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Intersections Between Subjects and Objects in My Compositions from 2013 to 2016

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Copyright Statement

Abstract

The following commentary details aspects of my recent compositions attempting to bring about intersections between subjects and objects. I demonstrate how my compositions highlight an interplay between the poles of subjectivity vs objectivity, human vs nonhuman and nature vs culture. Various musical precedents rooted in objectivity form the basis of this endeavour, such as the inaudible cosmic vibrations proposed by the Pythagoreans' *Musica universalis*, the chance procedures of mid twentieth-century experimental music, and the Platonic forms of Tom Johnson. However, although these standpoints do attempt to broaden the scope of music beyond the human sphere, they remain most often framed by transcendent discourse without explicitly addressing the subjective implications of such work.

I propose an approach to composition that distances itself from a transcendental perspective, instead choosing to highlight the effects that objectivity elicits in human beings, while maintaining the presence of an external reality that remains inscrutable. Thus, my portfolio addresses the precise ways in which subjectivity remains present even within an objective musical discourse, whether through exploring psychological responses to chance, the existential boredom brought on by unchanging forms, subjective reactions to the objectification of the human body, and the input of the imagination in the face of withdrawn or speculative musical objects.

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List of Portfolio works

The list of works is presented here by *order of appearance* in the text beginning from Chapter 2 and on the accompanying USB drive. In this manner, references to portfolio compositions will be addressed in-text between brackets, with the identifier 'USB #(work number)'.

1. **WHAT IS THIS THING CALLED...** (USB #1)
    - Date: 2014
    - Format: still 3D illustrations and animated GIF
    - Materials included on USB drive:
        - Images
            * WhatIsThisThingCalledStringQuartet.jpg
            * WhatIsThisThingCalledOrchestra.jpg
            * WhatIsThisThingCalledTrumpet.gif

2. **TWO-PART INVENTIONS** (USB #2)
    - Date: 2014
    - Format: notated music and MIDI recordings
    - Materials included on USB drive:
        - Scores
            * Invention1.pdf
            * Invention2.pdf
            * Invention3.pdf
            * Invention4.pdf
        - Recordings
            * Invention1.aif
            * Invention2.aif
            * Invention3.aif
            * Invention4.aif

3. **METAMORPHOSEN** (USB #3)
    - Date: 2015
    - Format: installation
    - Materials included on USB drive:
        - Video Documentation
            * Metamorphosen.mp4
        - Still Images
            * Metamorphosen1.jpg
            * Metamorphosen2.jpg
            * Metamorphosen3.jpg
        - Audio Files (tracks diffused through apples)
            * Apple1.mp3
            * Apple2.mp3
            * Apple3.mp3

4. **NO CHANCE MUSIC** (USB #4)

- Date: 2014
- Format: web application
- Materials included on USB drive:
  - URL link
    - NoChanceMusic.txt
  - Source code
    - NoChanceMusic.html

5. **SOMETIMES PATTERNS V.1** (USB #5)

- Date: 2015–2016
- Format: solo tuba, notated score
- Materials included on USB drive:
  - Score
    - SometimesPatternsV1.pdf
  - Recordings
    - 3rdOrder.wav
    - 4thOrder.wav

6. **SOMETIMES PATTERNS V.2** (USB #6)

- Date: 2016
- Format: bowed string instrument, score in web application format
- Materials included on USB drive:
  - Link to online score
    - SometimesPatternsV2URL.txt
  - Source Code
    - SometimesPatternsV2source.txt

7. **MIXTAPES FOR...** (USB #7)

- Date: 2014
- Format: text scores
- Materials included on USB drive:
  - Scores
    - MixtapeForAStomach.pdf
    - MixtapeForSpace.pdf

8. **SONIFICATION OF...** (USB #8)
    - Date: 2016
    - Format: 20-track LP
    - Materials included on USB drive:
        - Audio Tracks (folder)
        - Album Art
            * SonificationOf.jpg

9. **NO SWEETER SOUND THAN MY OWN NAME** (USB #9)
    - Date: 2015
    - Format: solo vocalist and live electronics, audio score
    - Materials included on USB drive:
        - Score
            * ScoreInstructions.pdf
            * Audio Examples
                · From Recording (folder)
                · From Score (folder)
            * Audio Score
                · NoSweeterScore.aif
        - Recordings
            * NoSweeterVideo.mp4
            * NoSweeterAudio.aif

10. **FIELDS** (USB #10)
    - Date: 2015
    - Format: chamber ensemble (fl, cl, perc, pf, vn, va, vc), notated score
    - Materials included on USB drive:
        - Score
            * Fields.pdf
        - Recording
            * Fields.aif

11. **HYPERSOLID** (USB #11)
    - Date: 2014
    - Format: mono electroacoustic
    - Materials included on USB drive:
    - Recording
        - Hypersolid.aif

Prologue

My first proposal for a PhD at the University of Huddersfield, when I applied in the Spring of 2013, involved the very musical subject of harmony and its relationship with intonation. At the time I was pursuing an interest in mathematical models for harmonic systems in just intonation, very much influenced by the writings of Harry Partch and the historical precedents found within *Genesis of a Music* (Partch 1974). I was composing music using just-intonation tuning lattices to generate non-octaviating scales. Although the theoretical basis for my music was shared with composers such as James Tenney and Ben Johnston, its stylistic realisation was much closer to the work of Gérard Grisey, Kaija Saariaho and other composers associated with spectralism. This was perhaps because several of my compositions from 2013 and earlier were informed by Grisey's division of musical time into three categories: *skeleton*, *flesh* and *skin* (Grisey 1987).

This approach distinguishes between the hidden structural divisions of chronological time (skeleton), the perceptual aspects of musical time that result from transformations of sound materials (flesh), and finally the organisation of sounds in the mind of the listener and their relationship to memory (skin). I was particularly inspired by statements such as the following:

> By definition, we will say that a sound is transitory. It is not defined by an isolated moment, nor by a series of isolated moments fastidiously realised and placed in sequence. What would bring us to a better definition of sound would be the knowledge of the energy which inhabits it and of the network of correlations which governs all of its parameters. (Grisey 1987, pp.268–269)

Thus my compositional process began with the creation of hidden, skeletal structures (chronological delineations, structural units, pitch arrays), which then became animated with dramatic and audible manipulations of sound materials: trajectories of register (low to high), timbral transformations (inharmonic to harmonic), differences of densities (clusters to constellations), and gestures (sweeps and swooshes). In 2011/12 I composed a large-scale work entitled *Turning Over* for chamber orchestra, piano, microtonal electronic piano and electronics. This piece became the subject of my Master's thesis and was the culmination of my ideas about tuning, informed by Partch, and form, heavily influenced by Grisey and my own fuzzy interpretation

of phenomenology. The mechanics of this piece are fleshed out in my Master's dissertation (Flanagan 2013) and as such I will not elaborate here, suffice to mention that it contains four sections (one of which consists of a thinly disguised, re-vamped fugue), each of which contains six short figures or 'sound materials' to which are applied five different types of transformations occurring over various time scales.

Although I had received a good deal of positive feedback after the premiere of *Turning Over*, from my mentors, peers, family and friends, I decided soon after completing the project that I was dissatisfied with the network of ideas that lay behind the work. The heavy emphasis on continuous transformation, and more importantly the fundamentally transitory conception of sound, conflicted with my interest in systems of intonation and their fixed, contemplative representations of harmony. Therefore I found myself in search of a more unified approach where idea, material and form could intermingle to such an extent that they would become a single entity. This brought my thinking about composition closer to the ideas of Alvin Lucier, whose music seemed to accomplish the same unification that I was seeking in my own practice. Lucier reveals his reductive process in a conversation with James Tenney:

> I'm always cutting things down to their simplest form so that the phenomenon is exposed. The minute your hand goes in there and you alter... [...] I remember listening to Lutoslawski talking on a panel once, and somebody asked him about indeterminacy and he said that he used it to generate material that he would then choose from. I thought that was a weak way of working. It means you don't really believe in the process. You only believe in it when it makes results that you like. (Lucier, Gronemeyer, and Oehlschlagel 1995, p.232)

To which Tenney replies, concerning his own works:

> The pieces that please me most among my own works are the ones in which I feel I had to make the fewest arbitrary compositional decisions. (Cited in Lucier, Gronemeyer, and Oehlschlagel 1995, p.234)

Two aspects to the preceding statements seem particularly noteworthy to me. The first is the composer's desire to "remove themselves from the activities of the sounds that they make" (Cage 1973, p.10). Tenney acknowledges this recurrent Cagean presence in the same conversation:

> There would, in some general way, be a kind of equivalence in that, in a sense, the composer has withdrawn from the situation [...] I think your work has carried that part of Cage's aesthetic, oh, miles and miles, in a direction that is very important. (Cited in Lucier, Gronemeyer, and Oehlschlagel 1995, p.236)

This first idea, although less resonant in my mind in the Summer of 2012, has since become a principal concern of mine and will be revisited, albeit in a different light, when I discuss the posthuman implications of my work later in this dissertation.

The second aspect concerns the reductive principles governing the crystalline statements of Lucier's works, also shared by Tenney in compositions such as *Koan* for solo violin, which contains limited materials (an even oscillation between adjacent strings) to which are applied a single transformation (a slow upwards glissando). All other variants become emergent properties of the process, rather than the result of direct manipulation from the composer.

Under the influence of this approach I composed a string quartet in the Spring/Summer of 2012 (my first project after the chamber orchestra piece discussed previously) which was much more limited in its sonorities, containing few materials (rolled four-note chords in natural harmonics) repeated in phrases of varying lengths. This was followed by a work for solo violin entitled *Grillo*, completed in the summer of 2013, containing a similarly limited set of ideas. Both of these compositions significantly foreground the extended just-intonation tuning of the instruments, by focusing on scordatura open strings and natural harmonics.

When I arrived in Huddersfield in the Autumn of 2013, I was rapidly exposed to a plethora of different practices and ideas that were completely new to me, and helped to take my work in quite different directions. I was particularly struck by a talk given by James Whitehead (a.k.a JLIAT) during a conference entitled 'Noise In and As Music', organised by Aaron Cassidy and Aaron Einbond, where I was exposed to the resurgence of contemporary philosophy that addresses the nonhuman world, commonly referred to as *Speculative Realism* and revolving around the work of Graham Harman, Quentin Meillassoux, Levi Bryant, Ian Bogost and Timothy Morton. Being at once fascinated by objects outside of human experience, and seeking to expand the focus of my work to engage with ideas outside of the arcane world of ratios and harmonies, I began to seek out the sonic implications and applications of post-anthropocentric thought. The following dissertation details my readings of such materials, their relationship with the

artistic and musical works resonating with my practice, and how they manifest themselves in my portfolio between October 2013 to the present day.

Chapter 1

Contextual Matters

The works that I have produced in the context of my PhD address the implications of sound outside of human experience. I have sought to make compositions that provoke the receiver to reflect on the potential forms of sound outside of the realm of human perception, emotion or intellect. Such work necessarily entails a degree of speculation, as it attempts to imagine sound beyond the empirical access to objectivity of scientific methods, as well as the purely experiential bases of sonic practice (self-expression, phenomenology, emotion, culture). Thus my work does not attempt to address what sound *is* outside of our experience, nor does my work address *how humans hear sound*, or indeed how I express myself through sound. My work attempts to address what forms sound *might take on* in the absence of people, while simultaneously acknowledging how such forms remain shaped by my own precarious subjectivity, as well as the effects of such external forms on the subjectivities of people experiencing my work. As I will demonstrate throughout these pages, it is this incursion of subjectivity that distances my work from existing approaches to musical objectivity, which often rely on transcendental or empirical standpoints.

This position is certainly present in the series of speculative text scores entitled *Mixtapes for...* (USB #7), in which I provide instructions to diffuse a playlist of topically relevant pieces of music in spaces that are normally inaccessible to human ears, such as in outer space or inside a human stomach. In this fashion, the *Mixtapes for...* series sets up situations for sound beyond

a relationship between acoustical sound and human perception, encouraging the receiver to imagine sound in extrahuman contexts. The subjective aspects of these compositions emerge from their invitation to speculate upon the implications of imperceptible sound, thus enacting a conversation between sound as an independent object and its subjective appropriation by human beings. Other works, such as the web-based application *No Chance Music* (USB #4), employ chance methods to address the cultural and psychological effects of contingency. *No Chance Music* is a kind of sonic lottery in which the webpage visitor chooses a number between 0 and 100,000,000,000,000,000, following which a sound occurs only if the chosen number is generated through a series of random numerical procedures. The aforementioned works provide a brief introduction to the specific manifestations of subject-object intersections in my portfolio, and will be discussed in greater detail, amongst my other compositions, in subsequent chapters.

1.1 Precedents

Numerous texts, artistic and literary works, and musical practices have directed my portfolio towards its engagement with subject-object relations. In philosophy, the Speculative Realism of Graham Harman and Quentin Meillassoux have informed my ideas about objects and the outside world, in addition to the work of Bruno Latour. My attitude and approach towards technology owes much to the writings of posthumanist scholars Rosi Braidotti and N. Katherine Hayles, in addition to the media theory of Friedrich Kittler. These theoretical works, insofar as they all address the nonhuman using methods other than scientific, provide the conceptual tools for artistic works that communicate similarly speculative realities. In the arts, my portfolio finds a particular resonance with works seeking objectivity in artistic creation, from the Pythagorean Harmony of the Spheres to John Cage, from the posthuman performance art of Orlan and Stelarc to the geological time scales of Land art, and the experimental poetry of Christian Bök. Several more figures will appear in the coming chapters, providing the foundations upon which I have sought to construct my own ideas.

A few key concepts form the basis of the present discussion and bring along with them a set of terms that will be referred to regularly over the course of this thesis. Therefore, before presenting an overview of the various thinkers who have guided my compositions it is pertinent to present some brief explanations of these terms that have already been alluded to, most notably the concepts of *object* and *subject*.

1.1.1 Object

The meaning of *object* most often presented in this thesis can be explained as follows:

> The most commonplace philosophical use of the term 'object' is [...] that which is intended to signify the more restricted concept of *substance*, understood (following Aristotle) as whatever is supposed to 'exist independently'. (Laycock 2014)

Whenever I employ the term *object* in this text it is therefore as something that presents itself independently, that is to say continuing to exist in the absence of an observer. Most commonly I refer to objects in a very totalising fashion to address the idea of an entire collection of things that carry on with their existence without a consciousness giving them form. *Objectivity* then refers to any standpoint or structure of thought that attempts to access objects, adopting a basic position that such an independent reality is indeed at least possible if not a certainty.

Objectivity typifies many forms of pre-modern thought, from the aforementioned *substance* attributed to Aristotle, to Plato's *Forms*, to societies based on an externally imposed divine order that structures and determines reality (Hall 2004). These positions represent forms of objectivity given that they view reality as being shaped by forces outside of human agency. Modern conceptions of objectivity are perhaps best reflected in scientific methods, more specifically *empiricism*. However, such methods remain rooted in Enlightenment ideals that rely upon the immanence of a human observer or *subject* (Latour 1993).

1.1.2 Subject

A *subject* in the present context refers to the aforementioned observer, and in apparent contrast to the outside object it represents an interior 'I' that thinks and understands reality. This 'I' forms a governing principle of modern thought, aptly represented in Descartes' *cogito* (Descartes and Lafleur 1960), or the idea that whereas all of external reality may be an illusion, the certainty of thought cannot be avoided and therefore it is the thinking subject that shapes existence. Descartes' proposal forms the basis of a separation between subjects and objects, as objects depend upon the presence of an observer who thinks reality. Such a proposal places human consciousness at the centre of philosophical enquiry, as observed by Donald Hall:

> In Descartes' conception, thinking – really doubting – and struggling to know, in inevitably subjective ways, is the very basis of being. The self's apartness and individuality are central to an understanding of human being. (Hall 2004, p.20)

Descartes' subject finds resonance in the philosophy of Kant, whose own position reinforces the idea that objects require a subject to think them:

> It is therefore not merely possible or probable, but indubitably certain, that space and time, as the necessary conditions of all our external and internal experience, are merely subjective conditions of all our intuitions, in relation to which all objects are therefore mere phenomena, and not things in themselves [...] (Kant 2009, p.107)

It becomes clear from this perspective that objects depend upon thought, and more specifically human thought. Therefore, the use of *subjects* and the accompanying position of *subjectivity* in this thesis signifies the 'I' in separation from and in relation to objects, as conceived by Descartes and Kant and that forms a central tenet of modern thought (Latour 1993).

Recently a group of philosophers have called into question the relationship between human subjects and the objects of the outside world. The term Speculative Realism has been invented to summarise the work of these thinkers, whom despite having developed quite different philosophies nonetheless possess a common project of decentralising the human from within the sphere of being. Philosopher Quentin Meillassoux takes issue with the division between subject and object (which he calls *correlationism*) as established in both Descartes' *cogito* and Kant's transcendental subject.

One of the main issues of correlationism according to Meillassoux lies in the fact that it cannot account for a time prior to the existence of human beings, or what he calls *ancestrality* (*l'ancestralité*)(Meillassoux 2008). Indeed, if Being can only be understood in terms of a correlation between a human subject and an outside object, then it becomes impossible to account for a world without a subject, a world consisting solely of objects. For the correlationist, ancestrality is thus inconceivable, an argument that Meillassoux deems unsatisfactory given that the existence of prehistoric time is at the very least a possibility if not an absolute certainty. Meillassoux then questions how one might go about accessing objective reality (what he calls the *Grand Dehors* or Great Outdoors). Meillassoux arrives at the paradoxical conclusion that contingency, or the capacity for things to be other than they appear to subjects, is the only absolute. This absolute contingency of being can be explained by the observation that when humans construct an understanding of things, the possibility that such things could behave in entirely different ways in their absence is inescapable and therefore absolute.

Meillassoux's thoughts on contingency provide the basis for several of my own compositions, while containing immediately apparent associations with chance procedures in contemporary music. These relationships will be discussed in more detail in Chapter 3, wherein I frame *No Chance Music* and the solo instrumental piece *Sometimes Patterns* (USB #5, #6) within the dual contexts of Meillassoux's work and the experimental music of Cage and Christian Wolff. Although these compositional practices predate Meillassoux's philosophy by several decades, they nonetheless emblematise a vision of objectivity that embraces chance as a method of ac-

cessing objective reality.[1] However, rather than promoting the presence of an absolute Great Outdoors that is activated through contingency (as intriguing as this idea appears to me), I seek to direct the attention towards the effects of such a position on the subjectivities of those experiencing the aforementioned works. This is achieved either through a somewhat playful allusion to the subjective and often unfounded projections of control involved when playing games of chance, in the case of *No Chance Music*, or through highlighting a performer's challenging negotiation with chance procedures that remain indifferent to the physical particularities of an instrument, in the case of *Sometimes Patterns*.

Graham Harman, another philosopher associated with Speculative Realism, proposes an elimination of the notion of a subject that is somehow removed from reality, developing instead a philosophy in which human beings operate on the same ontological plane as objects both material and immaterial (whether they are animals, plants, cybernetic implants or imaginary planets). The starting point for this viewpoint lies in Harman's critical work on Heidegger (Harman 2011), within which he calls into question the supremacy of Dasein (Heidegger 1967) (roughly translated as *being-there* or *presence* and referring to the special case of humans' awareness of beings *as* beings), arguing that "the problem [with Dasein] lies in the additional assumption [...] that human existence is the hero that frees entities from the present-at-hand realm. This approach wrongly casts Dasein in philosophy's starring role, while preserving the unfortunate belief that the world itself is made up of sheer physical objects: neutral slabs of material accidentally shuffled around or colored by human viewpoints, stable substances volatilized only by an external force" (Harman 2011, p.19). Instead, Harman extends the condition of Dasein to all beings:

> Even if it were granted that Dasein alone is fully conscious of beings as beings (and this is far from clear, as shown by the apparent intellectual and emotional complexity of wolves, parrots, ravens, and dolphins), it would not follow that only

[1] This is perhaps less obviously the case with the music of Wolff, given the common dependence on human interactions which might be considered intersubjective rather than objective, however I would argue that the complexity arising from such contingent interactions goes beyond individual human agency and thus emerges a type of chance akin to Meillassoux's absolute contingency.

> humans can encounter discrete objects. Far from it! Screen thwarts gravel, and gravel collides with dust; dust is blocked by paper; paper is gouged with knife, but not with musical sounds. (Harman 2011, p.222)

Considered a subset of Speculative Realism, Harman's work has since led to the development of a new field in philosophy called Object Oriented Ontology (OOO), one that seeks to remove human beings as privileged subjects by focusing instead on the relationships between objects, human or otherwise.

In relation to my portfolio, Harman's philosophy is most relevant in works that explore the autonomy of musical objects. Autonomy forms the main theme of Chapter 2, in which I discuss the series of 3D illustrations entitled *What is This Thing Called...*(USB #1). This series presents exploded instruments whose musical operations become obscured, closely relating to Harman's concept of *withdrawal* (Harman 2011), the notion that interacting objects only ever present each other with a limited set of properties while their remaining facets withdraw from view. The works discussed in this chapter invite the receiver to fill in the gaps left by the facets of the work which have withdrawn, including acoustical sound and the human beings that normally produce sound on instruments, both of which are absent in this series. In this fashion these works require a cross-synthesis between the distant autonomy of objects and their representations by humans – both of which are necessary in order for the series to function in its intended way.

In Chapter 2 I will also discuss autonomy in relationship to computational processes, specifically in the MIDI/solo keyboard compositions entitled *Two-Part Inventions* (USB #2). These pieces use a computer to generate and perform large numbers of pitch permutations at tempi that would be impossible for a human performer to play. The speed of these works also surpasses a human listener's ability to perceive pitch patterns, thus lending a degree of autonomy to the music which is inaccessible to humans both as performers and listeners. This perspective closely relates to the media theory of Friedrich Kittler, who provides convincing arguments about the

autonomy of media technologies in a reversal of Marshall McLuhan's vision of technology as an "extension of man" (McLuhan and Fiore 1967, p.3). Kittler argues that the computer, which has the potential to take over all other forms of media due to its ability to encode all forms of sensory information (video, sound, text), operates on a fundamentally different level than human beings.

> This postmodern Tower of Babel reaches from simple operation codes whose linguistic extension is still a hardware configuration, passing through an assembler whose extension is this very opcode, up to high-level programming languages whose extension is that very assembler. In consequence, far-reaching chains of self-similarities in the sense defined by fractal theory organize the software as well as the hardware of writing. What remains a problem is only recognizing these layers which, like modern technologies in general, have been explicitly contrived to evade perception. We simply do not know what our writing does. (Cited in Gane 2005, p.35)

Kittler views the operations of computers as inscrutable by human beings due to the myriad layers of encoding that reach down to the level of electronic circuitry, which is far removed from the information communicated via the GUI. Therefore the computer in its physical manifestation operates through a cryptic sequence of events that is meaningless (to humans) at its core, although forming the basis of its existence in the world.

The technological autonomy of computers is equally reflected in posthumanist scholarship, in particular by Rosi Braidotti, whose work draws from feminist and queer theory in order to dismantle the humanist concept of 'Man'. Braidotti highlights how the universality of Man reveals itself to be a construction of the Enlightenment, which is itself largely a creation of European men (Braidotti 2013). Braidotti replaces humanist ideas of 'Man' as a fixed identity with a flexible, pluralistic conception of human beings that entails a breaking down of distinctions between humans and nonhumans.

The ever-present mediation of technology breaks down such distinctions even further, leading Braidotti to consider technology as a self-organising force of nature:

> [Machines] have their own temporality and develop through 'generations': they contain their own virtuality and futurity. Consequently, they entertain their own forms of alterity not only towards humans, but also among themselves, and aim to create meta-stability, which is the precondition of individuation. (Braidotti 2013, p.94)

Braidotti's perspective on technology can be turned around in order to change existing definitions of human subjects. N. Katherine Hayles, in her book *How We Became Posthuman* (Hayles 2008), presents a posthuman subject that is a mutable amalgam of biological, technological, material and immaterial agents, or "an 'I' transformed into a 'We' of autonomous agents operating together to make a self" (Hayles 2008, p.6). This vision is of course informed by cybernetics but does not apply exclusively to technologically-altered humans:

> Whether or not interventions have been made on the body, new models of subjectivity emerging from such fields as cognitive science and artificial life imply that even a biologically unaltered *Homo Sapiens* counts as posthuman. The defining characteristics involve the construction of subjectivity, not the presence of non-biological components. (Hayles 2008, p.4)

In both Hayles' and Braidotti's view, there exists no separation between a disembodied consciousness and the so-called natural world; these dichotomies are constructions of a bygone world, to be replaced by a "bio-technologically mediated" (Braidotti 2013, p.61) posthumanism. Objects penetrate our subjectivity at every turn, such that we cannot claim to be the sole authors of our being.

The bio-technological continuum presented by posthuman scholars finds its way into my solo voice and electronics composition *No sweeter sound than my own name* (USB #9), discussed in Chapter 5 in relation to the concept of embodiment. In this chapter I present *No sweeter sound* as a manifestation of the capacity for digital signal processing to amplify the voice's embedding within the body, while simultaneously bringing about a distancing effect through the voice's encoding and distribution across an array of electronic circuits. The simultaneous distance from and proximity to the body brought about by the mediation of technology intends to highlight human beings' imbrication within our technological environments, within which subjectivity becomes distributed across a range of external objects. *No sweeter sound* also highlights the necessary incursion of the performer's subjectivity that emerges in response to the objectification of the voice - as I will discuss in Chapter 5, this latter observation emerged from audiences' visceral reactions to the live performance of the piece.

The posthuman line of thought owes much to the writings of Bruno Latour, who equates the modern separation of subjects and objects with that of culture vs nature, the binary opposition that he describes as essential to the construction of modernity (Latour 1993). Illustrating early manifestations of modern thought in the work of Hobbes and Boyle, the former in the social realm and the latter in the natural realm, Latour elaborates a set of relationships between nature & culture on the one hand, and transcendence & immanence (in the sense of being inside, or of the mind) on the other. He argues that the seemingly unshakable foundations of modern thought (what Latour calls the *Constitution* of Modernity) lie in its ability to attribute either transcendent or immanent characteristics to both culture and nature, resulting in the following possible interpretations:

- Nature is transcendent, outside of humanity and therefore unknowable.
- Nature is immanent, empirically defined by humans in the laboratory and therefore subject to human will (Boyle).
- Culture is immanent, shaped by the people who unite and are represented by a leader through whom the people speak with one voice (Hobbes).

- Culture is transcendent, greater than the sum of its parts and therefore surpassing the will of any individual subject.

Although these concepts seem contradictory, they can be applied in different contexts in order to solidify the ideological tenets of modernity, including the transcendental truth of scientific fact against the superstitious beliefs of pre-modern societies, contrasted by its immanence which allows for widespread control and shaping of 'nature' to suit our needs, and the immanence of free will and self-determination, contrasted by the transcendental truth of modern social values against the despotic regimes and dubious cultural practices of pre-modern societies.

Latour argues that these conceptions break apart when the boundaries between nature and culture, or between objects and subjects, begin to crumble, as has become increasingly evident in recent times.

> Once we find ourselves invaded by frozen embryos, expert systems, digital machines, sensor-guided robots, hybrid corn, databases, prescribed psychotropic drugs, sonar-equipped whales, gene synthesisers, audience analysers, etc., once our daily newspapers deploy all of these monsters from cover to cover, and that these chimera can be located neither on the side of subjects or objects, nor somewhere in the middle, something must be done. (Latour 1991, p.72)

For Latour, these nature-culture "hybrids" (Latour 1991), which have always existed although the modern project seeks to eradicate them (while paradoxically causing their multiplication), undermine both the thinking of science on the one hand, given that all scientific theories are mediated by subjects, and various postmodern (deconstructionist, semiotic, post-structuralist) theories on the other, given that the objects of science are undeniably real and not solely the product of human experience.

> Scientific facts are constructed but cannot be reduced to the social since they are populated by the objects that have mobilised to construct them. The agent of

> this double construction originates in an amalgamation of practices that the notion of deconstruction fails to capture. The hole in the ozone layer is too social and narrated to be actually natural; the strategies of businesses and heads of state, too full of chemical reactions to be reduced to structures of power and interest; the discourse of the eco-sphere, too real and too social to be solely the product of sense perceptions. Is it our fault that networks are at once as real as nature, as narrated as discourse, as collective as society? (Latour 1991, p.72)

The preceding ideas, although coming from different fields within the humanities, all share a common project of addressing the human's place from a post-anthropocentric perspective. In philosophy, the works of Graham Harman and Quentin Meillassoux address the complexities of the *Grand Dehors*, either through the examination of geological or cosmological scales (Meillassoux) or the strange interactions of objects (Harman). Friedrich Kittler's media theory proposes the idea of technologies that surpass human understanding, akin to Harman's mysterious objects. Hayles and Braidotti reveal that the human subject is itself mysterious, and far more complex and mutable than the humanist construction of Man. It is no coincidence that these theories emerge at a time when human technologies continue to modify our consciousnesses and relationships with our physical bodies on the one hand, while the natural world that modern humans have attempted to keep at a distance for centuries reveals itself more and more to be inextricable from all of human activity. As a result, the separation between a transcendental subject and the objects that it gives life to inevitably falls apart as the overwhelming reality of objects becomes more and more apparent.

These readings provide the discursive sphere from which my creative work emerges, however it is important to note that, unlike philosophers and social theorists, I do not seek to demonstrate a specific philosophical conclusion regarding humans and/or nonhumans (i.e reality is a subjective construction, or an absolute state of contingency, or an ever-withdrawing absence etc.). It is rather the case that all of the aforementioned thought processes compel me to operate within this domain of thought, but as an individual producing artistic work that is necessarily the product of my own subjectivity (however shaped by external agencies this subjectivity may be)

and that is intended to be experienced by other human beings, it follows that the incursion of subjectivity, however defined, must be addressed as it is embedded within all artistic practise. As I will demonstrate at present, within the musical sphere, theory and composition addressing objectivity most often obscure or indeed deny the presence of subjects, whereas music that specifically emerges from a narrative of subjectivity often does so from the perspective of a transcendental subject, one that situates itself outside the influence of nonhuman forces.

1.1.3 Musical Subjects and Objects

At this point I will engage in a particular reading of specific musical occurrences of the two opposing perspectives that I have been discussing thus far, those of subjects and objects. My purpose is to establish how these poles manifest themselves in musical thought and practice as a result of their historical and ideological contexts, eventually leading to the proposal of an aesthetic middle ground that permeates my own creative work, one that attempts to open up the potential for a sonic practice that seeks a balancing of human and nonhuman factors. I must emphasise that the purpose of this section is not to present an overarching musical evolution that shifts back and forth between subjective and objective poles, but rather to highlight some manifestations of these divergent conceptions that for the most part coexist in different weightings and at different points in musical time. Thus when I discuss, for example, how music performs certain conceptions of objectivity in Medieval and Renaissance music theory, this does not imply that subjectivity was entirely absent from music of these times; I am rather identifying a particular musical discourse that reveals a culturally significant perspective on objectivity. Ultimately, the goal of such an exercise is to point out how music is able to foreground specific interpretations of subjectivity and objectivity, and from which my own interpretation of subject-object relationships emerges.

Transcendental Objects

Pythagorean theorists posited that the source for musical intervals was embedded into the structure of the cosmos, providing a source for music that lies outside of human consciousness.

The notion of music as located outside of the human domain represents an early example of music being designated as objective, something that can be conceived of independently from human experience. Indeed, the relationship between musical intervals, numerical relationships and the structure of the universe was a widely explored topic from the Pythagoreans to Johannes Kepler, who was perhaps the last known astronomer to pursue the idea with conviction (Stephenson 2014). From a contemporary perspective, it appears evident that the idea of a series of musical intervals forming the basis of the orderly universe is an entirely subjective construction, however it is nonetheless essential to the discussion at hand to present how a number of thinkers have attempted to situate music in an objective context for quite some time, however human-centred their conceptions of the universe might be. What is most telling about the musical investigations of Antiquity is the idea that the source for music lies not in human perception, expression or emotion, but rather embedded into the structure of the universe. The Pythagorean mirroring of musical intervals in the cosmic order corresponds with Latour's conception of so-called 'pre-modern societies', for whom nature and culture were indivisible. Social order was inseparable from the natural, and vice-versa: natural phenomena were the result of human activity that angered or pleased god(s), and likewise social structures were inscribed in natural law. To continue Latour's line of thought, Pythagoreanism and its inheritors saw music as inseparable from the transcendent fabric of nature.

Transcendental models for the organisation of music, such as those proposed by the Pythagoreans, persisted throughout the middle ages, largely due to the Latin interpretations of early scholars such as Boethius:

> [Boethius'] treatise *De institutione musica* [...] was the most influential source of Pythagorean music theory throughout the middle ages. Boethius expounded a threefold division of "music" into *mundana*, *humana*, and *instrumentalis*. Of these only the third corresponds to what we know today as music. *Musica mundana* is the harmony of the heavenly spheres, and *musica humana* deals with the influence of music, broadly considered, on the human soul. The very expansive conception of music embraced by these three categories provides the theoretical basis for most

> discussions of music into the sixteenth century [...] Thus for Boethius and his readers there is nothing fanciful about the music of the heavens. It is a standard part of the subject. (Stephenson 2014, p.41)

The concept of *Musica mundana*, which as pointed out by Stephenson constituted a standard component of musical studies until the sixteenth century, continued to situate musical order outside of the human subject, that is to say within the numerical relationships that determined all things, including cosmic bodies. Transcendental sources for musical order provided theorists with the necessary ammunition to promote the universality of their theories, such as Zarlino, who legitimises the use of thirds and sixths as consonances by deriving them from lower-order ratios:

> [Zarlino] justified [the presence of thirds and sixths] by extending the fundamental Platonic and Pythagorean number sequence from 1, 2, 3, 4 to include 5 and 6 as well - 6 being the first "perfect number," which equals the sum of its factors 1, 2, and 3. By allowing 5 and 6 within the fundamental sequence, Zarlino could accept thirds corresponding to proportions of 4:5 and 5:6, and the major sixth corresponding to 3:5. This extension made Pythagorean harmonic theory much more plausible as a basis for contemporary composition. (Stephenson 2014, p.44)

Although Stephenson's last point is debatable given that thirds and sixths had already become widespread in musical practice by the early sixteenth century, the fact that Zarlino felt compelled to inscribe these intervals within the perceived universal order of numbers is nonetheless indicative of the persistence of transcendental models during the Renaissance.

The idea of the transcendental object persists in the music of modernity, not only in the resurgence of post-Pythagorean tuning models of Harry Partch and his students, but more generally in music that draws upon numerical sources for musical structure, such as in the work of Arnold Schoenberg whose compositions were arguably guided by concepts of a hidden order

revealed through number. The connection between Pythagoreanism and the use of number in Schoenberg's work lies most significantly in numerology, a practice that merges Pythagorean number theory with perceived manifestations of number found the Bible's books of Genesis and Solomon:

> Philo Judaeus gave a decisive turn to number symbolism when he interpreted Genesis in terms of Pythagorean number theory (e.g., the six days of creation made a perfect number). Subsequently, biblical numbers mingled with Pythagorean-Platonic symbolisms like the *tetraktus* (1 + 2 + 3 + 4 = 10) and the lambda series (1, 2, 4, 8; 1, 3, 9, 27). Such principal symbolic numbers informed patterns throughout Western culture: they appear in early medieval Celtic romances and 17th Century ecclesiastical music, in biblical commentaries and lyric poems, in masque dances and cathedral architecture. (Fowler and Greene 2012, p.959)

Beyond Schoenberg's documented obsession with numerology in his daily life (Sterne 1982/1983), numerological concepts govern many organisational principles in his music:

> [...] Number symbolism plays a crucial role in the organization of [*Pierrot lunaire*], a role that Schoenberg was careful to point out in the title, and one that cannot be ignored in any thorough study of the work's structure. Finally, in spite of the fact that the title of *Pierrot lunaire* is the single instance of its composer indicating his use of numerology in the structuring of a work, the procedure is not at all peculiar to that composition. Used systematically at least as early as the Chamber Symphony, Opus 9, numerology continued to be used by Schoenberg as a structural device in his music until the very end of his life. (Sterne 1982/1983, p.516)

As demonstrated by Sterne, Schoenberg's belief in the power of numerology extends beyond anecdotal accounts of the composer's fear of the number 13 to reveal a deeper belief in the

connection between music and universal order through the medium of number, as observed by Ethan Haimo:

> Schoenberg's interest in numbers had a genuinely musical outlet, one in which motivic relationships were enabled not by ad hoc procedures but by consistent numerical relationships. Thus, in Schoenberg's worldview, numbers and music were not unrelated spheres; rather they were two aspects of the same thing. In Schoenberg's eyes, the fact that the systematic manipulation of numbers produces musically meaningful relationships was not an accident. Rather it was confirmation not only that the universe was ordered but, more important, that numbers and music together play an essential role in expressing that order. (Haimo 2007, p.393)

The idea that numbers provide an access point to objective reality finds its way into the more recent practice of Tom Johnson, a self-proclaimed Platonist who views mathematical models as autonomous found objects. By explaining his compositional process as a framing of pre-existent natural phenomena, Johnson roots his practice in the experimental tradition of Cage, Feldman, Lucier and Oliveros:

> I too like to find music that exists outside myself, rather than to compose something that is inside myself, but I am looking more in the direction of mathematical models. When I work with a logical sequence of numbers, or a set of permutations, or Pascal's triangle, or a logical sequence of geometric turns, or with the paper-folding formula, I have the feeling that I am working with absolutes. (Johnson, p.3)

Johnson equates his implementation of mathematical models with the indeterminate practices of experimental music, drawing attention to music of his contemporaries and predecessors that relies upon the emergent properties of a system, such as Lucier's *I am sitting in a room* or Steve Reich's *Pendulum Music*, both of which seek to let "the music do what it [wants] to do" (Johnson, p.2). In this latter statement, which Johnson attributes to his teacher Morton

Feldman, the composer assigns a powerful agency to music, which exists in an absolute state outside of human experience:

> This general way of working reminds me a bit of what we used to call "process music." In all these cases the "composers" are not really composing so much as simply letting music arise out of circumstances that they can not personally control. They are finding music which somehow already exists. Is this not a kind of Platonism? Is this not a search to find a kind of music that existed, or could have existed, before the advent of human beings on the earth? (Johnson, p.3)

The principles of transcendent musical objects raise several questions, most notably when it comes to their supposed universality. After all, numbers are a human construction which can only stand in as a representation of a reality that remains shaped by subjective viewpoints. Pythagoras, Boethius, Zarlino, and Schoenberg were part of a particular culture whose claims to universality could just as easily be revealed as naïve superstition; it would be difficult today to unilaterally declare that fifths and octaves are the only consonances given the perfection of their ratios, or that formalised music with twelve tones will soon become the pinnacle of musical creation. From this perspective, it becomes impossible to claim a purely objective basis for music without acknowledging its subjective sources, whether as cultural expression, social interaction, or the exposure of a musician's innermost thoughts and feelings. If I were to form a criticism of transcendence in music, I could not raise any objection to the music itself since the music itself, just as the all-encompassing thing-in-itself, is at the very least unknowable, or from the most extreme point of view, a purely fabricated construction of subjectivity. Instead, I would be criticising a particular discourse that privileges transcendence often to the detriment of other 'cultural' musics of a lower form (popular, 'world' musics, folk traditions). And in this case, since music in itself would exist solely as the product of discourse, I would be criticising all that exists in music, that is to say 'text', language, tricks of the mind. Later I will present how this subjective u-turn reveals its own set of challenges, but not before investigating a range of subject-oriented musical practices that reveal the other side of the coin.

Performing Subjects

The arrival of Descartes' *cogito* in philosophy, followed by Kant's transcendental subject, introduced a dimension of complexity to musical subjectivity that had a profound impact on musical thought and practice. Such thinking coincides with Latour's germination of modernity, which identifies the subject as both immanent (i.e. self-determining) and transcendent (i.e. removed from the world). Michael P. Steinberg identifies a source for the awakening of musical subjectivity in another Enlightenment philosopher and musician, Jean-Jacques Rousseau:

> Rousseau required and depended upon music to think subjectivity, to understand subjectivity as itself an aesthetic discourse, a mode of art. Rousseau thus attempted to formulate a modern discourse of subjectivity in reliance on music. (Steinberg 2010, p.7)

Steinberg argues that Rousseau's position gave rise to music in the nineteenth century as a performance of subjectivity, and proceeds to map the enactment of subjectivity in the music of Mozart, Beethoven, Wagner, and other figures from the era of common practice. The image of Beethoven emerges, as Steinberg suggests, as the principle representative of the immanent subject through the singularly individual nature of his compositions, which defy tradition through the distortion of established forms and imbue his music with an unhindered force of will. Adversely, to the modern thinker, Beethoven's immanent self-determination simultaneously achieves transcendence, as his ideas, materials and forms originate somewhere mysterious, outside of society's laws and conventions and cannot be reduced to previous stylistic categories. Through Beethoven, the freedom of the subject becomes a transcendent principle, fundamental to the construction of the modern constitution. Thus emerges a musical practice that views music as a transcendent manifestation of the subject, which persists throughout the nineteenth century:

> Music was first anointed as a privileged discursant of subjectivity by German Romantic theorists, [...] including Hoffmann, Wackenroder, Tieck, and, a generation later, Schopenhauer. Schopenhauer's central assertion that music possessed the ability to personify human will [...] proved a decisive influence on Wagner and Nietzsche. But this philosophical continuum took as its musical correlative a specific musical and cultural moment, focused on Beethoven and on the symphony, and granted it a transcendental imprimatur and the status of an absolute. (Steinberg 2010, p.11)

The music of Romantic figures such as Beethoven becomes a document of the composer's experience that further inscribes the particular subjectivity of the composer within the intangible dimension of musical tones and rhythms. It is this encoding of subjectivity into musical parameters that allows for the construction of a universal subject, insofar as music is itself conceived as a universal language. Here the Pythagorean/Platonic musical object, previously considered as a rarefied entity that maintains a distance from human intervention, now positions itself as a vessel for the human soul. Beyond Romanticism, Lawrence Kramer identifies the constructed transcendence/immanence of subjectivity as a general property of musical thought, which although reaching an apex in the Romantic sensibility, is central to the construction of meaning in all musical cultures:

> The basic work of culture is to construct subject positions, contingent frames of reference within which certain forms of action, desire, speech and understanding become possible [...] The immediate effect of culture is to install a repertoire of definite identities within the perceived individuality of the person. This is typically done so that the locally formed identity seems to exemplify a universal. (Kramer 2001, pp.156–157)

In Kramer's thought, the immanence of subjectivity is exemplified in the construction of "subject positions" specific to a certain culture, contrasted by the illusory transcendence of the

subject achieved by the establishment of a "locally formed identity" that "seems to exemplify a universal". Although Kramer acknowledges that the Kantian transcendental subject is in fact always inscribed within a culture, he nonetheless argues for a fully subjective understanding of music, even if this subject is entirely determined by its social milieu. Kramer's perspective, and indeed the perspective of many musicologists of the last few decades that fall under the broad banner of "Critical Musicology" (Beard and Gloag 2005, pp.59–62), presents a multiplicity of subjective viewpoints at play in all facets of musical life. Through this lens many recent musical practices are seen to perform a highly individualised subjectivity based on the lived experience of a particular artist, as exemplified by Nicola Dibben in her essay on the construction of subjectivity in the music of Björk:

> Much of the discourse surrounding [Björk's] work encourages listeners to receive the music as if it offers up Björk's own subjectivity and, in particular, her affective life. The presentation of emotion in Björk's music thus tells the listener not just about Björk, but also about the ways in which she herself experiences emotion [...] The particular track 'Unison' affords an intimate, sensual, sublimated and euphoric experience, a state of being most often attributed to Björk herself. In so doing, it constructs and maintains a common cultural narrative of the subject as a unique, discretely constituted individual whose psychic interior is revealed only through introspective, and in this case aesthetically mediated, reflection. (Dibben 2006, pp.173–184)

Dibben reveals how aspects of composition, production and performance in the song 'Unison' generate a specific manifestation of subjectivity, not only through Björk's highly autobiographical lyrics, but also through the intimacy generated by frequent close miking of the voice, "the instrumentation of choir, strings and harp [that] is suggestive of Romantic art music" (Dibben, 2006, p.176), as well as the sampling of domestic objects from Björk's home that replace standard drum samples (Dibben, 2006). Dibben further argues that journalistic receptions of Björk's work guide audiences' perceptions of her music in a subjective direction:

> Much of the writing about her music – journalistic commentary, record reviews and scholarly criticism – interprets it in terms of her biography, as illustrated in the headlines and associated visual images which accompany various magazine articles and other publicity material [...] Hence critical reception inescapably conditions the way in which the music is received, as well as reconfirming the manner in which this same discourse should itself be understood. (Dibben 2006, pp.172–175)

The focus on subjectivity in musical criticism is pervasive and certainly not limited to the music of Björk, as demonstrated in countless album reviews, live concert reviews and interviews with artists. In his 2010 Guardian article "Kanye West and the Essence of Self-Expression", Tom Ewing writes:

> There's a delicious, productive tension at the heart of a pop song, between the personal and the universal, which anyone who's fretted over a mixtape will grasp intuitively. No other popular art form relies so much on the first person, which makes pop a vehicle for the most intense self-expression, not just by the people who make it but by the ones who listen to it [...] This tension is what makes the X Factor so compelling: it doesn't produce great pop – far from it, usually – but it's a great show about pop, dramatising the ways people take songs and make them relate to their situations. Katie Waissel sings Help! and the "I" in the song becomes her, constantly knocked back by the public whose affection she relies on. It's hardly subtle, but it's effective. The highest compliment the judges give, week after week, is that a contestant took a song and "really made it their own". (Ewing 2010)

In this example, the immanence of the artist's subjectivity, referred to as 'the personal' by Ewing, transforms into a subjectivity that transcends the individual as audiences and aspiring artists alike identify aspects of their own selves in the performances of the artists they follow. This is how contestants on the X Factor are perceived to make songs by other artists 'relate to their situations'. Similar perspectives present themselves in this recent review of an Iggy Pop concert at the Royal Albert Hall:

> There is something about the naked exuberance with which Iggy confronts audiences that facilitates their own exuberance. This veteran showman understands the rock ritual of catharsis, how to use sound and performance to transform strangers into a community, transmuting the daily agonies of ordinary lives into a brief shared expression of liberation and joy. (McCormick 2016)

Again, the journalist emphasises the capacity for the artist's performed subjectivity to transcend the personal, to the extent that the audience becomes a community united by a "shared expression of liberation and joy". The article further reinforces the idea that a particular subject position (in this case Iggy Pop's) can become transcendent through the focus on the performance's overarching power to transform and transmute, in addition to ideas of community and sharing.

The pervasiveness of subjectivity as a starting point for musical expression, alongside extensive commentary (both academic and journalistic) surrounding ideas of the self in relationship to musical culture, makes a strong case for understanding music as a performance of subjectivity, on the part of the artist and the communities that assemble around a particular form of musical expression. This would appear to be especially true given the apparent impossibility of music to exist outside of human subjectivity, given that the idea of a transcendent musical object has been revealed as a social construction. The Pythagorean/Platonic object can only be understood by a human subject and as such the object cannot place itself 'out-there', but rather must be contained in the specific perspective of the human being whose viewpoints shape external reality. Thus, the all-encompassing 'I' of the artist, specific to an individual and yet able to transcend personal boundaries, replaces the universality of the musical object. And yet something of music must remain when humans are taken out of the equation, since it could not exist without the objects that produce it: violins, guitars, perfect cadences, microphones, gavottes, scores and mp3 players etc. With this in mind, how does one account for musical objects when their mystical transcendence is no longer a viable position? A few approaches come to mind, which I will account for before returning to the posthuman basis providing the foundations of my own compositional approach.

Listening Subjects, Empirical Objects

Contrary to the transcendent aspirations of the Pythagoreans, Aristoxenus and his followers were of the conviction that the source for music lay in human perception. For Aristoxenus, the structure of musical intervals could only be defined by the ear:

> To define, for example, the octave as the ratio 2:1 is the merest nonsense: the octave is just what we hear as a certain concord, and it is that independently of any mathematical analyses which may be applied to the conditions of its production. (Barker 1978, p.11)

The example provided here by Barker demonstrates Aristoxenus' opposition to the Pythagorean model for musical intervals. Musical order is not transcendent, but immanent insofar as it emerges from human subjectivity. Thus Aristoxenus promoted intuitive forms of musical expression rooted in human experience, rather than transcendent, otherworldly models.

Alongside the dramatic appearance of music as performed subjectivity during the Enlightenment, empirical conceptions of music emerged, reflecting Aristoxenus' perceptual grounding in order to inscribe sound within a scientific framework. The empirical approach, in which "all knowledge of real existence must be based on the senses or selfconsciousness, that is, on experience" (Meyers 2014, p.2), absorbs reality into the domain of the thinking (and sensing) subject and forms the basis of the construction of scientific objectivity. Going back to Latour, empiricism allows for science in its modern manifestation to claim access to objective reality due to the transcendence of the subject, whose independence allows humans to define nature from a privileged perspective. In music, the empirical approach can be witnessed in the proliferation of treatises based on the study of acoustics, including Rameau, Helmholtz and continuing to the present day in psychoacoustic and spectral approaches to musical theory and composition. It is in the work of these musicians that the idea of a listening subject appears, as a complement to the performing subject of Rousseau, the Romantics and their contemporary representatives.

Musical scholar Jairo Moreno points towards the emergence of the subject as listener in his book *Musical Representations, Subjects, and Objects*:

> Descartes' "early modern" subject gives way to the "modern listener," the ideal cognitive agency in the process of comprehending the dynamics of harmonic successions articulated in Rameau. Supplanting the "modern listener" is the "listening subject," a self-reflexive figure for whom interpretation of music is both a trace of its consciousness and the mark of its incapacity to fully grasp that consciousness. (Moreno 2004, p.4)

Of particular interest is Moreno's observation on how this "listening subject" plays a role in constructing empirical objectivity:

> "The object of music," Descartes writes, "is sound." This motto provides the impetus for examining the criteria for the construction of sound as an object, and most importantly for inquiry about the figure to whom sound constitutes an object. For Descartes these criteria fall under the jurisdiction of the perceiver and are determined by analysis of sound in terms of measurement (calculation of identities and differences among intervals or temporal units in a composition against a common unit) and order (serially arranging the results of measurement according to degrees of complexity). The results of such analysis constitute the mark for certain, demonstrable, and intersubjective knowledge, in short, for the kind of knowledge considered to be "objective" to this day. (Moreno 2004, p.14)

The Cartesian conception of music as a division between subject and object perpetuates in the musical studies of Rameau, who writes:

> We may judge music only through our hearing, and reason has no authority unless it is in agreement with the ear; yet nothing should be more convincing to us than their union in our judgements. (cited in Moreno 2004, p.85)

What becomes clear in the musical representations of Rameau and subsequent empirically-minded approaches, is that subjects become the arbiters of musical reality to such an extent that their fundamental role in the creation of objects no longer needs to be acknowledged. This allows for the empirical object to take up the place of the pre-modern transcendent object, as initially subjective definitions of objects become empirical truths.

Empirical musical objects persist within certain cultures of contemporary musical creation, more specifically in musical works rooted in psychoacoustics and spectral models for musical composition. The music of Jean-Claude Risset provides a fitting illustration of an empirical musical approach, particularly in his capacity as both a composer and scientist (Risset 1994). Risset acknowledges the Aristoxenian basis for his music in the following passage:

> According to Aristoxenus, the foundations of music are not in number ratios, but in the ear of the listener. Computer synthesis strongly confirms this view. I have, for instance, produced sounds that seem to go down in pitch when their frequencies are multiplied by 2 – a striking effect that is contrary to intuition and common sense. Similarly, I have produced beats that seem to slow down when one doubles the speed of the tape recorder on which they are played. (Risset 1994, p.258)

The conceptual grounding for Risset's implementation of auditory illusions, such as the paradoxical movements of pitch in *Computer Suite for Little Boy* and *Mutations*, within which pitches "seem to glide indefinitely up or down in pitch, or seem to go down in pitch but end up much higher than they started" (Risset 1994, p.259), relies on a human listener who defines the form of the work through the filter of the auditory system. Thus the musical object resides within human perception, seemingly in a continuation of the empirical tradition. However, the implications of Risset's illusions are more complex than that: in actuality, Risset's music confounds the subjective certainty of musical sound when one takes into account the measured reality of the musical processes at hand. Indeed, a spectral graph of the Shepard tone reveals that the frequency does not in *reality* rise or fall in perpetuity, defying our intuitive perceptions. Thus the intrigue of auditory illusions relies on a disconnect between perception and

the constructed objective reality represented by the machines that both produce and measure them. From this perspective, Risset's music explicitly performs the separation between subject and object, with sound as measured in the laboratory (frequency, loudness, spectrum) playing the role of object, while the auditory and neurological systems of the human perform the role of subject. In order for this disconnect to have any potency, empirical definitions of both 'sound' and 'the listener' must be sustained, as sound must be understood on the one hand as a vibration through a given medium whose effects are measured according to frequency and amplitude, and on the other as a product of human ears whose mechanisms encode sound in a particular way (also measurable in the laboratory) before being sent as electrical signals to the brain. The potency of this illusion remains as long as the poles of subject and object remain irreconcilable. However, once one observes that subjects inevitably penetrate the measurement of objective sound, as has been previously determined in the subjective foundations of empiricism, AND that objects such as our eardrums, stereocilia, cochleas and auditory nerves shape our subjective interpretations of sound, the uncanny nature of the illusion dissipates, as sound locates itself not only at the poles but equally at every other point in between. Acoustic sound is both subjective and objective, just as perceptual sound is both objective and subjective.

Similar subject/object dichotomies reinforced by empiricism underlie many spectral approaches to composition, whose practices rely upon the extraction of 'natural' sounds as musical parameters. Emerging as a reaction to the perceived arbitrariness of twentieth-century avant-garde techniques (Murail 2005), the spectral method prioritises the implementation of models understood to be natural insofar as they are derived from acoustical phenomena occurring outside of human manipulation:

> [...] It is more realistic, more in keeping with physical reality and perception, to consider a sound as a field of forces [...] Such an approach empowers us to work more precisely upon sounds, to perfect instrumental techniques in the context of an understanding of sonic phenomena. It allows us also to develop a compositional technique based on the analysis of sounds, and to make of their internal forces a starting point for the composer's task. (Murail 2005, p.122)

In a similar fashion to Risset, Murail's techniques rely upon an empirical understanding of physical reality and perception, wherein "sound itself" (Murail 2005, p.121) is equated with sound as represented by the tools of science, most notably spectral analysis. Although Murail criticises traditional forms of notation for their assumption of "a direct correspondence between the symbol and the thing" (Murail 2005, p.122), the replacement of such traditional forms with spectral techniques equally relies upon symbols provided by spectral analysis tools, which stand in for the symbols of notes, rhythmic divisions and dynamics. Although scientific/technological representations of sound arguably generate more complex and continuous representations of sound than can be provided by the discrete scales of staff notation, thus contributing to the characteristic fluidity and transformation associated with Murail's work, they remain nonetheless representations that cannot be understood as sound itself any more than the representations of traditional notations.

Phenomenological Objects

Phenomenology provides an alternative access to objects, one that rejects the empirical understanding of reality in order to favour "not real (concrete) objects, but the ideal (abstract) forms and contents of experience as we live them, not as we have learned to conceive and describe them according to the categories of science and received opinion" (Carman, in Merleau-Ponty 1995, p.viii). At its basis it manifests a fundamentally subjective understanding of reality, and in its most extreme form questions the presence of any external reality, as is the case with Husserl (Carman, in Merleau-Ponty 1995, p.ix). Husserl's philosophy points towards ideal objects that form in the mind as a synthesis of experiences that one encounters with a given object. Thus, although when encountering an object one only experiences it from a particular perspective (for example when standing in front of a house, one can only glimpse certain aspects of its interior, and cannot experience the form that the rear of the house takes on), one is still able to form a complete conception of that object in the mind as a synthesis of previous experiences of the object taken from different perspectives. As a result, the idea that forms in the mind transcends any particular experience of the object, therefore locating the object

within its ideal form rather than in external reality. In this world, objects are accessed through a phenomenological deduction.

Phenomonelogical thinking permeates Schaeffer's concept of reduced listening, a very Husserlian way of conceiving sound objects as ideal forms derived from an experience of listening:

> For Husserl and Schaeffer, the contents of our mental acts possess a special type of objectivity. Hearing, whether imagined or real, presents us with indubitable evidence or data. Based on such indubitable evidence, intentional objects are both ideal and objective. (Kane 2007, p.19)

Therefore the acousmatic approach at its inception attempted to isolate sound from its physical source in order to facilitate its synthesis in the mind of a listener (Kane 2007), revealing the sound object through a process of mental reduction. Through this process Schaeffer formulated an objective classification of sound into *typo-morphologies*, represented in his *Traité des objects musicaux* (Schaeffer 1966) and further extended and clarified in Michel Chion's *Guide des objects sonores* (Chion 1995).

More recent practices pursue an embodied phenomenological vein, in opposition to the abstraction of Schaeffer's sound objects. Composers such as Jonty Harrison, working in the acousmatic tradition, prioritise an access to the external world through perception not of an individual object or set of objects, but rather an environment in which the interactions between objects become more important than the objects themselves:

> I am not referring only to the single isolated sound event, which may differ from its equivalent in one's own personal environment, but also to that sound in the context of, surrounded by, in relation to, the whole soundscape in which it sits – we are thus sensitized not only to an individual objet sonore, but to the relationships that exist between multiple objets sonores. (Harrison 2013, p.314)

This position differs from Schaeffer's in its focus on sound existing in relation to the human being within an environment, rather than an ideal object formed in the mind, echoing the philosophy of Merleau-Ponty:

> Given that relations among things or among the appearances of things are always mediated by our body, then the setting of our own life must in fact be all of nature; nature must be our interlocutor in a sort of dialogue. And this is why we ultimately cannot conceive of a thing that could be neither perceived nor perceptible [...] The thing can never be separated from someone who perceives it; [...] (Merleau-Ponty 1995, p.334)

Merleau-Ponty similarly focuses on "relations among things" rather than individual objects, and how these relations are mediated by our bodies. Merleau-Ponty also points towards the interdependence of the senses in determining environments, paraphrasing Cézanne who "said that a painting contained, in itself, even the odor of the landscape" (Merleau-Ponty 1995, p.332). This analogy can be applied to an acousmatic listening experience, such as Hildegaard Westerkamp's soundscape composition *Kits Beach Sound Walk* (Westerkamp 1989), in which a recording of a walk on the beach is accompanied by Westerkamp's voice providing a description of the events happening around her. In this piece Westerkamp provides the invitation to consider an embodied phenomenological response to the work in which all of the senses, indeed the whole body, activates itself in relation to the environment being presented. David Kolber points towards the evocation of the visual within Westerkamp's work:

> [Westerkamp's] visual descriptions also provide the listener with a space to day-dream, to take a moment to be. [Her] references to the season and time of day ground the piece in a very specific, concrete (as opposed to abstract) reality. Unlike some electroacoustic compositions that create a more aurally ambiguous setting, KBS places the listener within an aural and visual context, a world that s/he can readily identify with. (Kolber 2002, p.42)

I would extend Kolber's evocation of the aural and visual to include all of the senses and indeed the entire body, if I am to adopt Merleau-Ponty's phenomonelogy. In any case, it becomes clear that the preceding instances of acousmatic music manifest a way of accessing objects through human subjectivity. Schaeffer and Chion's theories represent a Husserlian phenomenology by highlighting the presence of sound objects derived from mental categories, whereas the acousmatic practices of Harrison and Westerkamp emphasise relationships over singular objects, reflecting the embodied phenomenology of Merleau-Ponty.

By now it has become clear how subjective and objective poles have been expressed in music of the past and in recent times. Pythagoreanism and its modern inheritors seek an object that transcends human boundaries through the conception of an underlying universal order most often accessed through number. This order finds its way into the compositional approaches of Schoenberg, Johnson and others seeking to sonify Platonic objects. From a postmodern perspective this approach fails to access the universality for which it strives insofar as number is a human representation, tinted by subjective lenses and bounded within specific cultures. Empirical perspectives fare no better under similar scrutiny, given that the tools of science still deal with representations rather than things-in-themselves. Even though the empirical vision of objects gains traction through a group of minds reaching a consensus, subjectivity never disappears and as a result the possibility remains that things exist in a wildly different state than we can conceive of them. Thus while spectral and psychoacoustically-minded composers may claim that their music finds its roots in nature (as a reaction to the mechanistic blandness of total serialism), such claims only operate within the confines of empiricism, where scientific representations of sound (frequency, amplitude, harmonicity, inharmonicity etc.) stand in for natural truth. Given the subjective foundations of empiricism, it would seem at this point that the object is either fated to remain a distant unknown, or from the phenomenological point of view, entirely shaped in the mind. Such a position emerges out of an entirely subjective standpoint, acknowledging that objects are in fact ideas with little or no material shape separate from how humans experience them. This is where Schaeffer's theory of sound draws its roots, attempting to disassociate sound from its physical source (and all of the baggage that this source brings with it) to reveal its ideal form existing in the mind. Subsequent phenomenolog-

ical approaches have sought more embodied visions of sound (Harrison, Westerkamp) perhaps reflecting the phenomenology of Merleau-Ponty, however the tendency towards typologies of sound based on the subject as listener remains. Finally, on the other end of subjectivity exists the idea of music as an expression of the self, the encoding in music of the subject position of the artist, wherein any musical object becomes the vessel or medium for the performing subject.

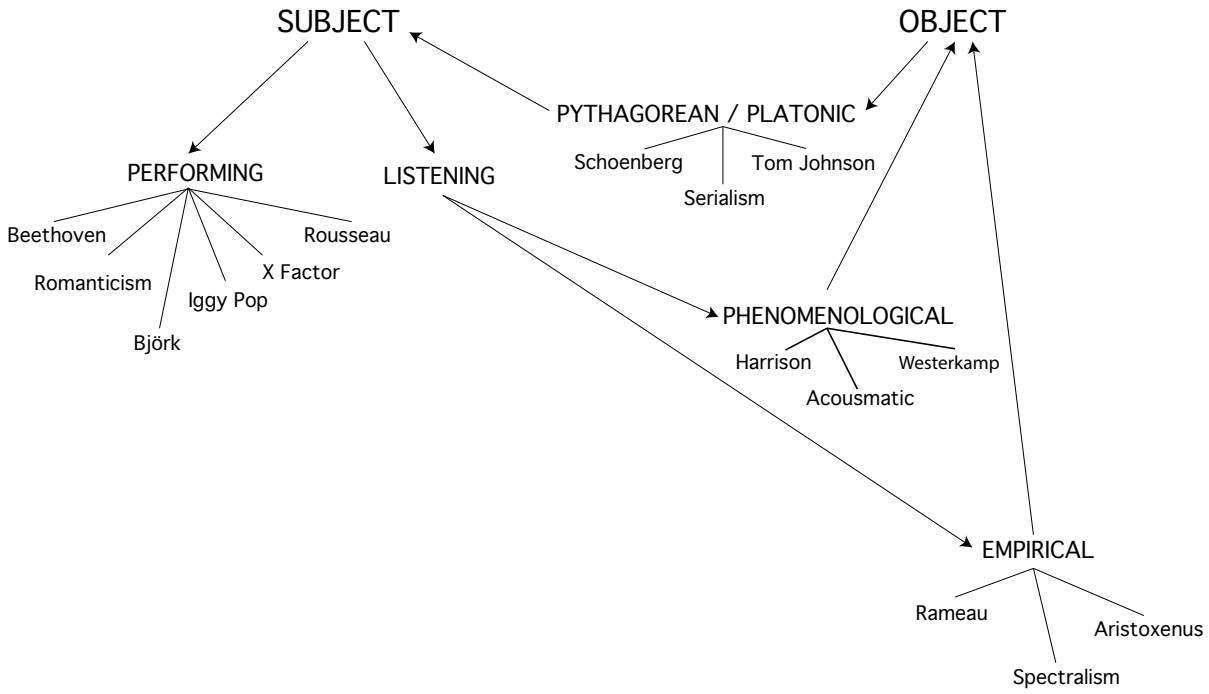

Figure 1.1: Map of subjects and objects in musics discussed. Arrows represent trajectories of accessing subjects and/or objects

1.2 *Point of Departure*

I view the seemingly inherent ambiguity of these objects as a rich starting point for artistic, and in my case sonic, enquiry. My work situates itself within the context of previous musical practices that address objectivity, whether in the work of composers adopting a Pythagorean concern with number, or in the indeterminacy of Cage, Lucier and Wolff, as will be discussed in subsequent chapters. However, far from seeking to enact in music a specific proposal detailing the transcendent nature of objects, or adversely to posit a pure subject position that animates external reality, my work seeks to set up encounters with the nonhuman that are full of the inevitable ambiguities that arise when human subjects are faced with the possibility of a totally independent objective world. Therefore my compositions highlight subjective reactions to objectivity, both on my part as a composer and in anyone experiencing my works. I consider how humans might conceive of themselves in a world that follows its own paths, one that is not a sandbox transformed exclusively by people at play. In this light, it is important to note that humans remain the principle focus of my work, even if at first glance it might appear that my compositions attempt to erase any human presence. Far from it; subjectivity remains at the core of my work, even if the version of subjectivity that I subscribe to and intend to highlight is not the immutable subject of the Enlightenment, but rather a subject that is constantly influenced and determined by sources outside of its control.

At this point I must confess that this question was not present from the start of my PhD project, but rather emerged gradually over the course of the past three years, not only through self-reflection in response to each work, but also through the reactions of performers and audiences, whose responses to my work were often highly personal, and, dare I say, emotional. At the outset, my intention was simply to respond to various readings in Posthumanist studies and Speculative Realism, and as a result my focus was primarily on conceptions of objectivity. I realised fairly quickly however that such an approach would quite easily tread the path of transcendence that I was attempting to distance myself from at the outset, and that subjectivity always intruded despite any attempt to erase it. Just how this subjectivity emerges will be explored in further detail in subsequent chapters.

Although this starting point takes many cues from recent materialist philosophy and shares a motivation to address objectivity beyond traditional forms of materialism, I consider my creative work as an invitation to ponder the possible forms of sonic objects outside of the subject, rather than providing a specific method or set of tools for accessing objectivity. My approach highlights the intersections between subjects & objects, humans & nonhumans, and nature & culture, in order to enable whomever experiences my work to reflect upon both the possibilities of external reality and the effects of such possibilities on their subjectivity. This approach takes on many forms throughout my portfolio, either through the hypothetical presentation of musical instruments removed from their human context, performances of autonomous computational processes, multiple layers of contingency, randomness and other forms demonstrating indifference to human perceptual mechanisms, speculative music beyond perception, embodiment & disembodiment, and finally durational & spatial flatness. In subsequent chapters these thematic areas will become clearer, as I explore their specific manifestations in individual works.

Several artistic precedents resonate throughout these works, which I will present here before moving on to a discussion of my portfolio, in hopes that they will be able to situate my compositions within a network of artistic practises.

1.3 Related Artistic Investigations

Posthuman studies have profoundly impacted the work of several artists, particularly from the 1990s onwards. The practice of performance artist Stelarc has been closely associated with posthumanist thought through its extensions and reconfigurations of the human body (Goodall 1999, Farnell 1999). In works such as *Ping Body* from 1995, wherein an audience is allowed to "remotely access, view and actuate Stelarc's body via a computer-interfaced muscle-stimulation system" (Stelarc 1996), the artist introduces external agents that break down the boundaries in this case between human subjects, through technological mediation. This mediation recalls the work of both Hayles and Braidotti in its consideration of the human as a product of interacting autonomous agents, as observed by Stelarc in an interview with Ross Farnell:

> Metaphysically and historically we've considered the grounding of our humanity due to the coherence of our individuality. To be individual means to be human, to lose our individuality means to be a machine, to be somehow sub-human. But consider a body with a multiplicity of agents [...] The pathology of this multiple agency would not be split physicalities, that would not be a pathology but rather a new complexity [...] (Cited in Farnell 1999, p.134)

Stelarc's work contains many associations with the body modifications of French artist Orlan (Goodall 1999), whose work similarly deals with extending the human body using surgical technology. In her performance series *The Reincarnation of Saint Orlan*, which began in 1990, the artist publicly displayed surgical modifications of her body. The operations were videotaped and photographed, and one of the performances (the seventh in the series) was broadcast live via satellite to audiences in a New York City gallery, who were themselves filmed and later interviewed on CNN (Goodall 1999, pp.159–160). Orlan's body modifications demonstrate in realtime that the human is fluid and modifiable, echoing the scholarship of Hayles and Braidotti.

The performances of Stelarc and Orlan reject clear distinctions between human and nonhuman by attempting to both modify and place their bodies in networked relationships with technology. However, this focus on the body (despite claims by both that the body is obsolete, see Goodall 1999, p.151), coupled with a McCluhan-esque conception of technology as an extension of the human, make their art fundamentally about the human condition, even if their work extends the limits of this condition to include nonhuman forces and interactions.

I am equally concerned with works that encounter the nonhuman by addressing domains of time and space that are inaccessible to humans. A significant mid-century manifestation of geological scales in art can be found in the Land art movement, and its most celebrated representative Robert Smithson. Smithson's most recognised work is *Spiral Jetty* from 1970, consisting of "a 15-foot-wide coil that stretches more than 1,500 feet into Great Salt Lake"("Spiral Jetty" 2016), in Utah. Made of the basalt rocks found on the site, the visibility of Spiral Jetty is entirely dependant on the water levels of the lake; at times it is completely submerged. The

work reflects Smithson's interest in the chaotic operations of nonhuman agents, as Smithson observes in his Artforum article from 1968:

> The strata of the Earth is a jumbled museum. Embedded in the sediment is a text that contains limits and boundaries which evade the rational order, and social structures which confine art. In order to read the rocks we must become conscious of geologic time, and of the layers of prehistoric material that is entombed in the Earth's crust. When one scans the ruined sites of prehistory one sees a heap of wrecked maps that upsets our present art historical limits. A rubble of logic confronts the viewer as he looks into the levels of the sedimentations. The abstract grids containing the raw matter are observed as something incomplete, broken and shattered. (Smithson 1968, p.89)

Here Smithson comments on the inaccessible dimensions of geologic formations as a result of temporal scales that extend far beyond human existence. The artist's practice hints at Meillassoux's ancestrality, confronting the correlationist worldview with the problematic of prehistoric time.

Combining Smithson's focus on geological formations with a Kittlerian form of media materialism, the recent work of new media artists Jonathan Kemp, Martin Howse and Ryan Jordan engages with the physical materials of digital media, specifically in the context of their *Crystal World* project. As explained by Jussi Parikka in his article comparing the work of recent media art to the Land Art of the 1960s and 70s,

> In their Crystal World project and exhibitions, Howse, Kemp and Jordan have engaged with the mineral qualities of computational culture by way of a lineage other than computational aesthetics. Instead of focusing on a computer graphics-oriented visual art, their work has addressed the material qualities that enable computationality to exist. They have exhibited different installations of computational hardware

> that had been exposed to chemical reactions: motherboards and other technological components meet DIY laboratory sort of a setting; earth materials brought into contact with principles of computation. (Parikka 2015, p.56)

Kemp details the conceptual underpinnings of the Crystal World project in his PhD thesis, revealing close connections with the post-anthropocentric materialism of Bruno Latour, Graham Harman and Jane Bennett (Kemp 2013, pp.37–38). The connection is made clear in the focus on "a distribution of human and non-human agencies at work in the world" (Kemp 2013, p.37) by way of exposing the raw materials and chemical processes at work in the process of computing.

The materialism of the *Crystal World Project* finds similarities with *The Xenotext Project* by the experimental Canadian poet Christian Bök, which illustrates the capacity for artworks to extend beyond the realm of human perceptibility, in addition to outlasting humans on a temporal scale, by encoding poetry into the DNA of a living organism.

> I have been striving to write a short verse about language and genetics, whereupon I use a "chemical alphabet" to translate this poem into a sequence of DNA for subsequent implantation into the genome of a bacterium (in this case, a microbe called Deinococcus radiodurans—an extremophile, capable of surviving, without mutation, in even the most hostile milieus, including the vacuum of outer space).
>
> When translated into a gene and then integrated into the cell, my poem is going to constitute a set of instructions, all of which cause the organism to manufacture a viable, benign protein in response—a protein that, according to my original, chemical alphabet, is itself yet another text. I am, in effect, engineering a life-form so that it becomes not only a durable archive for storing a poem, but also an operant machine for writing a poem—one that can persist on the planet until the sun itself explodes... (Bök 2011)

Bök's work awakens a bio-technological continuum within which the product of a human subject (the poem) becomes implanted into another life form whose own specific biology reforms the

poem, thus representing a rich dialogue between human cultural expressions and nonhuman behaviours. Furthermore, the possibility that the poem in its biological encoding could outlast the human race raises the prospect of life beyond humanity, or in other words a universe of objects that do not depend on a human subject to give them form.

The preceding examples represent similar ideological standpoints to my own in that they all begin from the position that objects possess an existence outside of subjective viewpoints. From this starting point emerges several creations that enact the implications of objective reality, including their effects on how humans conceive of themselves as consciousness and as culture. All of these shared artistic motivations are for now taken from art forms other than music. I highlight the musical bases for my work within the thematically arranged chapters that follow, presenting specific compositions in relation to the existing musical practises that are most pertinent to the topic being discussed.

Chapter 2

Autonomy

Central to much of my portfolio is the notion of autonomy, which presents an inquiry into the possible state of objects removed from their human function. I will repeat that the purpose of such an inquiry consists not of mounting a case for the status of objects as transcendent absolutes nor as purely subjective fabrications, but rather to provoke an encounter between humans and nonhumans that dislodges objects from their entrenchment in either pole of the subject/object divide, situating them instead somewhere in the porous middle ground. In order to achieve this, it becomes necessary to acknowledge that objects possess some form of autonomy outside of human conception and intervention, but that this autonomy retains unknowable characteristics due to an inevitable subjective deformation. Thus the autonomy of objects that I invoke in the works presented here remains intentionally tenuous and necessarily morphed by my own subjectivity, in addition to that of whoever happens to be experiencing my work. This incursive subjectivity manifests itself most notably in the methods that I choose to employ in order to communicate the autonomy of objects, resulting in the creation of particular artworks that would possibly take on quite different forms in the hands of other artists.

The general theme of autonomy further divides into three manifestations in my work: 1) the separation of musical instruments from their human operators and sonic context, 2) the presentation of technology as a mediating force between subjects and objects, as both a tool of

human construction and as a set of material objects maintaining a degree of autonomy, and 3) the interplay between the perceptible and the hidden elements of objects.

2.1 Autonomous Musical Instruments in *What is this Thing Called...?*

What is this Thing Called...? (USB #1) consists of a series of two still 3D renderings and one animated GIF presenting a kind of exploded view of various musical instruments. These images are partially based on engineering diagrams, in which all of the parts of an object are drawn separately and suspended in space in order to reveal the object's inner workings, but mostly they provide an interpretation of the many posters and diagrams of instruments that adorned the walls of my high school band rooms.

Figure 2.1: An educational diagram of the orchestra ("Meet the Orchestra!" 2016)

The works are influenced by Graham Harman's concept of *withdrawal*, or the idea that objects not only present unknowable characteristics to humans beings, but also maintain hidden identities that withdraw from each other.

> If it is true that other humans signal to me without being fully present, and equally true that I never exhaust the depths of non-sentient beings such as apples and sandpaper, this is not some special pathos of human finitude... When avalanches slam into abandoned cars, or snowflakes rustle the needles of the quivering pine, even these objects cannot touch the full reality of one another. (Harman 2012)

In other words, just as humans cannot fully grasp the true reality of things (one can never absolutely know what is on the other side of the coin), other beings encounter the same problem: the avalanche only encounters the car as an object of impact rather than as a tool for getting around or as a deteriorating pile in a metal recycling depot, the snowflake only encounters the pine branch as a landing spot rather than as an absorber of CO_2 or as a festive decoration. The illustrations in the *What is this Thing Called...* series are intended to highlight the precariousness of musical objects by presenting their various components in isolation, as is the case with traditional exploded views. However, in the case of these illustrations the purpose is to blur the relationships between parts and their whole rather than to clarify them.

What is this Thing Called String Quartet? (see Fig 2.2) presents an exploded view of the instruments of the string quartet wherein all of the various parts of each instrument have been scrambled in space (as if the string quartet had actually exploded) in order to confuse the relationships between all of the different parts of the instruments. Thus the ensemble is presented not as a coherent set of parts that interact harmoniously with each other to generate musical sound, but rather as a bewildering array of disparate objects whose interactions become inscrutable. The fingerboard *as* fingerboard becomes something else entirely, an independent form of definite shape and dimension that retains a unique identity despite being divorced from its function. The work also seeks to trigger a reflection on the point at which an object's identity begins to disintegrate, or the moment at which the String Quartet can no longer be

understood as such, becoming instead an amalgamation of parts that cease to operate in their normative functions. *What is this Thing Called Orchestra?* applies the same method to the instruments of the orchestra, creating an even more confusing display.

Figure 2.2: *What is This Thing Called String Quartet*

The disintegration of identity is perhaps most evident in *What is this Thing Called Trumpet?*, within which a 3D rendering of a trumpet decomposes into a series of triangular vertices whose positions in three-dimensional space are randomised in order to distort the image. This method lends an element of intangibility to the representation, as the various components of the instrument rapidly shift around on the screen, forming a kind of ghostly image of the trumpet.

Similarly to *What is this Thing Called String Quartet?*, the trumpet depiction presents an object at its breaking point, that is, at the borderline between trumpet *as* trumpet, fulfilling a certain sonic and cultural purpose, and trumpet as an assemblage of disparate objects, each of which possesses its own autonomous identity.

2.2 Technological Autonomy in *Two-Part Inventions*

Two-Part Inventions (USB #2) is a series of pieces for two melodic voices, taking loose inspiration from J.S. Bach's two-part keyboard inventions. I was motivated to write these pieces after discovering a proliferation of Bach MIDI realisations available on the web (for example: `http://www.jsbach.net/midi/midi_johnsankey.html`). There exists an on-line community devoted to digitising Bach's keyboard works in MIDI format, a practise that interests me for its historical and technological implications. On these topics Dave Grossman, programmer of Bach keyboard works and author of the website 'Dave's JS Bach Page', writes:

> The quality of a MIDI sequence is governed by the quality of the initial encoding. Many of us see the value of sequences that do not include added interpretation. Bach's music is beautiful in and of itself and it does not require interpretation by another individual to make it beautiful. My *Goldberg Variations* sequence is encoded pretty much exactly as Bach wrote it [...] Listening to a clean sequence of a Bach work, it is possible for the mind to add it's [sic] own interpretation and one is able to listen to the work in such a way that their own realization of the work comes through. (Grossman 2010)

Grossman's statement expresses the adaptable nature of Bach's music, and its presence on the borderline between the physical and the speculative. I was encouraged to create music that similarly exists at a crossroads of different mediums (score, performance, audio, MIDI file), thus allowing for a multitude of interpretations, either performed or imagined. The ultimate

goal of such music is to reflect upon the paradox of music existing simultaneously in several different formats, while none of these formats can be understood as constituting the work itself. It then follows that each format only presents a particular facet of the work, while retaining some degree of autonomy that remains inaccessible. The interplay of human presence/absence produced by the added ingredient of technology renders this reflection all the more complex: since human agency has traditionally constituted a necessary condition for the creation and performance of music, what happens to the work when human labour becomes augmented by a technological third party whose actions greatly surpass the capacities of human beings in terms of efficiency and speed of execution? These reflections were greatly inspired by Rosi Braidotti, who proposes a conception of technology as a mediation between nature and culture.

> A posthuman theory of the subject emerges, therefore, as an empirical project that aims at experimenting with what contemporary, biotechnologically mediated bodies are capable of doing. These nonprofit experiments with contemporary subjectivity actualize the virtual possibilities of an expanded, relational self that functions in a nature-culture continuum and is technologically mediated. (Braidotti 2013, p.61)

Braidotti's vision of human subjects' relationship with nature opens up speculation about where to position technology within the nature-culture continuum: whereas technologies are the product of human consciousness, they nonetheless exist as entities separate from ourselves, therefore taking up a place in the external world of objects that is typically known as the natural domain. Thus our connection with technology brings us closer to the external world while simultaneously reinforcing a certain distance from the technological objects that we create.

Using the Bach MIDI realisations as a starting point I sought to delve deeper into the matter by furthering the separation between the work and the performer in an attempt to illustrate the distancing effect of technology. Thus the two-part inventions that I have composed not only exist in formats similar to Grossman's MIDI realisations, but are also at the limits of human playability. These limits are shaped by the physical and mental endurance required, on the part of the both the player and listener, should the pieces ever be performed at playable tempi

in a concert setting. For example the first invention, lasting two hours in the MIDI rendition at crotchet = 980, would last 16 hours at a more comfortable tempo of crotchet = 120.

The materials and forms of the pieces are equally impenetrable for a listener. In an effort to propose the idea that technology is an autonomous force divorced from the human agency that created it, I relied upon processes and working methods that are specific to a computer's design. The main strength of the computer lies in its ability to perform simple tasks (mainly addition) in extremely large batches and at great speed, yielding results that a human being alone would not be able to accomplish. Sound artist JLIAT expresses the computer's mechanics quite clearly:

> A simple computer (processor) can only add. It cannot do multiplication, as rather than guess what 7 x 8 is, it simply adds up 8 lots of 7. Furthermore, a simple processor cannot subtract. It achieves subtraction by using complimentary arithmetic, and this process it is how a computer system can "identify" or recognize. Complimentary arithmetic only sounds complex. Here is how you compliment a binary number, for example 0100101. Step 1. If you see a 0 change it to a 1 and if you see a 1 change it to a 0. Step 2. Add 1. That is it. (Whitead 2013, p.14)

The ability to achieve complex results using simple logic is what shapes the computer's unique reality, allowing it to behave in ways that move beyond human capabilities. Using this strength as a starting point I created an algorithm in Max/MSP that initially calculated every permutation of a three to five note series, depending on the individual movement. For instance, in Invention #1 each note was numbered from 1 to 5, and in turn each permutation was numbered P1 to P120, 120 being the number of possible orderings of a sequence of five numbers (1 x 2 x 3 x 4 x 5 = 120). Each voice was then assigned different individual permutations to create further, higher-order permutations (or permutations of permutations), presented in the following sequence:

(RH = Right Hand, LH = Left Hand, P = Permutation)

RH: P1 P2 P3 P4 ... P120

LH: P1 P1 P1 P1 ... P1

RH: P1 P2 P3 P4 ... P120

LH: P2 P2 P2 P2 ... P2

RH: P1 P2 P3 P4 ... P120

LH: P3 P3 P3 P3 ... P3

RH: P1 P2 P3 P4 ... P120

LH: P4 P4 P4 P4 ... P4

...

RH: P1 P2 P3 P4 ... P120

LH: P120 P120 P120 P120 ... P120

The total number of these 'higher-order' permutations is 14,400, achieved by squaring the initial number of five-note permutations (120 x 120). This process results in patterns that, although displaying extensive repetition, never actually repeat the same higher-order permutation twice (See Fig 2.3). The pieces finish when all 14,400 permutations have presented themselves, and thus both the initial materials and working process generate the form for each invention. The duration is then determined by the tempo at which one decides to interpret each work. These have been chosen somewhat arbitrarily for the MIDI renderings of each invention, in order to make the recordings last between one and two hours.

It is quite apparent that the permutational nature of this piece draws from a specific musical tradition, perhaps most obviously resembling Tom Johnson's *Chord Catalogue* (Johnson 1986), which relies upon the same basic principles for its generation. Whilst it is obvious that my own

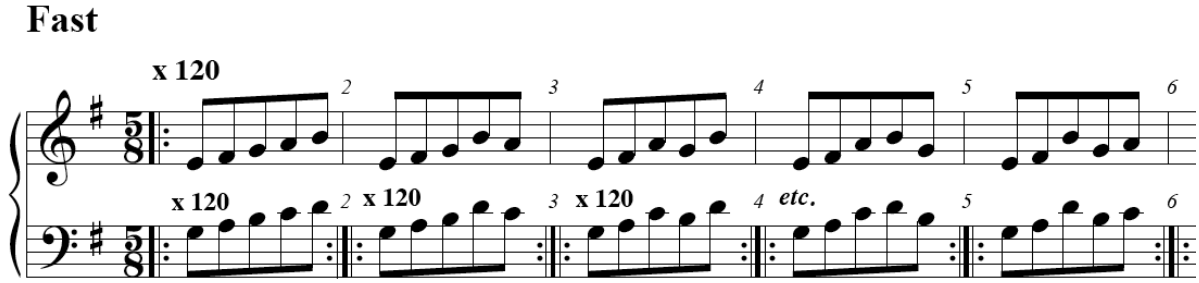

Figure 2.3: *Two Part Invention no.1*, First Five Permutations

work employs the same methodology, the motivations are in fact antipodal: whereas Johnson's work stems from a desire to channel absolutes, so that the composer becomes 'a kind of puppet being driven by some inevitable geometric-musical logic' (Johnson, p.5), I seek to problematise the 'inevitability' of this geometric object by causing it to withdraw into a space where it becomes unknowable. As the permutations proceed at a pace beyond human perceptibility, the experience becomes not one of exposing a geometric-musical logic to the ear but rather to conceal it, to the extent that subjectivity must put together the pieces left missing by the act of concealment. This subjective act dismantles the transcendence of the object, instead positioning it in a tenuous relationship between a human perspective and a nonhuman universe.

2.3 Autonomous Objects in *Metamorphosen*

In the installation *Metamorphosen* (USB #3) I place tactile transducers inside three green apples, so that fruit becomes the vibrating medium through which sound propagates. The choice of apples as the conduit for sound is a nod to René Magritte's painting *The Son of Man* (Magritte 1964) and represents an effort to make connections with the ambiguous relationships between the visible and the hidden found in Magritte's work.

> Everything we see hides another thing, we always want to see what is hidden by what we see. There is an interest in that which is hidden and which the visible does not show us. This interest can take the form of a quite intense feeling, a sort

> of conflict, one might say, between the visible that is hidden and the visible that is present. (Magritte and Torczyner 1977, p.172)

Figure 2.4: René Magritte *The Son of Man* (Magritte 1964)

Magritte's interest in concealment reflects Harman's view of objects containing elements that withdraw from view, hiding their true nature not just from human beings but also from each other. *Metamorphosen* uses sound to portray concealed environments within each apple. The sonic materials for the piece consist of various field recordings made with my mobile phone, including a recording of Richard Strauss' *Metamorphosen* (H. Von Karajan conducting the Berlin Philharmonic (Strauss and Von Karajan 1983)) being played in an adjacent room, a recording of myself talking (mostly reading emails from my sent messages folder) with the recorder being placed on the other side of a wall, and finally a recording of an empty room inside my house.

Another dimension comes into play when diffusing these recordings through apples, adding an element of concealment to the sonic materials. The surfaces of the apples, similarly to Magritte's painting, act as barrier between the gallery space in which they are placed, and the imagined environment that is being projected by the field recordings. This is not unlike the familiar experience of listening to a seashell placed against one's ear, the noise of which provokes associations with the surf, alongside all of the subjective and cultural deformations that allow such associations (the fact that seashells emerge from the sea surely aids this association, as much as the acoustic similarities). Indeed, heavy compression of the field recordings reinforce the connection with the seashell experience, as the volume of the noise floor is increased to create a rather loud hiss not dissimilar to the sounds of the surf. In both cases the medium (speaker-concealed-in-apple, seashell) becomes a barrier to complete meaning, providing only a sonic imprint that leaves the listener to wonder at the images, scents and feelings that they would encounter were they actually present within the environment being projected. The inaccessibility of the apples' inner worlds (completely manufactured in this case), just like the imagined seascape inside the shell, is what provokes subjective projections into the nature of these environments. The acoustic activity emerging out of the object, providing only a perceptually incomplete contour of the environment contained within, invites the desire to find out what is happening inside the object. Since one cannot shrink oneself down to the size of an apple or crawl into the depths of a coiled seashell, the curiosity can never be sated. One is instead left to form impressions in the mind, while the object itself retains its murky autonomy; this is where the encounter between subject and object occurs in *Metamorphosen*.

Although the idea of autonomy, characterised notably by Harman's observations surrounding the withdrawal of objects, finds its way into most of the works in this portfolio, it is particularly prevalent in the three series of works presented in this chapter. In the series of renderings entitled *What is this Thing Called...?*, I explore the autonomy of musical instruments and the relationship between parts and wholes, divorced from both their sonic and performative contexts. In the *Two-Part Inventions*, it is the mediation of technology that is brought to the forefront, and more specifically the computer which serves perhaps more than any other object of human construction as the modern emblem of technological invention. In these pieces I

Figure 2.5: *Metamorphosen*

examine the simplistic operations underlying computer processes that operate at speeds beyond human capacity; this velocity creates a differentiation between human and machine labour, thus allowing the computer to achieve a level of autonomy. Finally, *Metamorphosen* takes inspiration from Magritte to examine the relationship between perceivable and hidden aspects of objects. In this case, the apples conceal an imaginary environment hinted at through the field recordings that are diffused through transducers placed inside the apples.

Although the works discussed in this chapter present objects as distant and autonomous unknowns, their success relies equally upon the incursion of subjectivity as much as upon their rarefied objectivity. The materials and media of these works point towards what is absent from them, whether through the absence of physical sound in the case of *What is this Thing Called...?*, despite the representation of objects normally reserved for the production of sound, or the absence of a fixed medium in *Two-Part Inventions*, or indeed the absence of the physical space suggested by the sounds in *Metamorphosen*. All of these absences leave significant holes which must then be filled in by the perceiver who can imagine the sound of exploded string quartets or the bedroom inside an apple – the works can only emerge through the intersection of autonomous objects and the subjects that experience them.

Chapter 3

Contingency

The starting point for my compositions constructed with elements of contingency lies predominantly in Quentin Meillassoux's understanding of the absolute nature of contingency. As discussed in Chapter 1, Meillassoux arrives at the reasoning that contingency, or the capacity for reality to take on myriad different forms, underlies any potential understanding that humans may form of reality. In other words, the common thread between all different forms of thought is their uncertainty, given that humans cannot 'think' reality outside of thought. Since this uncertainty is unavoidable, forming the final and fundamental hurdle between thought and external reality, Meillassoux concludes that it is the product of an absolute contingency, absolute since it is the only element that binds together all conceptions of reality.

Contingency has served as a compositional standpoint at least since the early twentieth century,[2] with different forms of contingency finding their way into the individual methods of experimental composers. These methods are more commonly known in musical circles as being indeterminate, relating to contingency in their ways of embracing the many different possibilities that music might take on after removing elements of the composer's subjectivity. This thought can be summed up in Cage's desire to "make a musical composition [...] which is free of individual taste and memory (psychology) and also of the literature and traditions of the

[2]With a few notable predecessors, see Hedges 1978.

art" (Cage 1973, p.59). The relationship between this form of experimental indeterminacy and Meillassoux's philosophy lies in the deployment of contingency as a way of conceiving objective reality. In both cases contingency is viewed as an absolute in its presence outside of human thought.

My own approach is more concerned with highlighting the middle ground between objectivity, as represented in the present case by indeterminacy, and the subjective implications that such an approach inevitably elicits. As mentioned previously, I do not seek to achieve transcendence, but rather to explore how the thought of objectivity affects human experience. Thus whereas Cage's adoption of chance represents an attempt to remove subjectivity from the equation, my work seeks to actively engage with the subjective implications of contingency, which are at once embedded in the compositional choices that I make and expressed within the people who come across my work. I employ indeterminate methods in order to provoke a conversation between the distant objectivity of chance procedures and its subjective associations, the latter of which includes treating indeterminacy as a cultural artefact that now possesses a 'literature and tradition', as well as playing with the psychological and physical reactions that chance operations can activate in human beings. This latter factor perhaps brings my work closer on the level of ideas to pieces such as *Duo for Pianists 2* by Christian Wolff, in which the pianists must make decisions based on cues that are entirely contingent upon the occurrence or non-occurrence of certain events (Cage 1973, p.38), although my own works such as *No Chance Music* (USB #4) displace the psychological encounter with indeterminacy from the performer (nonexistent in this case) to whomever is experiencing the work.

Sometimes Patterns, which exists in a first version for solo tuba (USB #5) and a second version for solo bowed string instrument (USB #6), employs constrained random procedures to generate large numbers of variable scores. This composition provides arbitrary mappings of the instruments' physical terrains: the parameters of valve combinations versus overtone series in the case of the tuba, and the mappings of natural harmonics on the fingerboard in the case of the version for string instrument. In this fashion *Sometimes Patterns* generates tension between an arbitrarily imposed structure that remains indifferent to physical reality and the negotiations

that this entails on behalf of the performer. Similarly to Wolff, this composition returns the subjective encounter with indeterminacy to the hands of the performer while providing the means to potentially discover unexpected ways of interacting with the instrument.

3.1 *No Chance Music*

In this project, the production of sound is contingent upon the alignment of a series of random numerical procedures. Upon loading the webpage that hosts the work, the visitor is prompted to choose a number between 0 and 100,000,000,000,000,000. After selecting a number and pressing the start button, a series of random numbers arranged in rows appear simultaneously on the screen. The top row displays a random number between the range of 0 and 100,000,000,000,000,000. Each subsequent row then displays a random number that is between 0 and the number displayed in the preceding row. The random numbers change at different rates, with these rates of change also varying randomly. If the bottom row on the page generates the number that the visitor chose, a sound plays. This makes for a process in which the totality of possible numbers varies greatly from one instant to the next; whereas for one instant it might be quite likely that the application generates the visitor's number, in the next instant the number of possibilities might be immense, greatly reducing the likelihood that the chosen number will be generated and thus that a sound will occur.

I relate this process to Meillassoux's ontological conclusions regarding the universe as a non-totalisable entity. A universe that is non-totalisable cannot be understood as a set of physical laws and behaviours that emerge from a larger (possibly infinite) set of possible universes, as if our known universe were one side of a die with infinite facets, "each face of which [constitutes] a single universe governed by a determinate set of physical laws" (Meillassoux 2008, p.133). This 'aleatoric' conception of being is fundamentally correlationist, according to Meillassoux, as it "implicitly assumes [that] whatever is equally thinkable is equally possible" (Meillassoux 2008, p.131). Meillassoux instead proposes a non-correlated view of the universe, which happens to be rooted in the theories of mathematician Georg Cantor.

> 'Cantor's theorem', as it is known, can be intuitively glossed as follows: take any set, count its elements, then compare this number to the number of possible groupings of these elements (by two, by three – but there are also groupings 'by one', or 'by all', which is identical with the whole set). You will always obtain the same result: the set B of possible groupings (or parts) of a set A is always bigger than A - even if A is infinite. It is possible to construct an unlimited succession of infinite sets, each of which is of a quantity superior to that of the set whose parts it collects together [...] But this series itself cannot be totalized, in other words, it cannot be collected together into some 'ultimate' quantity. For it is clear that were such a quantitative totalization to exist, then it would also have to allow itself to be surpassed in accordance with the procedure of the grouping of parts. (Meillassoux 2008, pp.142–143)

A universe conceived in this manner is necessarily non-correlational, as it must include elements that are beyond what is thinkable to human beings, always exceeding any 'totalising' conception that one could make of it.

This system is reflected in *No Chance Music*: although at any given moment there is a 'total' range of possibilities from which any subset can be extracted, this 'total' is constantly varying in a random fashion, rendering it impossible to establish any kind of permanent totality. Admittedly, the application is in fact confined to an ultimate quantity consisting of the largest possible number of the top row (100,000,000,000,000,000), however as demonstrated in Cantor's theorem the number of possibilities contained within will always exceed the whole, which would make the actual 'total' of the system correspond in this case to the combination of all possibilities rather than the whole which contains these possibilities. This however gives rise to the contradictory notion of a totality that is greater than itself, the paradoxical nature of which further reinforces the case for understanding various sets (numerical or otherwise) as being non-totalisable.

Mathematical conundrums aside, the many layers of contingency present in *No Chance Music* emphasise a world of sound that remains indifferent to the expectations of human ears, serving to emphasise the psychological reactions that this might cause for the visitor of the web page. The following impression from a blog post sums up my colleague Michael Baldwin's reaction the work:

> *No Chance Music* [is] a web-based piece that feels an awful lot like playing the sound art lottery – just as hopeless as the national lottery and with a reward equally fleeting as it is rare [...] Despite its straightforward premise, the piece has always left me perplexed. For as many times as I've entered in a random number (you'd be surprised), and given my almost unhealthy attachment to opened browser tabs, I feel as though I should have heard this elusive – and by no means accidental – sound by now. However, after countless hours of running this piece in my browser my ears are none the richer [...] After some time of not hearing the sound of *No Chance Music*, an almost conspiratorial itch began to gnaw at me. Perhaps I had heard this supposed sound but didn't notice, my mind having long since wandered away from the webpage and onto one of my other 30-something tabs. Maybe another sound in my environment masked the sound of the piece. More troubling still, because there is no concrete description of the sound, my mind began to wonder whether the sound was humanly perceptible. (Baldwin 2015)

Viewed in this light, *No Chance Music* draws out the psychological implications of indeterminacy. Although the unforgiving element of chance reflects Cage's desire to "let sounds be just sounds" (Cage 1973, p.70), my focus draws itself towards the effects of an encounter between human beings and chance procedures. As reflected in Baldwin's reaction to *No Chance Music*, when faced with the inscrutable indifference of indeterminate processes, the temptation exists to make subjective projections or predictions when in reality one has no control over the situation. Similar observations have been made in psychological studies of gambling, perhaps most notably in a series of empirical tests conducted by Ellen Langer in the 1970s, who concludes:

> Studies concerned with the judgment of contingency, the "just world hypothesis," or the attribution of responsibility for an outcome all demonstrate either that people deny the operation of chance or when they do appeal to chance as an explanation for an event, this appeal is not simply a function of an objective lack of contingency [...] Why does this occur? People are motivated to control their environment [...] most social scientists agree that there is a motivation to master one's environment, and a complete mastery would include the ability to "beat the odds," that is, to control chance events. The more difficult a problem is, the more competent one feels in being able to solve it. The greatest satisfaction or feeling of competence would therefore result from being able to control the seemingly uncontrollable. (Langer 1975, p.311–323)

From this perspective, the implementation of choice in *No Chance Music*, given that the page visitor is invited to choose a number that will potentially unlock a sound, provides the impetus to project a sense of control over the process, as if choosing the 'right' number at the start could result in a successful outcome determined by the occurrence of sound. Baldwin reflects this thinking in his many efforts at re-entering different initial values, followed by the feeling that this would surely result in the occurrence of sound. When the expectation of hearing a sound is not rewarded, Baldwin proceeds to look for a reason for not having heard sound: the sound occurred but he was too distracted to hear it, perhaps it was masked by other sounds in the environment, or perhaps it wasn't even perceivable at all.[3]

This is not to say that a range of different experiences of this work are not possible, and the preceding commentary relies simply on the anecdotal reactions of one individual. However, Baldwin's reaction is consistent with Langer's more rigorous studies involving much larger cross-sections of the population (Langer 1975), therefore pointing towards a general propensity amongst humans to seek out causality in otherwise indeterminate processes. *No Chance Music* seeks to emphasise this particular intersection between subjects and objects, more specifically the projection of personal significance onto indeterminate behaviours.

[3] Although I can assure the reader that it is.

3.2 *Sometimes Patterns*

The first version of *Sometimes Patterns* consists of a series of short, traditionally notated scores for solo F tuba, whose underlying structures result from randomised paths through a two-dimensional grid. The x-axis of this grid lists the 12 standard valve combinations in descending chromatic order, whereas the y-axis represents the ascending harmonic series, beginning from the fundamental and ascending to the 12th harmonic. Through this 12 x 12 grid I then implemented Javascript code written by mathematician Nathan Clisby (Clisby 2014) to generate what is known as a Hamiltonian path. The Hamiltonian path is any path through a graph that touches every point in the graph only once, while beginning and ending at different points on the graph, or in mathematical terms, 'a graph path between two vertices of a graph that visits each vertex exactly once' (Weisstein 2016a). Although the specific operations of Clisby's code are admittedly beyond my total understanding,[4] generally speaking the algorithm selects beginning and end points on the grid at random, and then proceeds to use evenly-weighted Markov Chains to select neighbouring points in the grid that will become the next point along the path. This process is repeated until every point, or vertex, in the grid is visited exactly once, thus generating a Hamiltonian path.

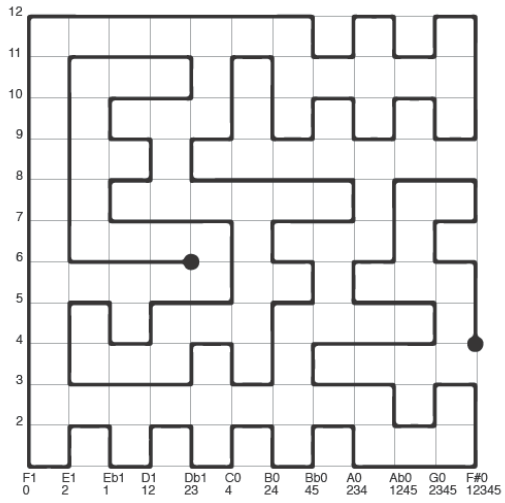

Figure 3.1: Ordering of pitches in the 3rd Order of *Sometimes Patterns*

[4]The code used in the work is itself based on a paper entitled "Secondary structures in long compact polymers" (Oberdorf et al. 2006) within which the authors propose a method for implementing randomised Hamiltonian paths for the purpose of modelling the molecular structures of polymers.

Each of the short compositions consists of a reading through a given Hamiltonian path: a move along the horizontal axis results in a change in valve combination (itself corresponding to the interval of an equal-tempered semitone), whereas a move along the vertical axis represents a shift up or down the overtone series of a single valve combination. In this manifestation of the composition I generated six different paths that I then transcribed in staff notation, with valve combinations written above each pitch. Durations are notated as a series of quavers, although in reality the rhythms retain an element of indeterminacy as they vary according to the physical challenges involved in managing to make each pitch sound. These challenges are the direct result of a compositional process that demonstrates indifference to the difficulties arising from lengthy sequences of non-standard valve/overtone combinations (particularly in the higher registers) and slurred pitches between higher partials within a single valve combination. I address these challenges in the performance instructions for the piece, stressing that rhythmic and dynamic variation is intended to emerge from the tension between arbitrary formal procedures and physical reality:

> All performable pitches must sound clearly. If it becomes necessary to slow down/accelerate or play louder/softer in order to make a pitch sound, proceed accordingly. (Flanagan 2016)

The rhythmic and dynamic variation of the composition emerges as an audible result of the encounter between the performer, their instrument, and the randomised procedures imposed by the score. On this level the piece mirrors the indeterminacy of Christian Wolff insofar as the music is shaped by contingencies that arise during the performance. However, whereas in pieces such as *Duo for Pianists 2* (Wolff 1962) or *Looking North* (Wolff 1969) performers must make decisions based on aural cues which are themselves reliant upon contingent factors, the indeterminacy of *Sometimes Patterns* results from the physical negotiation that occurs between the performer and their instrument. In this light, the piece enacts a dialogue between subject and object (represented respectively by the performer and the instrument) that is mediated by random procedures, an example of what Cage calls an "operation exterior to [the]

mind" (Cage 1973, p.35). If random procedures such as those employed in *Sometimes Patterns* indeed portray an objective force that exists outside of subjective compositional choices, while remaining indifferent to the physical and psychological factors involved in performance, the incursion of objectivity is therefore felt by both the composer and performer. On the side of the composer, my subjective decisions (I establish the initial parameters which will shape the work, themselves based on influences, previous decisions, biases) enter into a conversation with contingency by subjecting my decisions to forces outside of myself. The performer engages with contingency mentally and physically: mentally, since they themselves must make choices based on the challenges imposed by randomised processes, and physically, given that these processes remain indifferent to the ways in which the performer typically uses their instrument.

Another aspect of subject/object relationships in *Sometimes Patterns* arises from the performer's negotiation of different forces within the instrument itself, namely the opposition between valve and embouchure and the corresponding pitch relationships of chromaticism and overtones. The performer for whom this piece was composed, Max Murray, observed the following in an email correspondence:

> Basing the discussion in brass writing's evolution away from natural instruments towards chromatically-functioning instruments – I'm sure you could talk about your making thematic the fundamental functioning of the instrument within the field of 'conquered chromaticism' – on the one-hand there's some element of atavism in the whole process but driven by a post-chromatic, post-dodecaphonic appetite for saturation. That fact is reflected in how one has to approach the work which demands an ear most often associated with valve-less instruments. Also the type of intonational-expressivity [which is how I personally experience it] – the ubiquity of untempered tones – that comes to characterize the pieces – engages a type of listening totally distinct from the tonal-listening that the instrument was designed to facilitate – and somehow the tension between those things being expressive... (Murray 2016)

The tension that Murray identifies here demonstrates an interplay of cultural and physical forces at work within the instrument: the introduction of valves on the instrument represents a mechanisation of the subjective requirements of a musical culture, in this case the growing prominence of total chromaticism in the nineteenth century (Ericson 1998). At first glance, the two axes that form the pitch matrix in *Sometimes Patterns* can be associated with the two poles of culture and nature: the (possibly atavistic) cultural product that is chromaticism and the corresponding mechanical action on the X axis, versus the 'natural' properties of air circulating in a tube and the corresponding embouchure action on the Y axis.

However, this observation encounters an obstacle when one considers that valves simply provide a means of lengthening or shortening the tube and are therefore no less 'natural' than an unmodified tube. In this light, it becomes more accurate to conclude that the cultural evolution of the tuba cannot be separated from its natural basis, and that these two poles together shape the uneven terrain that the performer must work through. The random procedures in *Sometimes Patterns*, coupled with the aforementioned 'appetite for saturation', represents a flattened map of this terrain by taking the chromatic/overtone matrix at face value and refusing to give priority to either a chromatic or harmonic organisation. Thus chromaticism as addressed here is as natural as it is cultural, as objective as it is subjective; the same applies for what is commonly known as the instrument's 'natural' qualities, which are in fact just as natural as the mechanics of valves, and just as cultural as a brass tube full of air. This flattened map, however, does not eliminate the bumpiness of the terrain, rather serving to multiply the irregularities arising out of the confrontation between conflicting systems: chromaticism on the one hand, which attempts to smooth out the asymmetry of overtones, versus the emergent characteristics of the harmonic series on the other, the behaviour of which is stubbornly embedded in the physical construction of the instrument.

It became apparent after composing *Sometimes Patterns* that its existence as a set of six fixed notations could hinder the rhythmic and dynamic variability sought out through the performer's arbitrary path across a bumpy terrain. The prospect of repeatability permits a potential smoothing out of the terrain, so that repeated performances of the work by a single

performer could lead to the piece growing closer and closer to its two-dimensional map as it distances itself from the territory. In Cagean terms, the piece was closer to the composer's critical assessment of *Klavierstück IV* (Stockhausen 1952), in which "the use of indeterminacy [...] is unnecessary since it is ineffective" (Cage 1973, p.36), and further from the ultimate indeterminacy of "composition which is indeterminate with respect to its performance" (Cage 1973, p.35).

In an attempt to address this issue, I devised another version of *Sometimes Patterns* (v.2), this time for solo string instrument, whose score format allows for a much greater degree of variability between performances. The second version of the composition takes the form of an application, currently available online although it could easily be implemented offline as well, wherein the performer can generate Hamiltonian paths through a grid at random, the grid in this case representing the four different strings along the x-axis, and a representation of harmonic nodes across the fingerboard along the y-axis (see Fig 3.2). The score is reduced to a performer's reading of the path as displayed on the screen, rather than a transcription in staff notation. The included instruction that "every new performance should follow a new path" (Flanagan 2016) highlights my intention that the composition should allow for a different negotiation of the instrument's territory (quite literally in this case, as a path across the instrument's fingerboard) each time it is performed. In this fashion, the irregularities or 'bumps' that emerge along the performer's path can be preserved, provided that this performer chooses to respect the score's instruction. Overall, this particular incarnation of *Sometimes Patterns* relates more closely to Cage's transparency pieces such as *Fontana Mix*, which also employ grid structures whose different placements on a page allow for myriad realisations, the main difference here being that the indeterminacy of *Sometimes Patterns* operates directly on the physical territory of the instrument, so that the performer must navigate an arbitrarily imposed path across their instrument.

The presence of contingency in my compositions finds its source in the philosophy of Quentin Meillassoux and the now established tradition of indeterminacy in experimental music. In keeping with the overarching project of establishing connections between subjects and objects,

the compositions presented in this chapter address both the objectivity and subjectivity of contingency by foregrounding the implications of objective indeterminate processes on human behaviours. In *No Chance Music*, I attempt to provoke thought patterns associated with gambling by inviting a user to input a number, with the distant promise of a sonic prize as an eventual outcome. *Sometimes Patterns* brings about interactions between a performer and their instrument that are mediated through randomness, bringing about a performance in which the performer must negotiate the particularities of the instrument with an arbitrary map. Although both cases demonstrate a typically Cagean methodology in their implementation of chance, this methodology does not seek to erase subjectivity from the equation, but rather to emphasise a reassessment of subjectivity in the face of objective procedures. This negotiation between subjectivity and objectivity occurs either in the user, in the case of *No Chance Music*, who I invite to experience the feelings of expectation and frustration brought about by games of chance, or in the performer of *Sometimes Patterns*, who navigates the challenging resistances arising from procedures that operate independently from the capabilities of the human body.

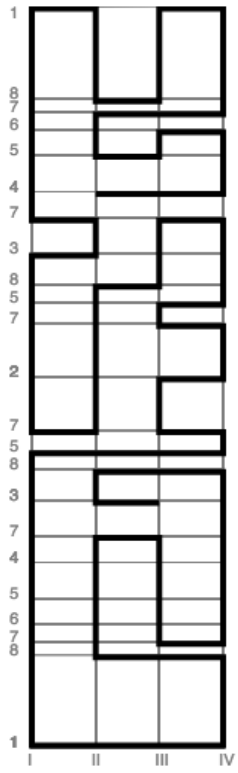

Figure 3.2: A realisation of *Sometimes Patterns V.2* for string instrument

Chapter 4

Speculation

The use of speculative methods in music relates to ancient musical theories such as the Pythagorean correspondence between music and natural order discussed in Chapter 1. Such theories look at the universe through the lens of human subjectivity, or as Joscelyn Godwin writes in his essay on speculative forms of music,

> Speculative music has to do with looking at the cosmos musically, and at music cosmically. The philosophers tell us that it is impossible for us to have unmediated knowledge of the external cosmos: we can only know it as it is reflected in our mind [...] Our picture of it depends on the state of our mental mirrors. Bright or dull, they are certainly warped, like the distorting mirrors of a fun house, by our education, our inclinations, and by the categories of knowledge we are willing to admit [...] But a mirror can also shed light in dark corners where the sun cannot penetrate. The light will be modified, shaped, or colored by the nature of the mirror. The departments of human knowledge are such mirrors [...] Speculative music is another such mirror (*speculum*), and that is where it gets its name. (Godwin 1982, p.373)

My interest in speculative music as described by Godwin lies in the interchange between objectivity and the ways in which humans attempt to understand a universe that would otherwise

remain distant and inscrutable. While remaining skeptical of any theory that asserts transcendence, given that any such approach inevitably collapses upon itself by drawing objectivity within the domain of a subjectively constructed theory and therefore negating the transcendence which it seeks to uphold, I value speculative observations that acknowledge their subjective basis while opening up a space for imaginative creations of the world. These speculations remain uncertain and in some cases entirely implausible by nature, but nonetheless can provide counterweights to affirmations that are in danger of becoming dogma. Pythagoreanism, for instance, offers a model that at various moments in time has constituted an assertion of transcendence, as music was seen to be reflected in the motions of the cosmos (Stephenson 2014). However, by rejecting such assertions of musical universality it remains possible to find value in the Pythagorean system as an imaginative speculation amidst a plethora of possibilities. Some recent musical speculations offer a Pythagorean mirroring of music reflected in the universe, while acknowledging that the vast spatiotemporal scale of the cosmos defies any attempt to bring it within a purely subjective domain. In other words, such a position provokes speculation into the nature of the universe while implicitly acknowledging its limits of understanding.

The recent work of James Whitehead (a.k.a. JLIAT) illustrates this vision, often presenting scales of time and space that are beyond human perception. For instance, in his work *The Grands* (Whitehead 2014), Whitehead imagines a series of immense grand pianos, the smallest of which is 3,100,000,000,00 km in length and located between the orbits of Uranus and Neptune. Considering the laws of relativity, a performance of John Cage's *4'33"* would last 9,126,968.67 years on such an instrument.

> The 'Cosmic Grands' are hypothetical instruments of vast dimensions, and though practically and physically impossible they open up space and time to 'musical' speculations, which as previously mentioned, was limited by the parochialism in art to the concert hall and art gallery. Our local environment has much going for it, without it life and so thought and art would not be possible, and therefore considerations of such a 'special' environment are understandable. However a danger

> arises when we see this environment as not being just special for us, but in someway privileged in itself from all other environments. (Whitehead 2014, p.6)

Conceived as a 'thought experiment' intended to demonstrate an idea rather than an artwork in the traditional sense, *The Grands* offers up a space for the imagination of music happening at a greater scale than any human could possibly experience. The impossibility of this experience is what opens up a speculative dimension: subjectivity must fill in the gaps left by the incomprehensibility of cosmic scales.

Swedish-American composer Catherine Christer Hennix pursues a similarly cosmic approach, framed within the context of cosmology.

> [...] modern cosmology [...] regards the universe as a collection of oscillations. At the lower end of this wave spectrum is the Hubble frequency presently at about 3 x 10^{18} Hz with a wave length the diameter of the entire universe. And at the upper end there is a cut-off frequency at about 10^{44} Hz (also known as the "Planck frequency") the wave length of which is limited by the Uncertainty Principle. Between these two extremes there is a discontinuous spectrum with zillions of frequencies of which we only know a fraction. However they all compose as a single composite wave form which may be considered as the form of the universe as such. A tiny subset of this giant 62-fold composite wave form is within hearing range and will be something we can listen to in the future. I call this abstraction The Hilbert Space Shruti Box when I draw on these frequencies as they are selected for my compositions. (Hennix 2011)

Hennix speculates that the audible spectrum constitutes only an infinitesimal portion of a massive range of frequencies that shape the universe, which invites speculation about the possible musical forms that could occur within the range of waveforms that surpass human audibility.

Musical speculation is not limited to the cosmic dimension, sometimes occurring within places on earth that are normally inaccessible to human ears. David Dunn's recent work surrounding the ecosystems of pine trees, specifically in relation to the pine beetles that are currently decimating tree populations across North American Boreal forests (Dunn and Crutchfield 2009), uses soundscape composition as an entry point into speculation surrounding the relationship between trees and the insects that inhabit them. More specifically, Dunn formulates a hypothesis that the beetles in question may be attracted to ultrasonic signals emitted by drought-weakened trees, a hypothesis derived from recordings that the composer made of the insides of beetle-infested trees.

> My working hypothesis for this project reads more like science fiction than science fact. I am theorizing that a much more complex micro-ecology exists between bark beetles, various fungi and their host trees. Sound probably has a much more profound role in regulating the dynamics of these relationships than previously suspected [...] For instance, we do know that one of the most common techniques for evaluating drought stress in trees is to measure their cavitation events through ultrasound monitoring. As the tree's vascular system becomes stressed from insufficient fluid transport, discontinuities in the integrity of its vascular conduits cause small partial vacuum bubbles to form. These can implode with such tremendous instantaneous force that, under laboratory conditions, they have been measured to produce temperatures up to 5,000 degrees centigrade. When these cavitation events occur, they release both light and ultrasound signals. Under extreme conditions, some trees produce these events as an almost continuous ultrasound signature [...] I am not the first person to wonder if this phenomenon is "audible" to the beetles and can play a role in their large-scale infestations. (Dunn 2001)

Dunn readily accepts the speculative dimension of his work, itself derived as much from artistic enquiry as it is from science. The composer argues, however, that this artistic questioning represents a dimension of thought that is difficult to achieve with scientific methodology alone:

> I readily admit just how fanciful my flights of hypothetical imagination might be, not to mention my lack of scientific credentials, but I also happen to think that this is one of the most important roles for artists in forging a new collaborative relationship with science: science fiction that might lead to science fact. Speculation and imaginative synthesis are the kind of thinking that artists, when they are thinking at all, do best. Unfortunately there is currently not much room for this kind of thinking in science because it is regarded as a threat to professional disciplinary rigor. At its worst, generalism is regarded as amateurish and flaky. It is, however, one of the few social benefits of being an artist that we can be tolerated, even encouraged, for our flights of imagination. (Dunn 2001)

Not being involved with scientific activity myself I cannot speak for the presence or lack of "imaginative synthesis" in current scientific methodology, however I share Dunn's position that artistic practice can offer hypotheses about reality that are unhindered by the parameters of empirical thought. Whereas scientific empiricism relies on a separation of nature and culture (Latour 1993), art does not necessitate such a separation and therefore can manifest an interpenetration of human and nonhuman elements. In my own speculative works, rather than putting forward specific hypotheses as is the case with JLIAT, Hennix and Dunn, I seek to provoke speculation on behalf of those experiencing the work. Thus, whereas JLIAT's *The Grands* quite clearly sets out a vision of a non-correlational universe derived from Meillassoux's philosophy, and Hennix adopts an extended 'Harmony of the Spheres' theory as a basis for composition, my speculative compositions leave the question of the nonhuman unanswered while reflecting this question back onto the human subject. In order to accomplish this, the works discussed in this chapter prompt the perceiver to consider their situation in the face of the Great Outdoors through speculation, by proposing impossible musical situations that can only be imagined, or by presenting a combination of perceivable and imperceptible materials in my compositions. These deliberate acts of concealment echo the ideas presented in Chapter 2 - the *Two-Part Inventions* and *What is This Thing Called...* series contain elements that are also inscrutable and therefore present an equal invitation to speculation. However, the topic of spec-

ulation was much more at the forefront of my thinking in works such as *Mixtapes for....* (USB #7), which invites speculation into the nature of sound in places that are normally barred from human access, inviting people to imagine themselves experiencing music within these places, one of these being the human body. *Sonification of the electric field average intensity in dB above background at 76 logarithmically spaced frequencies ranging from 616 Hz to 10085542 Hz, between the dates 19-01-2016 at 00:01:30.000 and 19-01-2016 at 00:58:30.000* (USB #8)[5] presents a spectrum of frequencies of which only a limited amount are audible to human ears, therefore leaving gaps in the spectrum that a listener must fill in with their mind. This album also adopts a critical approach to sonification, which is most frequently viewed as a tool for understanding various patterns and behaviours that are not normally audible – in this case, I seek the exact opposite by attempting to obscure the understanding of behaviours, therefore directing the focus towards the speculative human rather than the sonified phenomenon itself.

4.1 *Mixtapes for...*

This series invites speculation on the nature of music within contexts that are inaccessible to human beings. For instance, in *Mixtape for Space*, the performer is instructed to diffuse a playlist of music, with some of the tracks containing associations with science fiction and outer space (such as the introduction to *Also Sprach Zarathustra* and the main title theme from *Blade Runner*), through speakers that are adrift in space. Since sound as we experience it cannot propagate in space, the result would be inaudible, thus 'neutralising' the contrasting characteristics of each piece on the playlist. In such a fashion, both Merzbow's *Woodpecker No. 1* (a piece of Japanese noise music) and Cage's *4'33"*, two works which would normally be considered polar opposites in terms of their acoustic qualities, become in a sense one and the same thing, losing all of their cultural significance when taken outside of their normal (audible) context and diffused into the acoustic silence of empty space. The subjective impact of this cultural leveling out is then brought to the forefront, inviting a questioning of the weight and

[5]Hereafter referred to as *Sonification of...*

significance of culture within the broader spectrum of the nonhuman universe.

Mixtape for a Stomach presents a similar experience that treats the human body as an object that is as alien to us as outer space. In the score I instruct the performer to swallow a loudspeaker and diffuse through it a playlist of music related to themes such as food, digestion or bacteria (tracks include *Eat to the Beat* by Blondie and System of a Down's *Chop Suey*), inside their stomach. Having never attempted a performance, I cannot know for sure to what extent the music would be audible from the outside. However, I can imagine how drastically transformed the sound would be, when passed through the multiple filtering layers of stomach acid, muscle and fat tissue. The sounding result would present the music being played as a foreign entity, displaced from its familiar context, in addition to revealing the strange inner workings of the performer's own body by setting their insides into vibration.

Furthermore, through this imagined transformation the cultural significance of the songs, whose subjects all address the digestive system, food or bacteria, enters into contact with the physical manifestation of the themes and lyrics that the songs portray. In this manner, an intersection is created between nature and culture, which aligns with the overall project of highlighting interactions between subjects and objects.

4.2 *Sonification of...*

Sonification of... presents in sound one hour's worth of data retrieved from NASA's WIND spacecraft, which is currently taking measurements of radio and plasma waves occurring in the solar wind (Wilson III 2016). Sonification of data collected by various instruments in space has become increasingly prevalent in recent decades,[6] serving as both a practical method of understanding physical phenomena that are otherwise imperceivable by human senses, as a complement or alternative to visualisation, in addition to a pedagogical tool for generating

[6]Some recent examples include Justin Joque's *Listening to the Dow* (Joque 2011), the LHCSound group who have produced sonifications of data from the Large Hadron Collider at CERN (LHCSound), and Martin John Callanan's *Sonification of You*, a live sonification of ambient wireless communications signals (Callanan 2016).

public interest into space exploration and research (see McGuire). Most of the signals that are measured by space instruments are imperceivable by human beings, and thus require considerable human and technological intervention in order to scale and transform incoming data into a perceivable signal (auditory or otherwise), in other words to scale the data into a format that conveys significance about the events being studied (Hermann, Hunt, and Neuhoff 2011). This particular project seeks to achieve the opposite by leaving out temporal and frequential scaling; I have sonified data from a particular instrument on board the WIND spacecraft that takes amplitude samples of the solar wind, measured in decibels at 76 predetermined frequencies, every three minutes (See Fig 4.1). What is heard then are 76 separate frequencies, some of which are beyond the audible range, represented as a series of sine tones whose individual amplitudes vary at intervals of three minutes, over the course of one hour. From a scientific perspective, this particular sonification is completely useless as it only represents a very brief snippet of solar wind activity, revealing nothing about larger scale changes in solar activity. Typically, sonification takes much larger samples of data and compresses them into shorter time periods in order for the changes in behaviour to be made audible.[7] In the case of this album it is the mechanical behaviour of the measuring instrument that is made audible: the 76 fixed frequencies at which it samples incoming signals, in addition to the periodic re-sampling of signals at three-minute intervals. The sounding result reveals much more about the tedious process of collecting and cataloguing massive amounts of data rather than the dynamic motion of the solar wind. Therefore this particular sonification project shifts the focus away from the object being studied (solar wind) and towards the humans that study the object, in addition to their machines. The questions that arise then do not relate to the behaviours of solar wind (nothing useful can possibly be learned about the solar wind from hearing this album), but rather address the human's position in relation to this cosmic phenomonon: how and why do we study such phenomena, what do we gain from this understanding, and does the exercise of sonification truly allow us to 'know' the solar wind?

[7] See http://cse.ssl.berkeley.edu/stereo_solarwind/sounds_examples2.html for examples of solar wind data sonification.

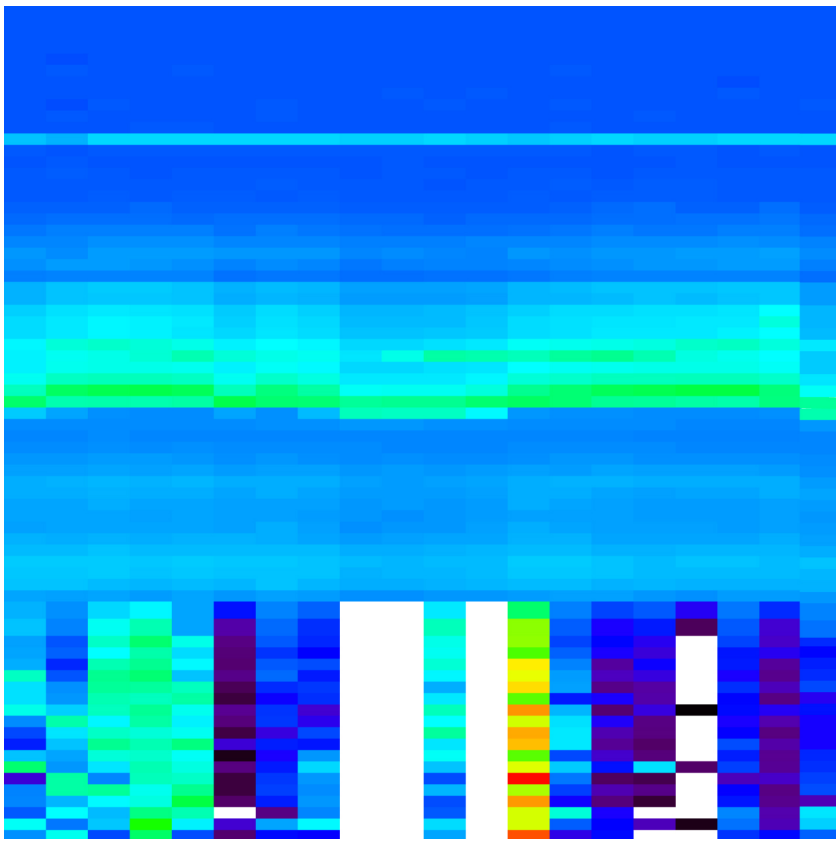

Figure 4.1: Spectral representation of the data used in *Sonification Of...* Blank / white sections represent missing data.

An important component of the album lies in its speculative dimension, in other words the range of frequencies that are speculatively present and yet beyond the audible range. As stated in the lengthy title, the frequency range being sampled by the WIND spacecraft is between 268 Hz and 10,085,542 Hz or 10,085.542 kHz, the latter of which is well beyond the range of human hearing and indeed the range of any sound-production mechanism used to both generate and diffuse the album (Max/MSP patch, sound card, loudspeaker, etc.). Thus only the first 31 frequencies synthesised are in the audible range (below ca. 20,000 Hz), and the remaining 45 frequencies sampled by the spacecraft exist purely as silent data. As is perhaps more typical with data sonification, I could easily have developed a scaling process which would have brought all of the frequencies within audible range. However, this would have countered the speculative dimension of the work, which is intended to project purely hypothetical frequencies as much as audible ones. In this manner, the audible frequencies provide only an incomplete imprint of the full spectrum of solar-wave activity being captured by the spacecraft; the rest of the picture is left to the listener's imagination.

The speculative dimension presented in this chapter pursues the Pythagorean tradition of situating music in external reality, albeit in such a fashion as to highlight the subjective implications of this external reality. Such an effort represents a negotiation between subjectivity and objectivity, as music that is unfathomable or imperceptible by humans can only be hinted at and requires subjectivity to fill in the blanks. It is this type of negotiation that my speculative compositions attempt to elicit. In *Mixtape for Space* and *Mixtape for a Stomach*, a hypothetical performer is instructed to diffuse a topical playlist in an environment that is acoustically inaccessible to humans, i.e outer space and the human stomach. *Sonification of...* brings about a situation in which audible and fictitious tones intermingle to form a composition that is as real as it is imagined, as objective as it is subjective.

Chapter 5

Embodiment

The theme of embodiment relates on a theoretical level to posthuman conceptions of the human subject, which range from familiar sci-fi scenarios of humans departing their corporeal beings to become data streams, to more embodied visions of subjectivity within which authors reject clear distinctions between consciousness and the body. These two poles of posthumanism are the source of much confusion for those unfamiliar with the field, and thus it is important to make a distinction between what has come to be known as transhumanism, which evokes the former conception of humans transcending corporeality, and posthumanism, which contends for the latter. Cary Wolfe succinctly clarifies this distinction:

> I emphasize two crucial points regarding my sense of posthumanism [...] The first has to do with perhaps the fundamental anthropological dogma associated with humanism [...] : namely, that "the human" is achieved by escaping or repressing not just its animal origins in nature, the biological, and the evolutionary, but more generally by transcending the bonds of materiality and embodiment altogether. In this respect, my sense of posthumanism is the opposite of transhumanism, and in this light, transhumanism should be seen as an intensification of humanism. (Wolfe 2009, pp.xiv–xv)

Wolfe proposes that a transhumanist vision of disembodied consciousness perpetuates the autonomous subject of humanism, whereas posthumanism moves beyond the construction of a transcendent human subject to conceive of humans beings as being inextricable from their biological and technological environments.

> [Posthumanism] comes both before and after humanism: before in the sense that it names the embodiment and embeddedness of the human being in not just its biological but also its technological world, the prosthetic coevolution of the human animal with the technicity of tools and external archival mechanisms (such as language and culture) [...] But it comes after in the sense that posthumanism names a historical moment in which the decentering of the human by its imbrication in technical, medical, informatic, and economic networks is increasingly impossible to ignore, a historical development that points toward the necessity of new theoretical paradigms (but also thrusts them on us), a new mode of thought that comes after the cultural repressions and fantasies, the philosophical protocols and evasions, of humanism as a historically specific phenomenon. (Wolfe 2009, pp.xv–xvi)

No sweeter sound than my own name (USB #9), for solo vocalist and live electronics, seeks to present a confrontation between a humanist subject conceived to be autonomous and its inevitable imbrication within bio/technological systems. In this fashion, the encounter between subject and object that characterises other works in my portfolio plays out here within the terrain of the body. The composition elicits simultaneous effects of distance and proximity from/to the human body through its most sonorous component, the voice. Moreover, the performance of this piece presents a portrait of a human subject responding to the conditions imposed by external processes: an amplified, disembodied voice, the parametric separation of otherwise coexistent vocal mechanisms, a degradation of the voice into digital noise.

No sweeter sound than my own name was conceived in collaboration with fellow composer/performer Michael Baldwin, beginning from initial informal conversations about the conceptual background for the piece and how this might be expressed in the performance. Following these

conversations I set up several studio sessions with Michael during which I recorded vocal improvisations that responded to specific techniques, including vocal fry, different forms of breathing, humming, and other sonorities achieved through constriction of the vocal tract.[8] From a very early stage it became important to me that all sounds should be produced with the mouth closed and recorded with a contact microphone attached to the throat, in order to isolate the voice from its expected exit point. This represents an effort to objectify the voice as much as possible by bypassing emotional communication via movement of the face and mouth (Scherer 1995).

The isolation of the voice is reflected in the compositional methods as well, which attempt to treat the vocal materials as dis-affectedly as possible by categorising them according to the physical parameters of throat constriction and tongue movement against the back palette and airflow, as opposed to their affective or emotive associations. As much as this parametric mindset represents an attempt at objectification, my adoption of this approach reveals a very subjective bias: Baldwin's earlier work as a composer emerges from a parametric philosophy, itself a response to the work of Aaron Cassidy (my own PhD supervisor) and other colleagues/former students of Aaron's, including my friend and colleague Alex Grimes. Thus the methodology at the basis of this composition, while representing an attempt at objectifying the voice through parametricisation, somewhat subverts its own objective nature by emerging as a result of personal relationships and influences. Indeed, this realisation marked a turning point in the focus of my PhD project, as I began to realise how subjectivity can reveal itself through the very process of objectification.

After collecting the initial improvisations I began the work of making categories of sound which would form the building blocks of the composition. These were eventually narrowed down to the following: controlled breathing (the duration of breaths as well as the intensity became parameters), vocal fry of varying speeds & intensities, humming, gargling, a high-pitched whine of indeterminate pitch, and moments of silence during which the performer holds their breath.

[8]Extensive audiovisual and textual documentation of the process can be found on Michael Baldwin's blog: https://michaelbaldwincomposer.wordpress.com/beavan-flanagan-no-sweeter-sound/.

All of the sounding parameters are submitted to filtering achieved by movement of the tongue away from and towards the back palette. Two distinct moments in the final composition diverge from these materials, notably at 13m15s in the video recording where the performer attempts to speak a series of words and nonsensical vocalisations while keeping the mouth closed, and at 15m18s where the performer gradually begins to open their mouth as if to speak, before closing it abruptly. Other than these two distinctive moments, the form of the piece represents a somewhat haphazard alternation between different parameters, with little sense of change or progression. The absence of dramatic change in the form serves to add a dimension of impenetrability, enhancing the neutrality of the performance.

The score consists of an audio file diffused through earbud-type headphones in the performer's ear, rather than notation. Given that the piece involves an important visual element requiring the performer's face to become the principle focus (even if its intentional lack of movement suggests otherwise), music stands and a paper score would have provided a distraction from this and caused the potential for eye movement from the performer who is instructed to remain as motionless and expressionless as possible (See Fig.5.1). With this in mind, the motivation behind making an audio score results from staging concerns, rather than any inherent performative differences that such a format might entail.[9] This reasoning combines with Baldwin's own propensities as a composer and performer: his own work frequently employs audiovisual methods of conveying score information (albeit for quite different reasons than my own), and as a performer we both agreed that he felt more comfortable following audio instructions rather than learning the piece from a notated score.

The resulting performance manifests a simultaneous effect of distance and proximity. The proximity is perhaps best achieved through the use of the contact microphone presenting an acoustic which is highly intimate and close up. I liken the quality of the resultant sound to the way I actually hear the sound of my own voice when I speak: fuzzy, muffled, somewhat claustrophobic. Thus the piece represents an amplification of the interior that reinforces the

[9]It occurs to me that the piece could quite easily have been notated graphically, perhaps with quite similar results.

embodiment of the voice, embedded as it is in the physical mechanisms that allow it to function. This aspect will resonate with any reader familiar with Barthes' oft-cited notion of the 'grain' of the voice.

> Listen to a Russian bass (a church bass – opera is a genre in which the voice has gone over in its entirety to dramatic expressivity, a voice with a grain which little signifies): something is there, manifest and stubborn (one hears only *that*), beyond (or before) the meaning of the words, their form (the litany), the melisma, and event the style of execution: something which is directly in the cantor's body, brought to your ears in one and the same movement from deep down in the cavities, the muscles, the membranes, the cartilages, and from deep down in the Slavonic language, as though a single skin lines the inner flesh of the performer and the music he sings. The voice is not personal: it expresses nothing of the cantor, of his soul; it is not original (all Russian cantors have roughly the same voice), and at the same time it is individual: it has us bear a body which has no civil identity, no 'personality', but which is nevertheless a separate body [...] The 'grain' is that: the materiality of the body speaking its mother tongue: perhaps the letter, almost certainly *significance*. (Barthes and Heath 1977, pp.181-182).

Although I would temper Barthes' argument by positing that the perception of 'grain' in vocal music is largely due to how one chooses to listen to the voice, therefore making it possible to extract 'expressivity' in Russian bass singing as much as it is possible to perceive the grain of operatic singing, it remains possible that certain practices can emphasise the grain over the expressive, as is the case in *No sweeter sound than my own name* through the prioritisation of the physical operations of the voice.

The proximity effect brought about by this heightened focus on the grain, however, is of course as artificial as it is technologically mediated – during the performance the audience is hearing interiority at least thrice removed: from the contact microphone to the computer, to the loudspeaker projecting the performer's voice; from sound to data, back to sound. This technological

Figure 5.1: Photo from the premiere of *No sweeter sound than my own name*. Photo Credit: Tom Hartford.

intervention brings about a distancing between the voice and its sounding. The audience no longer hears a human voice, rather a representation of a human voice as interpreted by technological agents. This distancing grows as the computer's processing becomes more present over the course of the piece: the noise that gradually takes over the vocal signal takes the sound further and further away from the body, and closer to the external circuitry that projects the sound. On a visual level, while the presence of the performer on stage, illuminated and intimately positioned near the audience, makes it clear that it is his body and his voice producing sound, the near-absence of any outward sign of vocal expression reinforces the disembodiment of sound provided by the electronic mediation.

Overall, aspects of embodiment and disembodiment in this composition provide a specific occurrence of an encounter between subjects and objects. The object is perhaps predictably represented by the intervening technology (amplification and computer processing), which both amplifies the grain of the voice and distances it from its human subject. And yet a human performing sounds with their voice invites an interpretation of the piece as a particular expression of the performer's self, which emerges out of the attempt at objectification. Even in the

absence of language and facial expression, vocal sound remains entrenched in emotional content and invites audiences to interpret the sounds accordingly. Indeed, the inseparability of physical vocal parameters such as fundamental frequency, formant and spectrum from their emotional connotations have been the subject of empirical study in recent years, such as in the work of Klaus R. Scherer, who observes:

> As vocalization, which remained a major modality for analog emotion expression, became the production system for the highly formalized, segmental systems of language and singing, both of these functions needed to be served at the same time. Thus, in speech, changes in fundamental frequency (Fo), formant structure, or characteristics of the glottal source spectrum can, depending on the language and the context, serve to communicate phonological contrasts, syntactic choices, pragmatic meaning, or emotional expression. (Scherer 1995, p.236)

With this in mind, any form of vocalisation is susceptible to provoking different forms of intersubjective interpretation, no matter how immobile or inscrutable the performer's actions are. Indeed, after witnessing a performance of the piece several audience members shared with me their emotional reactions to the performance, which ranged from anxiety and isolation to boredom and bafflement (these latter reactions will be explored in more depth in the next chapter). During one performance, at a particularly repetitive moment in the piece, one audience member began tapping their feet and clapping their hands quite loudly in time with the music for an extended duration, as if attempting to extract a degree of drama from the piece that would otherwise have been absent.

The relationship with posthumanism occurs most significantly in the embodied aspects of subjectivity that *No sweeter sound than my own name* attempts to highlight. In this form of posthumanism, subjectivity is no longer considered as a disembodied consciousness, but rather embedded in the body. Such a shift suggests that subjectivity is therefore shaped by the body and its biotechnological environment. In *No sweeter sound than my own name* this embodiment is represented both through the mediation of technology, which amplifies the mechanisms of

the body while causing it to extend outside of itself into external objects, and in the subjective content of these bodily mechanisms in which audiences identify affective meaning in otherwise neutral vocalisations. Thus, subjectivity emerges through the very attempt at objectification - via the chosen methodologies (themselves revealed to be subjectively biased through their network of influences) and the human drama that unfolds as a result of the performer's fraught encounter with objectification.

Chapter 6

Flatness, Boredom

This chapter addresses my approach to musical structure, specifically in relation to a particular understanding of flatness and the accompanying feeling of boredom. My structural methods were hinted at in the prologue, as a move away from a view of composition as the derivation of an audible surface which conceals an underlying structure that is itself inaudible, towards a flattening out of the relationship between surface and structure. The former view of structure represents an architectonic approach that finds its way into Grisey's division of musical time into the 'skeleton', 'flesh' and 'skin' (Grisey 1987), and remains most significant in the case of my own music as the methods employed in several of my previous compositions remain indebted to this model. More recent compositions reflect a shift away from this mentality, instead seeking to reveal structure by rendering it audible, therefore blurring the distinction between surface and structure. This forms a central characteristic of music by composers such as Alvin Lucier and James Tenney, as reflected in Lucier's desire to "[cut] things down to their simplest form" (Lucier, Gronemeyer, and Oehlschlagel 1995, p.232). Thus, a composition such as Lucier's *Music on a Long Thin Wire* presents itself as an audible unveiling of the resonance of a string, which forms both the material and form of the piece, both its surface and its structure. However, whereas Lucier reduces in order to reveal an object (see Lucier, Gronemeyer, and Oehlschlagel 1995, p.232), my flattened approach to structure reveals little to nothing about the object being observed, instead shifting the focus towards the listener's

experience of a reductive processes. That experience is in this context framed by boredom. Whilst I have already discussed the deliberate obfuscation of musical objects in the context of autonomy and speculation, for instance in the *Two-Part Inventions* that demonstrate the autonomy of computational procedures, the boredom elicited by objects that do not necessarily function *for us* remains a topic to be explored. Indeed, boredom is at the forefront of most of my works that involve a temporal dimension,[10] including *Two-Part Inventions* for which the temptation to skip ahead on the playbar is ever-present, and *No sweeter sound than my own name*, which provoked a feeling of surfeit in members of the audience in reaction to its rather arid form. In this chapter I will focus on three other works within which boredom performs a vital role: *Sonification of...*, *Fields* and *Hypersolid*.

On a temporal level, the flatness of the works discussed in this chapter is often represented by a certain lack of salient structural changes, coupled with a built-in sense of predictability and inevitability. This is particularly the case in *Sonification of...*, where I impose a rather obvious formal procedure, after which the work becomes little more than a situation in which a listener waits[11] for the inevitable outcome of a given process. This temporal aspect of the work relates to the overarching concern with addressing subjective engagements with objects, which can in many cases evoke sensations of wonder associated with the sublime (for instance, when contemplating the scale of the universe or the structural perfection of snowflakes), but whose impenetrability can also lead to the experience of boredom, as it can be felt in processes that operate on scales beyond immediate perception. eldritch Priest finds the root of this particular form of boredom in the confrontation between a finite subject and an infinite universe.

> Boredom [...] is a coping mechanism that cradles us from the madness of the infinite, but, insofar as there is no end to being bored, its cradle reduplicates the summons of infinity. Boredom's sprawl is therefore the propagation of an ambivalent event that shelters the subject from the loss of its practicable horizon with a homeless mood. (Priest 2011)

[10] As opposed to the illustrations and perhaps the text scores if they are to remain unperformed.

[11] Or indeed skips ahead, or stops the tracks from playing altogether, given that these works have yet to be diffused live and exist solely on my website and SoundCloud page.

In identifying boredom as the reverse effect of an encounter with the infinite, reverse as it appears in opposition to the overwhelming awe of facing the nonhuman, Priest directly evokes Sianne Ngai's concept of the 'stuplime' as a postmodern equivalent of the sublime.

> [...] "sublime" seems an inappropriate term to use here, even in spite of its critical voguishness today, which marks the persistence of an older aesthetic tradition where it was typically invoked in response to things overwhelmingly vast or massive and large (mountains, seas, the infinite, and so forth)—things that threaten to crush the subjectivity out of us [...] and point to the limits of our psychological and cognitive faculties. In this sense, the term seems fully applicable. But while the sublime encompasses the feeling of awe or astonishment [...], it fails to circumscribe the concomitantly solicited effect of boredom [...] One way of calling attention to the affinity between exhaustion and the astonishment particular to the sublime, invoking the latter while detaching it from its previous romantic affiliations, is to refer to the aesthetic experience I am talking about—one in which astonishment is paradoxically united with boredom as the stuplime. (Ngai 2000)

The stuplime provides an apt description for my own works that address the boredom associated with flatness, either through the unveiling of a process whose outcome is known from the start, the reduction of structurally salient changes which make way for singular forms, or the flattening of spatial relationships between different sounds.

6.1 *Sonification of...*

I have previously discussed this work in its relation to its balancing of audible and inaudible frequencies, the latter of which exist to human beings in an inaudible, speculative capacity. Another significant thematic area of the work lies in its engagement with the current topic of flatness and boredom. *Sonification of...* seeks to tease out and experience of the stuplime in

its revelation of the flip side of cosmic contemplation, most notably the boredom activated by human beings' inability to directly perceive the massive operational scales of cosmic events. Instead, such events are only understood through the collection of mass data, which although scientifically relevant yields little of perceptual salience in its raw and untempered form.

The Bandcamp page that hosts *Sonification of...* provides some statistics that reflect listeners' potential levels of boredom. The 'stats' page of my Bandcamp profile (Bandcamp 2016) reveals that out of a total of 146 plays between 21 March 2016 (the date on which the album was uploaded) and 08 October 2016 (the date at which I am writing this paragraph), 95 of these plays are classified as 'skips', meaning that less than 10% of the track was played (for a track lasting 3m00s, this corresponds to a listening duration of 18s or less), 38 are 'partial' plays, corresponding to more than 10% of the track but stopped before the 90% mark, and 13 are classed as complete plays. Furthermore, as might be expected, the number of plays for each track diminishes significantly as the album progresses (see Fig 6.1). Whilst I cannot ignore the possibility that these statistics reveal equally as much about general modes of listening on the Internet as they do about the musical materials of the album, the tracks certainly do not appear to encourage prolonged and attentive listening. Therefore I can only hypothesise that the unchanging forms of each track lead the listener to predict the outcome to the extent that they no longer feel that it is necessary to listen through to the end of a given track, and even less so to the end of the album.

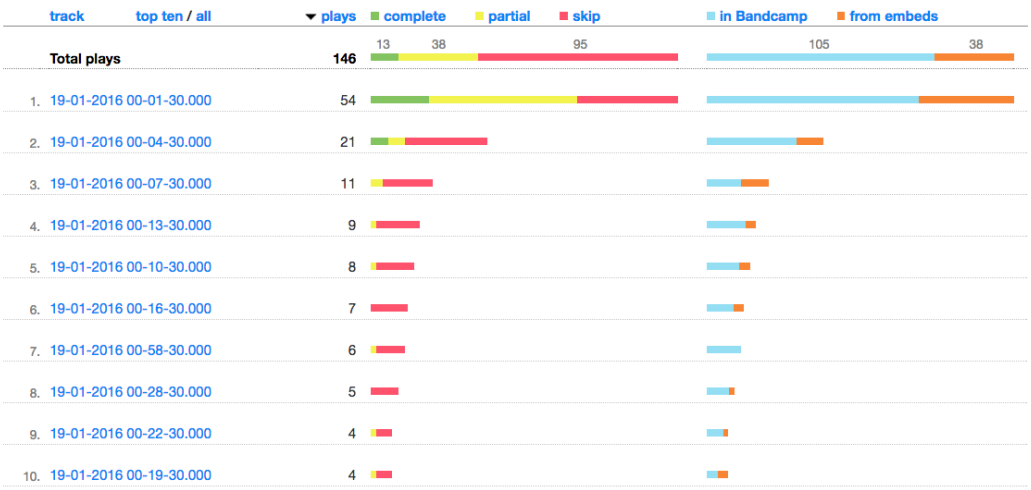

Figure 6.1: Listening Statistics for *Sonification of...* (Bandcamp 2016)

I would attribute the boring experience of listening to *Sonification of...* to the flatness of the work's structure that itself results from the sonified ordering of data streams. Structural flatness in this case refers to the flattening of material and form, the material in this case being the data set whose intervallic sampling generates the musical structure as well. In this regard, the work reflects Lucier's non-interventionist approach in which the "composer has withdrawn from the situation" (Tenney, in Lucier, Gronemeyer, and Oehlschlagel 1995, p.236). The lack of intervention[12] yields a form in which particularly salient perceptual features are absent, with the most significant changes occurring with at the beginning of a new track. As these changes occur at regular intervals and are indeed visible to anyone viewing the track list while listening, the form of the album becomes immediately predictable — a key ingredient of boredom (Toohey 2011).

6.2 *Fields*

I include the seven-instrument chamber composition *Fields* (USB #10) in the present chapter because it exhibits a merging of surface and structure, although certain ornamental and durational conceits render the piece perhaps less prominently 'flat' than some of the other works discussed here. If I am to be completely candid, the reasons for this stem from a combination of my own self-consciousness, particularly prominent in the process of composing this piece, which was a commission whose outcome was a possible prize of considerable worth, in addition to the durational limitations set out by the commissioning body. Therefore this piece represents a negotiation of my motivations in implementing structural flatness as a method of generating boredom, as set out in Sianne Ngai's concept of the stuplime, and a parallel personal project of composing a sensuous and timbrally salient piece of music that would excite continental new music audiences. In my mind, the fact that these two motivations are completely at odds with each other results in a composition which achieves neither goal, and is instead neither

[12] Although my intervention does occur on the level of choice, given that I chose to sonify the particular data set with certain conceptual goals in mind, the manipulation of sonic materials is more or less given to me in this case, with little intervention on the level of structural transformation.

'boring' nor 'interesting', or if I am to be a little less harsh, only somewhat interesting and a little bit boring. Setting aside this disclaimer, I will focus on the aspects that illustrate the present thematic category, namely the piece's rooting in a particularly Romantic form of boredom exemplified by the implementation of a single harmonic progression which governs the composition.

Written for clarinet, flute, percussion, piano, violin, viola and cello, the process of composing *Fields* began with a descending triadic progression that I devised at the keyboard, taking inspiration from the left hand of Chopin's *Prelude in E Minor, Opus 28 no.4* (Chopin 1839). In this Prelude the left-hand chords continuously descend one note at time, most often in increments of a semitone:

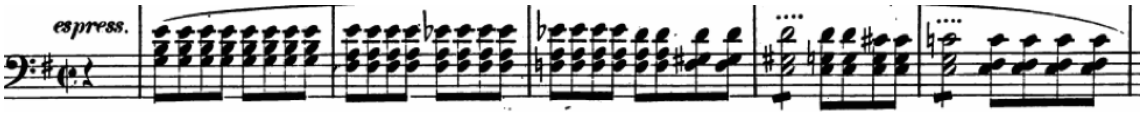

Figure 6.2: Chopin *Prelude no.4 in E Minor*, first five bars

I have always been particularly taken with the cyclical nature of many of Chopin's compositions, whose sequential harmonic progressions such as the one presented here exemplify a sense of inevitability that coheres with the stuplime boredom presented by Ngai and Priest, even if his compositions predate the concept by more than a century. Perhaps it makes more sense in the case of Chopin to talk of *mélancolie*, or the kind of existential boredom that characterises much late nineteenth-century literature, particularly in France. This has been pointed out by Peter Toohey in his book *Boredom: A Lively History*:

> Melancholy or existential boredom is a Gallic obsession. Such 'iconic' books as Gustave Flaubert's *Madame Bovary*, Jean-Paul Sartre's *Nausea* (the title intended by the author was *Melancholy*), or Albert Camus' *The Outsider* have this condition at their heart [...] The precise nature of existential boredom can [...] seem to be protean: depression, melancholy, superfluity, boredom, as well as a sense of frustration, surfeit, disgust, indifference, apathy, and a feeling of entrapment are all names of feelings to be associated with it. (Toohey 2011, p.29)

Chopin composed the *Prelude in E Minor* during his time in Mallorca with his lover George Sand and her children (Brown 1957), where they were hoping to escape the damp Paris winter in the hopes of improving Chopin's ill health. Their time in Mallorca is documented in Sand's novel *A Winter in Majorca* (Sand, Graves, and Quadrado 1956), which describes a less than idyllic sojourn characterised by rain, damp and bitter winds that was exacerbated by their stay in a cold Carthusian monastery, in a perfect characterisation of the "Gallic obsession" with melancholy. Although the connections between the dullness of Chopin's Mallorcan experience and the inexorable downward trajectory of the Prelude in E Minor remains purely speculative, this narrative association nonetheless drew me towards the progression and led me to create a similar chord sequence which forms the basis of *Fields*:

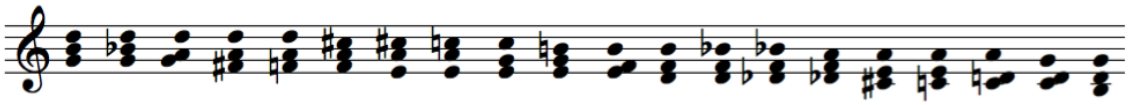

Figure 6.3: Initial chord progression in *Fields*

This highly directional progression forms the basic building blocks for the flute, clarinet, piano and vibraphone parts, and is used by these instruments throughout the piece. In parallel, I devised a second harmonic progression that ascends in contrary motion, built on natural harmonics of each chord in the original series (microtonal accidentals indicate the 7th harmonic of a given string):

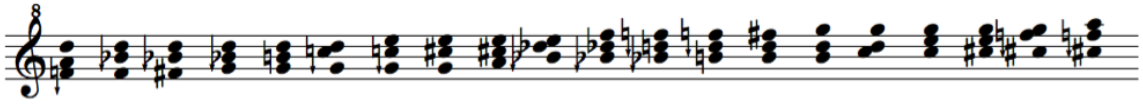

Figure 6.4: Harmonic progression in contrary motion

These chords are performed by the remaining string instruments throughout the piece. Formally the piece undertakes various trajectories through the parallel harmonic progressions, largely obtained by transcribing my own improvisations. In these improvisations I traced various semi-randomised paths through the chord sequence, resulting in a haphazard, wandering progression that hints at tonal functionality while never providing a complete sense of tension

and resolution. As the chord sequences descend or ascend in register they cycle through different chordal inversions. In total the harmonic progression cycles through five different registers, forming the following progression:

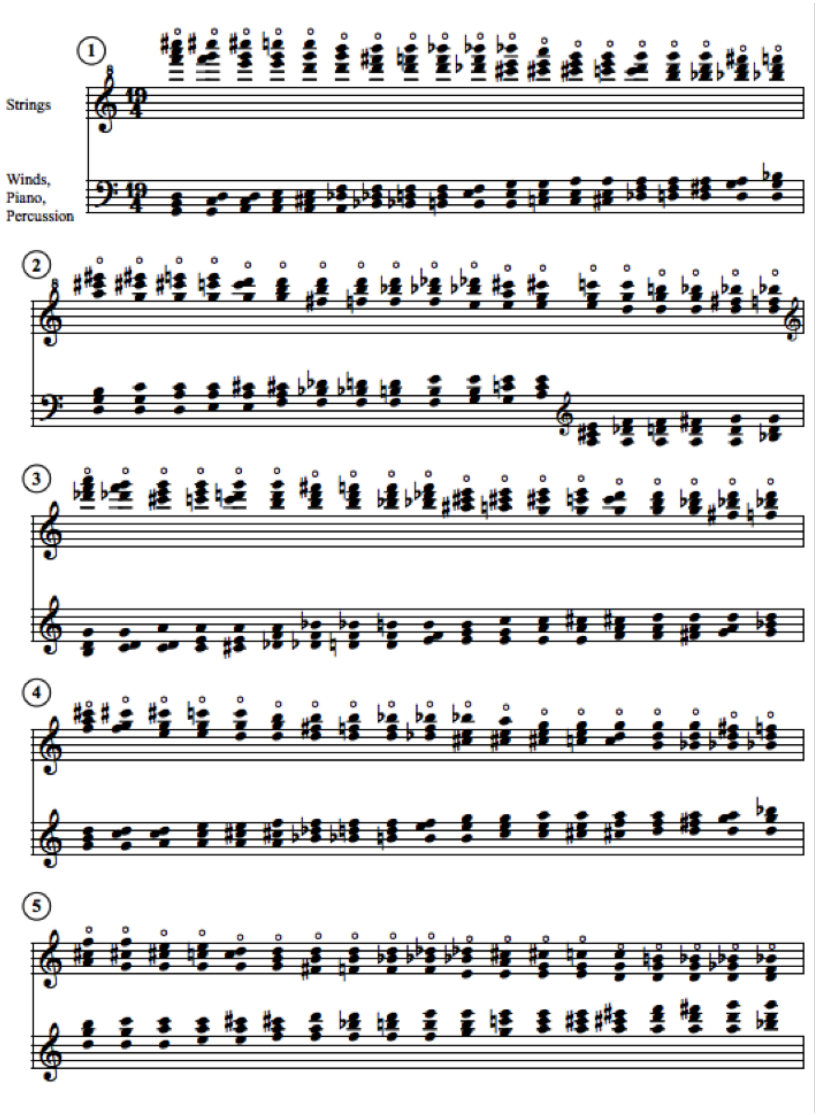

Figure 6.5: Harmonic progression across all inversions

One of the most salient characteristics of this progression lies in the simultaneous ascending and descending motion of individual voices from the mirroring sequences. The purpose of this motion is to instill a paradoxical sensation of both motion and stasis, wherein the upward motion of one voice is always opposed by the downward motion of another. This aspect of the composition represents a musical encoding of an important feature of boredom: a sense of anticipation, caused here by the presence of identifiable pitch trajectories, which is always countered by a contrary motion that fixes the trajectory in place, like a child squirming their

way through a lengthy church service (here I write from personal experience), or indeed an adult squirming their way through a lengthy concert of experimental music (again I write from personal experience). In either case, this physical manifestation of boredom, symbolised in *Fields* by the harmonic motion itself based on Chopin's inexorable trajectories, indicates the failure of human subjects to deal with processes through time whose salience lie outside of reach and for which the only possible response is to wait, or as eldritch Priest describes:

> [Waiting] is an uncertain witnessing of the time of events in their infinite eventuality and a way of listening to nothing in particular in order to imagine the impossible possibility of disappearing into an event that always never takes place. (Priest 2011)

6.3 *Hypersolid*

Hypersolid (USB #11) is characterised by an absence of any sense of placement of sound within an environment (physical or virtual), typically made possible by means such as volume, reverberation, panning and filtering. This flatness is present both in the medium itself (the piece being composed in mono), and embedded within the musical materials. I determined that a sense of auditory space would be undesirable as it is a principle factor in creating immediately apparent relationships between sounds (sound A is further away from sound B, sound C is to the left of sound D, etc.), and I wished to create the opposite effect. Instead, all of the sounds (which consist of audio recordings of a person gasping, a can of spray paint, a kick drum hit, a synthesised 'clicking' sound, and finally a sinusoidal chord which appears sporadically throughout the piece) are presented at the same dynamic level (in this case quite loud), with negligible artificial reverberation to negate any sense of spatial difference.

The 'mono' nature of the composition negates any placement on a horizontal left/right plane. It should be noted as well that all of the individual sounds as well as the entire track are heavily compressed in order to reduce the amount of dynamic variation to a minimum. The intended

final result of this 'flat' composition is to create a kind of impenetrable surface that masks the deeper relationships between its constituent parts by blurring its spatial configurations. These relationships become further blurred as the piece progresses: a granulation process gradually disintegrates each sound until it becomes impossible to differentiate individual sounds from within a global texture made up of synthetic grains. There is one exception that creates a brief sense of spatial depth; at two points during the piece a chord made up of sine tones enters briefly, interrupting the steady rhythm of the other sounds. The chord quickly disappears however, only to return at the very end of the piece. These moments of three-dimensionality serve to hint at a hidden depth, a kind of inaccessible background that is mostly concealed by the more dynamic surface activity.

The process that is responsible for generating the temporal structure of *Hypersolid* results from chaotic operations, in particular the formula known as the *Logistic Map* (Gleick 1988). Similarly to the chance methods discussed in Chapter 3, the implementation of chaos in this work represents a compositional engagement with objectivity, given that the non-determinism of chaos theory represents operations that are apparently independent from human agency. The flattening of structure in *Hypersolid* again follows in Lucier's footsteps, wherein the material and form merge as the result of a singular process.

Following the basic premise of chaos theory in which "small causes can sometimes have large effects" (Wolfram 2002), the Logistic Map illustrates this observation by presenting a formula whose outcome varies wildly according to initial conditions or values. The formula is expressed as follows:

$$x_n = rx_{n-1}(1 - x_{n-1})$$

Implemented recursively, subsequent values of x will tend towards aperiodic, chaotic behaviour as the value of r increases (see Fig 6.6). In *Hypersolid*, durations between the triggering of sound samples are determined by subsequent values of x (scaled in order to correspond to millisecond values) as the value of r decreases gradually over the entire duration of the piece.

In this manner the rhythmic activity becomes more and more periodic as the piece progresses, and also accelerates in accordance with the inherent behaviour of the Logistic Map. This gradual unveiling of periodicity and acceleration eventually brings along with it the perceptual characteristic of predictability, as the process unfolds over a long enough period of time for it to become entirely predictable. As in *Sonification of...*, the listener is then intended to be left waiting, equipped with the knowledge of the piece's inevitable outcome. This process may induce a situation of contemplation or perhaps heightened anticipation, but could just as easily lead to a sensation of boredom in the face of a process that does not take into account a listener's perceptual affinities.

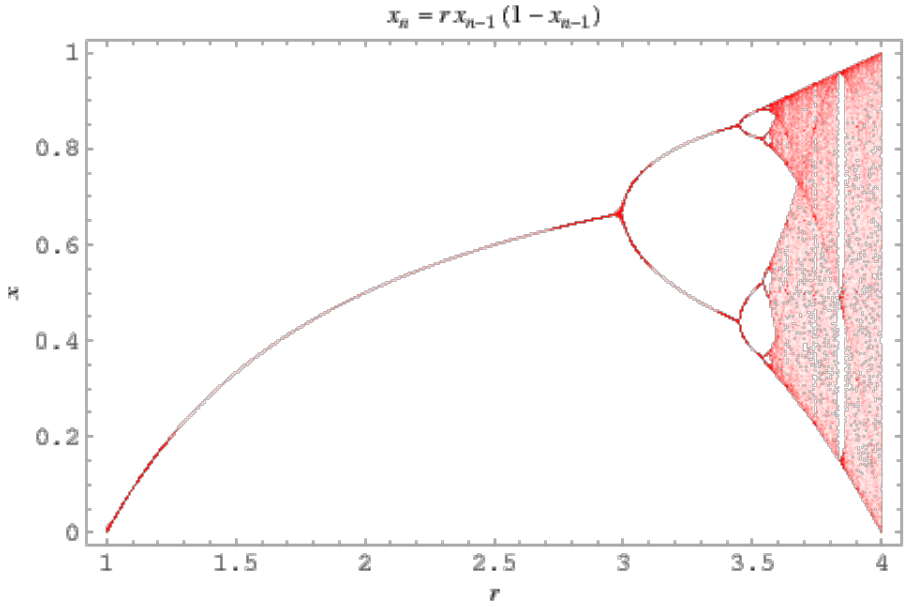

Figure 6.6: Bifurcation Diagram of the Logistic Map (Weisstein 2016b)

The flatness of my compositions operates primarily on the level of structure, as I attempt to flatten the relationship between surface activity and underlying structure. Although this relationship derives from the minimalism of Alvin Lucier and James Tenney, the guiding principle of revelation remains absent from my own work. My conception of flatness instead invites a particular kind of boredom, notably in *Sonification of...* and to a lesser extent in *Fields*, expressed in Sianne Ngai's concept of the stuplime. In *Sonification of...*, I attempt to address the stuplime by placing emphasis on the inscrutability of outer space, presented in a sonification that reveals very little about solar wind activity and instead focuses on the tedious process of real-time data collection. *Fields*, although perhaps not boring enough to fully embody the ideas

discussed in this chapter, finds its source in the Romantic *mélancolie*, particularly as it is found in Chopin's *Prelude in E Minor*. Finally, *Hypersolid* provides a slightly different interpretation of flatness by focusing on the compression of virtual space in acousmatic composition alongside the implementation of a perceptually predictable process. Overall, boredom as aptly defined in the concept of the stuplime reveals an important aspect of humans' response to the Great Outdoors, providing yet another manifestation of the subjective implications of posthuman thought.

Chapter 7

Conclusion

The starting point for my PhD finds its roots in forms of contemporary thought that address the nonhuman. Philosophical enquiries such as the speculative realism of Graham Harman and Quentin Meillassoux attempt to gain access to a universe that exists outside of a relationship or *correlation* between subjects and objects, and develop methods that might allow such a conception to exist. Posthuman theories, notably those put forward by Rosi Braidotti and Katherine Hayles, share a similar standpoint in acknowledging the existence of a non-correlated universe in order to redefine the human subject as itself imbricated within such a universe, rather than existing as a separate identity that shapes the world from a privileged perspective. Bruno Latour defines a non-hierarchical balancing of human and nonhuman interactions, arguing that subjects define objects as much as they are themselves shaped by external actors. Although all of these proposals address different areas of enquiry, they all share the same project of addressing the nonhuman from a perspective other than scientific, the field which in modern societies is most commonly tasked with defining the mechanisms of nature.

I share similar motivations, but as a composer I do not feel the obligation to propose a specific theory of human-nonhuman interactions, and have instead sought to explore how the knowledge of a Great Outdoors affects our subjectivities. This position evolved from the realisation that subjectivity remains at the heart of artistic practise, and remains present even within a creative

discourse that places objectivity at the forefront. Although I cannot ignore the possibility that alien races might practice art, or a future generation of artificial intelligences might engage in creative practise, or indeed that the elaborate rituals of birds might be conceived of as art, I cannot avoid the fact that I myself am a human being and that my work presents itself to other human beings – therefore rather than attempt to erase subjectivity from the equation I choose instead to embrace the subjective connotations of objective musical practise. Many of these connotations were revealed to me throughout the process of creating the works, either through the ways in which contingency can lead to projections of control (as in *No Chance Music*) or to physical and psychological struggle with objective mechanisms (*Sometimes Patterns*), or through the drama created by an embodied subject that emerges despite attempts to disembody and objectify the human voice (*No sweeter sound than my own name*), or the stuplime boredom that emerges when audiences engage with flattened musical structures. Other explorations of subject/object interactions remain more open-ended, as the ambiguous autonomy of musical objects as well as the inclusion of a speculative dimension leaves open-ended spaces which may be filled with all manner of subjective imaginations.

It is my hope that the philosophical and aesthetic underpinnings of my portfolio should be clear at this point, in addition to their relationships with individual works. What remains to be determined are the reasons why, considering my background in notated instrumental music, I chose to work with quite such a wide variety of formats and media, including music for voice and live electronics, 3D renderings, web applications, sound installations, electroacoustic works, text scores and of course notated instrumental scores. These reasons have only become apparent to me throughout the process of making the works and indeed the present commentary, and as such it seems appropriate to conclude with an investigation of the aesthetic and personal motivations for creating the portfolio, followed by a reflection on the successes and failures of my work in relation to its underlying ideas, and finally how this reflection will influence future compositions.

Since we cannot think sound outside of our own conceptions and perceptions, the only option that remains is to contemplate what forms sound *might* take on in our absence. This approach

suggests to me a perceptual silence, as the presence of audible sound would undoubtedly bring the speculator back into the realm of sonic perception rather than imagination. It is in large part due to this observation that many of the works from the portfolio avoid perceivable sound in favour of textual or pictorial formats, which encourage the receiver to conceive sound rather than perceive it. Such works include the *What is this Thing Called...?* series of illustrations, in addition to the series of speculative text scores *Mixtapes for...*. Other compositions contain a mixture of perceived and non-perceived sound, such as *Sonification of...*, which sonifies solar data using additive synthesis in which only a limited set of frequencies are actually audible. The fact that these works, and others as in the case of *No Chance Music*, are mainly accessed on the Internet further emphasises their speculative nature - I have always liked to imagine that websites continue to exercise their behaviours in the absence of people, a position that is further complicated by the difficulty in locating the material presence of web-based artwork. Although these pieces physically exist somewhere on a server in the form of an inscription on a storage device, they are not experienced as such; instead, they can be accessed by any number of people[13] at any given time, anywhere on the planet. This form of distribution lends an intangibility to the works insofar as they can exist simultaneously in many different places, without a specific location in both space and time that anchors them in physical reality. This particular aspect of many of my compositions remains under-explored given that their web presence, although built-in, is not necessarily foregrounded. I hope to explore this area further in future work, which I will discuss a little further on in this final chapter.

Other reasons for working in the ways that I do are more personal, and reflect my compositional state of mind when beginning my PhD in the Autumn of 2013. At that point I felt very much that I had reached the end of a previous line of thought, represented by my interest in intonational systems, and was struggling to find ways to break out of this fairly narrow mindset. In order to achieve this I resolved to work in as disparate a fashion as possible in order to potentially provoke unexpected discoveries, in total opposition to the focus and compositional rigour that I had carefully crafted during my previous studies. Thus I went from

[13] Although in reality there is a limit to this parameter, I cannot realistically hope that enough people will simultaneously be visiting my website in such a fashion as to cause a crash.

being a competent composer working within a fairly limited set of parameters, to becoming an amateur artist working around and about both sound and music using whatever materials that seemed to work in accordance with the situation at hand.

Following through with this mindset, each composition then opened up an opportunity to explore the medium that would most clearly express the ideas underlying a given composition. For instance, in the case of works such as the *What is This thing Called...* series, I would have found it difficult to compose a piece of music for human performers that clearly expresses the idea of instruments that are removed from their human context, given that the presence of humans on a stage would clearly negate the guiding principles of the work. Thus in this case it made more sense to present musical instruments at a distance, that is to say as virtual entities placed in imaginary contexts and removed from their performative milieu. In contrast, the experience of boredom seems to work rather well within the context of a musical performance, as boredom expresses a particular response to events unfolding over time. Boredom is something that I have experienced on many occasions during musical performances and while listening to recordings,[14] and therefore as a result of this association I attempted to incorporate the experience in pieces such as *Fields* and *Sonification of....*

7.1 Future Work

Although the compositions produced during my PhD situate themselves within the context of musical practices addressing objectivity, such as the tradition of indeterminacy, the explicit interpenetration of subjectivity and objectivity in my portfolio bridges the gap between aspects of composition that have previously remained isolated in the compositional narratives within which my work is situated. Whilst I believe that this particular position presents itself quite clearly in the work, the incursion of elements representing subjectivity is perhaps not always as evident as it could be. For instance, whereas *No Chance Music* highlights quite evidently

[14] I do not mean this in a derogatory sense, as I have previously mentioned that boredom represents an important facet of human interaction with time scales that surpass understanding.

the affective qualities of chance procedures, therefore aptly initiating an encounter between subjects and objects, other works such as *Sometimes Patterns* remain very much indebted to a Cagean model without presenting any explicitly subjective associations for a listener, even if the subject-object encounter does occur on the side of the performer. Thus I would have to remark concerning my PhD that although I have developed an ideological framework capable of generating and maintaining a large corpus of creations, the compositional work itself contains many areas that can still be developed much further.

Reflecting on the successes and failures of the present portfolio in relation to the overarching project, I have been able to develop a clearer idea of the work that remains to be done in pursuing the current enquiry, most notably achieving an even greater interdependence of subjects & objects, humans & nonhumans, and culture & nature. I am attempting to achieve this goal with several current and future projects, most notably the works-in-progress *Cassette Underground*, and *Geiger-Curated Playlist*.

7.1.1 *Geiger-Curated Playlist*

A Geiger counter is a device typically used for measuring radiation. These devices are still commonly used today, perhaps most notably in the aftermath of the Fukushima nuclear disaster, during which a group of activists constructed a crowd-sourced Geiger counter monitoring network in order to fill in massive gaps in the data surrounding radiation levels from the Fukushima Daiichi nuclear plant (Prosser 2016). However, they are also emblematic of a time when the dangers of radioactivity occupied a significant place in the collective psyche of the Cold War era; as a result Geiger counters were readily available to the average consumer for purchase in catalogues such as Sears.

The Geiger counter makes manifest the ways in which natural phenomena, which occur outside of human intervention,[15] become inscribed within culture to the extent that the boundaries

[15] Although nuclear plants and atomic bombs are man-made, radiation is present everywhere both outside and inside the sphere of human activity.

Figure 7.1: Sears Tower Model 6157 ("Sears Roebuck & Company" 2007)

that human beings establish between the 'natural' and the 'manmade' begin to break down. The device provides a perfect illustration of the appropriation of an imperceptible, naturally occurring phenomenon by a machine that represents a culture of paranoia and fear of global catastrophe.

My installation proposal, which has yet to be realised, seeks to redirect the Geiger counter away from its function as a machine of war and science, towards a more musical application. Drawing inspiration from Doris Day's 1949 performance of the song *Tic Tic Tic* (Day, Warren, and Blaine 1949), in particular the lyrics '*How can anything go wrong / If you're listening to that Geiger counter song*', the proposed installation takes up the idea of a Geiger counter song by using readings from an actual counter to generate Spotify searches reflecting radiation levels in the gallery space. For this work, a computer program will map the CPM (clicks per minute) of a Geiger Counter to Spotify Web API search parameters, searching for songs from the Spotify database according to popularity. Higher radiation levels will result in more popular or *hotter* tracks (to use the modern colloquialism) being selected, whereas lower levels will generate less popular songs. Each time the Geiger counter emits a click, a new track is

played based on previously averaged CPM. In this fashion, the Geiger counter curates a playlist of songs that addresses the paradoxical sentiment of Doris Day's lyrics; namely, the diversion from an impending sense of terror by way of familiar tunes.

The *Geiger-Curated Playlist* diverts the focus of Spotify from a highly personalised content-curating machine towards an approach that encompasses the indeterminacy of natural phenomena and their relationship with the collective consciousness. In this light, the installation represents a further integration of human and nonhuman elements.

The specific location of the Geiger Counter remains to be determined, although my intention is that it could potentially become mobile, either existing in any venue willing to host the counter (galleries, libraries, universities) and/or placed in public locales in a more 'guerilla' fashion (shopping malls, public squares, parks). Ultimately the format for *Geiger-Curated Playlist* will be both local and distributed: local, as the physical presence of a Geiger Counter is required for detecting radiation in a particular place, and distributed, as the data and resultant Spotify tracks will be broadcast via a dedicated webpage. As previously discussed, I hope to foreground the work's presence on the web by emphasising an interaction between physical and speculative reality. The physical portion of the project remains quite easy to fathom, represented by the specific location of the Geiger Counter, whereas its speculative dimension is a bit more complex, lying in the geographical indeterminacy of the work's web presence. It is this indeterminacy that invites speculation on the part of those visiting the webpage: confronted by a totally mediated and incomplete picture of the work, the receiver can only imagine the particular environment wherein the Geiger Counter is situated.

7.1.2 *Cassette Underground*

The title of this project refers to the subcultural distribution of recorded music via cassettes that grew to prominence in the 1980s and that has undergone a revival in recent times (Flota & Fisher 2013). Several cultural themes underlie this practice beyond the nostalgia and vintage aesthetic commonly associated with middle-class hipster-ism, as observed by Craig Eley:

> Two deeply related principles [...] were critical to [cassette culture's] development, success, and continued deployment today: the facilitation of subcultural interactions not restricted to specific local geographies, and the establishment of an alternative economy for the circulation of music. (Eley 2016, p.48)

My goal for this particular project is to make relationships between the cultural implications of cassette tapes, their material basis and the soundscape of the underground by burying cassette recorders several feet into the ground and recording the entire process. In this fashion each cassette will be filled with the sounds of digging a hole, placing the recorder within it, filling the hole and whatever sounds the recorder is able to capture while submerged for the remaining duration of an entire 'A' side of the cassette. The process will then be repeated for the 'B' side. I will produce a series of such underground cassette recordings, in different locations and perhaps depths, which will be available for interested parties to order via post. The works' existence strictly in cassette form is intended to reflect not only the cultural aspects of contemporary cassette culture, most notably a dystopian view of digital distribution (Flota & Fisher 2013) together with a form "technostalgia" (Eley 2016, p.45), but also the material nature of the cassette which will contain within it an audible record of the process of making the work. Finally, the underground soundscape recorded on each cassette further reinforces its materiality by creating a metaphorical association with its origins as base metals and minerals, all of which will have originated from the underground.

The two projects described above represent a further integration of the ideas central to the works produced over the course of the past three years. Whereas these past works often utilise existing musical paradigms such as indeterminacy and permutation to generate intersections between objectivity and subjectivity, my plans for future compositions seek to expand beyond such methods, which still contain associations with transcendental objectivity (Pythagorean number, chance procedures), to include a greater interplay between subjects and objects. I believe that the subjective and cultural aspects of the work need to be portrayed more explicitly in order to arrive at a greater balance of subject-object interactions. In the two proposed works this is achieved by highlighting both the cultural and natural aspects of the materials employed

(Geiger counter, cassettes) in equal measure, in addition to presenting cultural constructions as being intricately linked with the physical mechanisms involved in their formation. I do not believe that I would have been able to reach this present state of mind without having produced the body of work presented in this thesis, including both its successes and ideological inconsistencies, and as such I regard my PhD work as an important stepping stone towards the establishment of future work that will build upon the present enquiry.

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