camperdown
Opening August 19, 6pm (FREE), August 20-September 7 (Wed-Sun, 11-4). Curated by Jennifer Teo

The Sound of Failure Festival kicks off with an enthralling sound art exhibition at Chrissie Cotter Gallery, Camperdown, hosting a diverse range of audio and audio-visual installations. For instance, US based sound experimenter, Subscape Annex,

has used the potentially explosive technique of combining electricity and water in a work that involves sound from dripping water across the contact of an instrument cable jack. The result, *The Water Method*, is a sublime ambient work that is hypnotically compelling. Norie Neumark and Maria Miranda dissect and interrogate the iconic Aussie cop drama, 'Homicide' (said to be the most important and popular television drama series ever produced in the country) in *Homicide Rumours – a sound slash fiction*.

The opening will feature a performance by renowned theatre artists Leisa Shelton and Jethro Woodward. Other artists include: Jordana Maisie, Vienna Parreno, Monoperro (Spain), Peter Newman, David O'Donoghue, Krzysztof Osinski, Ashley Scott, Greg Shapley, Cara-Ann Simpson, and the 2203 Collective.

Rococo Vortex by Wade Marynowsky

(dresses by Susan Marynowsky)
Don't Look Gallery, 419 New Canterbury Rd, Dulwich Hill
Opening August 20, 6pm (FREE), August 21-30 (Thur-Sat, 11-5)

The following evening is the opening of Wade Marynowsky's stunning solo exhibition at Don't Look Gallery, *Rococo Vortex*. This exhibition explores 18th century European notions of the automaton, elegance, decadence and how these have filtered down into contemporary Australian kitsch culture.

In the gallery shop front are spinning Rococo styled and robotic crinolines. The robotic stands spin as if they are in continual dance. The spin position coordinates are sent wirelessly to a computer, which translates this movement into sound. The work questions Australia's, and other countries', continuous obsession with identity, antiquity, and bourgeois society.

Question/Answer... Interruption

UTS performance space
Bon Marche building, Corner of Broadway and Harris St
August 27, 6pm – FREE

This unique performance will explore and disrupt the notion that music should be as symmetrical as a 'perfect' human face. Participants will be invited to perform in this collaborative work aimed at investigating notions of rhythm, structure, form, space and time. These performances will make use of the snazzy new facilities (which include a 9.1 surround sound system) in this UTS space. Performers (tbc) include: Peter Newman, Shannon O'Neill and Jessica Tyrrell.

Sound of Failure Festival, main performance night

Factory Theatre, 105 Victoria Rd, Enmore
August 30, 7pm, $20 (+booking fee)
Book online at http://factorytheatre.com.au

Internationally renowned torturers of electronic toys, Toydeath, will unleash their circuit bent mayhem on the Factory Theatre along with 15 other acts that include everything from the burlesque cabaret of Dianne's Dollhouse, and the endurance karaoke of Samuel Bruce and the uninhibited, primordial yowls of Lectre Macabre & Triangle. Other performers include: Ian Andrews, catfingers, Greg Chatonsky, Cleaning Lady, Jacob Craig, Delirium Tremens, Est Et Non, Tom Hall (Brisbane),

Hiske with Psychic Date & VJ Jax, Sari TM Kavinen, Marquis de Sound, Glenn Remington, and Jessica Tyrrell & Chris Caines.

Book now for August 30 at http://factorytheatre.com.au

SoundOff Picnic
Enmore Park, Marrickville
August 30, 3pm

Before the performance evening at the Factory there will be an audio picnic in Enmore Park. Bring your food and noisemakers for this impromptu, unofficial, romp in the park!

Sound of Re-use
Reverse Garbage, 8/142 Addison Rd, Marrickville
Opening September 3, 6pm. September 4-13 (retail hours)
Curated by Mary Jean Newton

Reverse Garbage has, for the last 30 years, shown what you can creatively do with discards and offcuts that would otherwise be condemned to landfill. Applying the same principles to sound making, these artists have constructed audio installations from junk or have used the principles of re-use (which will be interspersed amongst the other 'junk'). Artists include: Ian Andrews, Caroline Huf, Maria Miranda & Norie Neumark, Subscape Annex, Nick Wishart and others.

Sound of Failure Festival Closing Party
Hollywood Hotel, 2 Foster St Surry Hills
September 4, 8pm. $10 at SOF events

It's no exaggeration to say that this event will feature some of the world's greatest alternative DJs, including DJ Olive (from New York, and founder of the Illbient movement), Panoptique Electrical (from Adelaide), Shannon O'Neill and file_error. Tickets are on sale at Sound of Failure events, but they will sell out fast (the Hollywood is not a huge venue).

The Sound of Failure festival is supported by Marrickville Council, the Centre for Media Arts Innovation (University of Technology, Sydney), Reverse Garbage, the Factory Theatre and Don't Look Gallery.
Festival Director: Greg Shapley.

Bibliography

Andrews, I. (2002). Post-digital aesthetics and the return to modernism Retrieved June 16, 2008, from http://www.ian-andrews.org/texts/postdig.html

Andrews, I. (2004). Minimalism Retrieved July 5, 2009, from http://www.propheticdesire.us/microsound/html/2004/2004-03/msg00492.html

Arcangel, C. (2004). Cory Arcangel's Internet Portfolio Website and Portal Retrieved July 10, 2010, from http://www.coryarcangel.com/things-i-made/maiden/

Arden, J. (2011). Old Tricks New Media: Schillinger Techniques are Relevant to All Kinds of Contemporary Music Irrespective of Style. *Contemporary Music Review, 30*(2), 127-141.

Ariza, C. (2010). Music and Technology: Algorithmic and Generative MusicSystems (lecture notes) Retrieved November 5, 2011, from http://ocw.mit.edu/courses/music-and-theater-arts/21m-380-music-and-technology-algorithmic-and-generative-music-spring-2010/lecture-notes/MIT21M_380S10_lec15.pdf

Attali, J. (2002). *Noise: The political economy of music*. Minneapolis and London: University of Minnesota Press.

Baker-Smith, B. (2012). LAPS Project Retrieved December 2, 2011, from http://bitsynthesis.com/2010/07/laps-by-art-of-failure/

Berglund, B., Lindvall, T., & Schwela, D. H. (1999). Guidlines for Community Noise. *World Health Organisation* Retrieved July 10, 2010, from http://www.moa.gov.cy/moa/environment/environment.nsf/77543A500D533CA4C2257991003D8793/$file/Guidelines%20for%20Community%20Noise%20-%20WHO.pdf

Bernard, J. W. (1993). The Minimalist Aesthetic in the Plastic Arts and in Music. *Perspectives of New Music, 31*(1), 86-132.

Bernard, J. W. (2003). Minimalism, Postminimalism and the Resurgence of Tonality in Recent American Music. *American Music, 21*(1 (Spring 2003)), 112-133.

Bi, H., & Curran, T. (2008). This is Not a Film Premiere (listing/invitation) Retrieved January 3, 2009, from http://crawl.net.au/index.php?view=details&id=587%3Athis-is-not-a-film-premiere&option=com_eventlist&Itemid=128

Bijsterveld, K. (2008). *Mechanical Sound: Technology, Culture, and Public Problems of Noise in the Twentieth Century*. Cambridge, Massachusetts and London: MIT Press.

Blood, A. J., Zatorre, R. J., Bermudez, P., & Evans, A. C. (1999). Emotional responses to pleasant and unpleasant music correlate with activity in paralimbic brain regions. *Nature America Inc.* Retrieved June 13, 2011, from http://neurosci.nature.com

Boulez, P., Menger, P.-M., & Bernard, J. W. (1990). From the Domaine Musical to IRCAM. *Perspectives of New Music, 28*(1 (Winter 1990)), 6-19.

Burkholder, J. P. (1995). *All Made of Tunes: Charles Ives and the Uses of Musical Borrowing*. New Haven and London: Yale University Press.

Burnett, S. (2012). Subscape Annex Retrieved January 16, 2012, from http://www.subscapeannex.com/

Cage, J. (1973). *Silence: Lectures and writings*. London: Calder and Boyars.

Cage, J. (1979). *Empty Words: Writings '73-'78*. Middletown: Wesleyan University Press.

Cascone, K. (2004). The Aesthetics of Failure: "Post-Digital" Tendencies in Contemporary Computer Music *Audio Culture: Readings in Modern Music* (Vol. 24, pp. 392-398).

Cascone, K. (2009). Musical structure Retrieved December 23, 2009, from http://old.nabble.com/musical-structure-td25448517.html

Cascone, K. (2010). Composing Electro-Acoustic Music Using the Schillinger System Retrieved November 23, 2011, from http://www.storung.com/?section=festival5&lang=en&bio=cnf_cascone

Cascone, K. (2011). The Use of Density Groups in Electroacoustic Music. *Contemporary Music Review, 30*(2), 143-153.

Cenciarelli, C. (2006). The Case Against Nyman Revisited: 'Affirmative' and 'Critical' Evidence in Michael Nyman's Appropriation of Mozart. *Radical Musicology, 1.* Retrieved January 14, 2012, from http://www.radical-musicology.org.uk/2006/Cenciarelli.htm

DiTullio, P. (2011). Joseph Schillinger: Resurrecting a Musical Visionary. *Contemporary Music Review, 30*(2), 187-190.

Erbe, T. (1991). SoundHack: A Brief Overview. *Computer Music Journal, 21*(1), 35-38.

Escudero, G. (2006). Loop Magazine Retrieved February 6, 2012, from http://loop.cl/

Feisst, S. (2002). Meditative Music - Young and Oliveros. *Audio Architecture.* Retrieved December 23, 2011, from http://www.audioarchitecture.co.uk/writings_feisst.htm

Fink, R. (2005). *Repeating Ourselves: American Minimal Music As Cultural Practice*. Berkeley: University of California Press.

Floyd, L. (1980). *Indian Music*. London: Oxford University Press.

Gann, K. (2006). *Music Downtown: Writings from the Village Voice*. Berkeley: University of California Press.

Google (2012). "The distinctive thing about musical processes is that they determine all the note-to-note (sound-to-sound) details and the overall form simultaneously" - Google Search Retrieved May 1, 2012, from https://www.google.com.au/search?hl=en&safe=off&noj=1&sa=X&ei=_MnVT77bHrGZiQf5t7SRAw&ved=0CAcQBSgA&q=%22The+distinctive+thing+about+musical+processes+is+that+they+determine+all+the+note-to-note+%28sound-to-sound%29+details+and+the+overall+form+simultaneously%22&spell=1&biw=1366&bih=597

Hadow, W. H. (1900). *Sonata Form*. London: Novello, Ewer & Co.

Helmholtz, H. (1954). *On the Sensations of Tone*. New York: Dover.

Henriques, J. (2003). Sonic Dominance and Reggae Sound System Sessions. In M. Bull & L. Back (Eds.), *Auditory Culture Reader* (pp. 451 - 480). Oxford: Berg.

Higgins, H. (2002). *Fluxus Experience*. Berkley & Los Angeles: University of California Press.

Hitchcock, H. W. (2007). *Ives*. New York and Toronto: Oxford University Press.

Hubbs, N. (1989). *Minimialism and Macroform.* Paper presented at the Contemporary Music Forum: PROCEEDINGS OF THE BOWLING GREEN STATE UNIVERSITY NEW MUSIC & ART FESTIVAL 10 PAPER SESSIONS, Bowling Green State University Bowling Green, Ohio.

Hurwitz, D. (2005). *Exploring Haydn: A Listener's Guide to Music's Boldest Innovator*. New York: Amadeus Press.

Johnston, T. F. (1995). The Social Context of Irish Folk Instruments. *International Review of the Aesthetics and Sociology of Music, 26*(1), 35-59.

Kahn, D. (1999). *Noise, Water, Meat*. Cambridge: MIT Press.

Kelly, C. (2009). *Cracked Media: The sound of malfunction*. Cambridge: MIT Press.

Kittler, F. (1995). There is No Software. *CTheory* Retrieved October 16, 2007, from http://ww.ctheory.net/articles.aspx?id=74

Knowles, J. (2004). Re: Microsound Retrieved July 5, 2009, from http://www.propheticdesire.us/microsound/html/2004/2004-03/msg00465.html

Knowles, J. (2006). Alva Noto. *Filter*(62), 17-19.

Kristeva, J. (1982). *The Powers of Horror: An Essay on Abjection* (L. s. Roudiez, Trans.). New York: Columbia University Press.

Lowe, A. (2012). Tourists stranded in searing heat as Apple Maps fails. *The Age*. from http://www.theage.com.au/technology/technology-news/tourists-stranded-in-searing-heat-as-apple-maps-fails-20121210-2b4n8.html#ixzz2Ghh0vnM1.

Manon, H. S., & Temkin, D. (2011). Notes on Glitch. *World Picture Journal,* (6 "Wrong"). Retrieved from http://www.worldpicturejournal.com/WP_6/Manon.html

Manovich, L. (2002). *The Anti-Sublime Ideal in Data Art*. Berlin: Mit Press.

Manovich, L. (2008). Post-media Aesthetics, What is Info-Aesthetics? Available from http://manovich.net/DOCS/Post_media_aesthetics1.doc

Marclay, C., & Tone, Y. (2004). Record, CD, Analog, Digital. In C. Cox & D. Warner (Eds.), *Audio Culture: Readings in modern music* (pp. 341-347). New York: Continuum.

May, M. (1996). Did Mozart Use the Golden Section? *American Scientist, 84*(2), 118-119.

McAlpine, J. (Unknown). Tom Johnson: Counting Keys (catalogue notes) Retrieved February 14, 2012, from http://www.wandelweiser.de/ewre/ewre0901.html

McClary, S. (2007). *Reading music: selected essays*. Farnham: Ashgate.

McLuhan, M., & Fiore, Q. (1964). *The Medium Is the Massage: An Inventory of Effects*. Berkeley: Gingko Press.

Merce Cunningham Dance Company (2009). Merce Cunningham Dance Company Biography Retrieved December 15, 2011, from http://www.merce.org/about/biography.php

Mertens, W., Nyman, M., & Hautekiet, J. (1988). *American Minimal Music*. Chicago: Kahn & Averill.

Milner, G. (2009). *Perfecting Sound Forever: The story of recorded music*. London: Granta.

Monro, G. (2001). Computer Music in New South Wales. *Organised Sound, 6*(1), 55-61.

Murphine, A., & Potts, J. (2003). *Culture & Technology*. Hampshire: Palgrave Macmillian.

Negroponte, N. (1998). Beyond Digital. *Wired 6*(12). Retrieved from http://www.wired.com/wired/archive/6.12/negroponte.html

Neumark, N. (2010). Un/shore: Tracing unshore terrains (catalogue essay). In G. Shapley (Ed.), *Un/shore: A beach denied* (pp. 3-5). Sydney: Mori Gallery.

Noris, G. (2003, July 26). Minimalism is Death. *The Telegraph*. from http://www.telegraph.co.uk/culture/music/classicalmusic/3599302/Minimalism-is-death.html.

Nyman, M. (1999). *Experimental Music: Cage and Beyond*. Cambridge: Cambridge University Press.

Obendorf, H. (2009). *Minimalism: Designing Simplicity*. New York: Springer.

O'Neill, S. (2006). Noise and Difference - Ian Andrews' In a Few Seconds Across the Ocean Retrieved May 20, 2008, from http://shanonn-oneil.net/tag/theory/page/2/

Oteri, F. J. (2010). Phill Niblock: Connecting the Dots. *New Music Box* Retrieved January 12, 2012, from http://www.newmusicbox.org/articles/phill-niblock-connecting-the-dots/

Ouellette, F. (1973). *Edgard Varese*. London: Calder and Boyars.

Papadakis, M. (2010). Picnic to lament beach mess. *St George & Sutherland Shire Leader*. Retrieved from http://www.theleader.com.au/news/local/news/general/picnic-to-lament-beach-mess/1767468.aspx

Parkes, A. F. (1974). *Freedom, Form and Process in Varese: A study of Varese's musical ideas - their sources, their development, and their use in his works.* Cornell University, Cornell

Pepperell, R., & Punt, M. (2000). *The Postdigital Membrane: Imagination, Technology and Desire*. Bristol: Intellect.

Potter, K. (2008). *1976 and All That: Minimalism, Analysis and Listening Strategies*. Paper presented at the First International Conference on Music and Minimalism. from http://musicminimalism.org/assets/papers/KeithPotter.pdf

Putz, J. F. (1995). The Golden Section and the Piano Sonatas of Mozart. *Mathematics Magazine, 68*(4), 275-282.

Reich, S. (1974). *Writings about music*. Nova Scotia: Press of Nova Scotia College of Art and Design.

Retallack, J. (1996). Introduction: Conversations in Retrospect. In J. Retallack (Ed.), *MusiCage: Cage muses on words, art, music* (pp. xiii-xlvii). Middletown: Wesleyan University Press.

Richter, H. (1997). *Dada: art and anti-art* (D. Britt, Trans.). London: Thames and Hudson.

Roads, C. (2004). *Microsound*. Cambridge: MIT Press.

Rockwell, J. (1997). *All American music: composition in the late twentieth century*. Boston: Da Capo Press.

Rosen, C. (1988). *Sonata Forms*. New York/London: W.W. Norton & Company Inc.

Rossolo, L. (1970). The Art of Noises. In U. Apollonio (Ed.), *Futurist Manifestos*. Cologne: Verlag.

Ryan, D. (2009). Experimental Music and the Visual Arts. In J. Saunders (Ed.), *The Ashgate Research Companion to Experimental Music,* Surrey: Ashgate Academic Press

Schoenberg, A., Strang, G., & Stein, L. (1988). *Fundamentals of Musical Composition*. London: Faber and Faber.

Schwartz, K. R. (2008). *Minimalists*. London: Phaidon Press.

Shapley, G. (2005). Scratching the Surface: The Aestheticisation of Everything.

Shapley, G. (2009). *The Sound of Technology Failing*. Paper presented at the Crisis? Networks, Resilience, Disorder Conference.

Shapley, G. (2010a). *In Memoriam; Downstream (artist talk)*. Paper presented at the Memory Flows.

Shapley, G. (2010b). Picnic of the Damned (flier). Sydney.

Shapley, G. (2010c). Un/shore: a beach denied (catalogue introduction). *Un/shore: a beach denied Catalogue*.

Shapley, G. (2010d). Un/shore: a beach denied (catalogue introduction out-take).

Shapley, G. (2011). After the artefact: Post-digital photography in our post-media era. *Journal of Visual Art Practice, 10*(1), 5-21.

Sim, S. (2007). *Manifesto for Silence: Confronting the politics and culture of noise*. Edinburgh Edinburgh University Press.

Slonimsky, N. (1967). Analysis. In E. Varese (Ed.), *Ionisation*. New York: Colfranc Music Publishing Corporation.

stAllio! (2008). Databending and glitch art primer, part 1: the wordpad effect Retrieved July 4, 2011, from http://blog.animalswithinanimals.com/2008/09/databending-and-glitch-art-primer-part.html

stAllio! (2009). Databending and glitch art primer, part 2: sonification Retrieved July 5, 2011, from http://blog.animalswithinanimals.com/2008/09/databending-and-glitch-art-primer-part.html

Sterne, J. (2006). The death and life of digital audio, Interdisciplinary Science Reviews, *30*(4), 338-348.

Strickland, E. (1991). *American Composers: Dialogues on contemporary music*. Indiana: Indiana University Press.

Strickland, E. (1993). *Minimalism: Origins*. Indianapolis: Indiana University Press.

Sutherland, R. (1992). Steve Reich. *ESTWeb (online version of EST Magazine)* Retrieved November 10, 2009, from http://media.hyperreal.org/zines/est/articles/reich.html

Tenney, J. (1988). *A History of 'Consonance and Dissonance'*. New York: Excelsior Music Publishing Company.

Thompson, P. (2004). Atoms and Errors: Towards a history and aesthetics of microsound. *Organised Sound, 9*(2), 207-218.

Turner, J. (2001). The Microsound Scene: An Interview with Kim Cascone. *C Theory* Retrieved December 12, 2009, from www.ctheory.net/articles.aspx?id=322

Vanhanen, J. (2003). Virtual Sound: Examining Glitch and Production. *Contemporary Music Review, 22*(4), 45-52.

Westrup, J. A., Harrison, F. L., & revised by Wilson, C. (1976). *The New College Encyclopedia of Music*. New York: W. W. Norton & Company, Inc. .

Whitelaw, M. (2003). Sound Particles and Microsonic Materialism. *Contemporary Music Review, 22*(4), 93-100.

Whitelaw, M. (2004). Hearing Pure Data: Aesthetics and Ideals of Data-Sound. In A. Altena (Ed.), *Unsorted: Thoughts on the Information Arts: An A to Z for Sonic Acts X*. Amsterdam: Sonic Acts/De Balie.

Whitelaw, M. (2006). Art Against Information: Case Studies in Data Practice. *Fibreculture, (11).* Retrieved November 10, 2011, from http://www.fibreculture.org/journal/issue11/issue11_whitelaw.html

Zizek, S., Butler, R., & Stephens, S. (2006). *Interrogating the Real*: Bloomsbury.