A PORTFOLIO OF COMPOSITIONS

by

CHARLES JOSEPH ROBERT LOCKWOOD

A thesis submitted to
The University of Birmingham
For the degree of
DOCTOR OF PHILOSOPHY

Department of Music

College of Arts and Law

University of Birmingham

September 2018

UNIVERSITY OF
BIRMINGHAM

University of Birmingham Research Archive

e-theses repository

This unpublished thesis/dissertation is copyright of the author and/or third parties. The intellectual property rights of the author or third parties in respect of this work are as defined by The Copyright Designs and Patents Act 1988 or as modified by any successor legislation.

Any use made of information contained in this thesis/dissertation must be in accordance with that legislation and must be properly acknowledged. Further distribution or reproduction in any format is prohibited without the permission of the copyright holder.

Abstract

A portfolio of compositions and accompanying commentary in which I explore the use of melody, harmony, and tonality within a (post-)acousmatic context. Consideration is also given to ideas of narrative, simplicity, and post-digital and glitch processing.

The pieces within the portfolio are divided thematically, falling into three broad categories that function as case studies and further examine the ideas given above. The first category is of two pieces based on folk music, and explores the use of leitmotif and programmatic structure within an acousmatic context.

The second category of three pieces are also based around repurposed melodic material, though derived from original compositions rather than folk song. Within these pieces, I move away from a strictly programmatic approach, but still use narrative ideas to structure the works. I also present a concept of 'framing' - examining the listener point-of-view presented by the music - and use these pieces as a case study to explore this further.

The third category consists of pieces which build on ideas of simplicity in structure, with a greater exploration of drone material. These pieces also deal with incorporating some manner of external material - works of visual art, material by other composers, or the use of an instrument alongside acousmatic material.

to the bean

Acknowledgements

It's all too easy to think of electroacoustic composition as a lonely endeavour, but this portfolio would not have been possible without the help of a great many people, all of whom deserve my heartfelt thanks.

First and foremost, thank you to my supervisor, Scott Wilson, who has pushed me to develop as a composer more than I had thought possible.

To James Carpenter, for bailing me out of more technical problems than I can count.

To Annie Mahtani and the rest of the BEAST composers, for a wonderful sense of community and some really good concerts.

To Nick Charlesworth, for the inspirational mandolin and accordion recordings used in several pieces, and to Mari Fukumoto, for a brilliant organ performance in *The Bones of the Earth*.

To my friends and my parents, for supporting and encouraging me.

And, last but not least, to Ruth for putting up with the weird noises.

Contents

Introduction 1

Compositional Concerns: An Overview 2

Melody and harmony 2

Formal simplicity and narrative 4

Glitch and Framing 5

Accessibility 9

***Hyperborea* (2015, revised 2018) 10**

Source material: spoken word, song, and leitmotif 10

Location and narrative perspective 13

Structure 16

***Submerged Objects* (2017) 19**

Sound material 19

Structure 20

Motifs 22

***A Sleeper* and *dream//visitation* (2016) 23**

Melodic development 23

Form and structure 26

Integration of glitch material 29

dream//visitation 30

***A Bright And Shining Future Has Passed Us By* (2017) 32**

Theme From A Bright And Shining Future 32

Structure and narrative 33

***Cantus Firmus for the Beheading of St. John the Baptist* (2018) ... 38**

Plainchant and cantus firmus 38

Other material 39

Structure 40

***Munich Fragment* (2017) 42**

***The Bones of the Earth* (2018) 45**

Writing for organ 45

Electronics 46

Structure 47

Performance 49

Conclusion 51

Appendix: Programme Notes 52

Bibliography 55

List of Figures

Figure 1: Arctic Theme 12

Figure 2: Death Theme 12

Figure 3: Ships Theme 12

Figure 4: *The Whalecatchers*, modified version 13

Figure 5: *A Sleeper,* main theme 23

Figure 6: Harmonised variant of main theme 26

Figure 7: Fragment of plainchant 38

Figure 8: Score overview of *Cantus Firmus,* showing retrograde plainchant 38

Figure 9: Transcription of 'Munich' manuscript 41

Figure 10: Derived chord progression 43

Figure 11: Basic chords used in organ part 44

Accompanying Media

A USB memory stick accompanies this commentary, containing the following:

- **Commentary**
  - Commentary.pdf - a copy of this document
- **Pieces**
  - 01 Prelude
    - Prelude.wav
  - 02 Hyperborea
    - 5.1 Mixes
      - Hyperborea (no voice).wav
      - Hyperborea (with voice).wav
    - Stereo Mix - No Voice
      - 1-01 Hyperborea (continuous mix).wav
      - 2-01 I. Here are the hinges on which the world turns.wav
      - 2-02 II. I love to sail forbidden seas.wav
      - 2-03 III. We hoisted our topsail.wav
      - 2-04 IV. A Hyperborean land.wav
      - 2-05 V. Wintered in the ice.wav
      - 2-06 VI. and here are the limits of the circuits of the stars.wav
      - 2-07 VII. Midnight Sun.wav
      - 2-08 VIII. When we find this path.wav
      - 2-09 IX. Erebus and Terror.wav
      - 2-10 X. Lat 69-37-42 Long 98-41.wav
      - 2-11 XI. The Road to the Assembly of the Hyperboreans.wav
    - Stereo Mix - With Voice
      - *As above*
  - 03 Submerged Objects
    - Submerged Objects.wav
  - 04 A Sleeper
    - 1-01 A Sleeper (continuous mix).wav
    - 2-01 Overture.wav
    - 2-02 A Machine for Dreaming.wav
    - 2-03 A Silence, Broken.wav
    - 2-04 Night Terrors.wav
    - 2-05 Lullaby for a Sleeper.wav
  - 05 dream_visitation
    - dream_visitation.wav
  - 06 A Bright And Shining Future Has Passed Us By
    - A Bright And Shining Future Has Passed Us By (stereo).wav
    - A Bright And Shining Future Has Passed Us By (5.1).wav

    - 07 Cantus Firmus for the Beheading of St John the Baptist
        - Cantus Firmus for the Beheading of St John the Baptist.wav
    - 08 Munich Fragment
        - Munich Fragment.wav
    - 09 The Bones of the Earth
        - The Bones of the Earth.wav
        - The Bones of the Earth (MIDI mockup).wav
        - The Bones of the Earth (Tape part).wav
        - The Bones of the Earth (Live at BEAST FEaST).mov
    - 10 Appendix
        - Theme From A Bright And Shining Future.wav
- **Scores**
    - Hyperborea.pdf
    - The Bones of the Earth.pdf

All 5.1 pieces use the following channel format:

1. Front Left
2. Front Right
3. Centre
4. LFE
5. Surround Left
6. Surround Right

List of Pieces

Prelude - 01:50 (2016)

Hyperborea - 26:57 (2015, revised and completed 2018)

I: “Here are the hinges on which the world turns…”
II: “I love to sail forbidden seas…”
III: “We hoisted our topsail…”
IV: “A Hyberborean land…”
V: “Wintered in the ice…”
VI: “...and here are the limits of the circuits of the stars”
VII: Midnight Sun
VIII: “When we find this path…”
IX: Erebus and Terror
X: “Lat. 69°37'42" Long. 98°41'”
XI: The Road to the Assembly of the Hyperboreans

Submerged Objects - 09:57 (2017)

A Sleeper - 16:00 (2016)

I: Overture
II: A Machine for Dreaming
III: A Silence, Broken
IV: Night Terrors
V: Lullaby for a Sleeper

dream//visitation - 08:51 (2016)

A Bright And Shining Future Has Passed Us By - 09:21 (2017)

Cantus Firmus for the Beheading of St. John the Baptist - 03:48 (2018)

Munich Fragment - 08:32 (2017)

The Bones of the Earth - 15:45 (2018)

Appendix: *Theme From A Bright And Shining Future*

Abbreviations, terms, and software

EBow: Magnetic device used to vibrate a guitar string, often producing overtones of the played note

Kontakt: Sampler software developed by Native Instruments, allowing the user to map sounds across a keyboard

LFO: Low frequency oscillator. Produces a waveform below the frequency of audible hearing, often used to modulate some other parameter

Paulstretch: Software designed for extreme time stretching of audio files

Reaktor: Graphics-based modular sound synthesis and processing software developed by Native Instruments

TR-909: Sample-based drum machine developed by Roland, considered an important influence on a range of electronic dance music styles

Introduction

The music presented in this portfolio constitutes the output of almost four years' work, in which I explore the use of melodic and tonal content within the framework of acousmatic music. As a composer, musician, and listener, I have always had a wide range of musical influences from a range of genres, which has led me towards a compositional practice that engages simultaneously with multiple styles. This portfolio presents a collection of 'post-acousmatic' pieces, rooted in 'classic' acousmatic music, but branching out across a range of other genres.

Monty Adkins, Richard Scott and Pierre Alexandre Tremblay explore the idea of post-acousmatic music, describing "multiple trajectories of musical practice arising from the acousmatic".[1] Rather than a unified genre, they instead conceive of the post-acousmatic as "a group of practices in relation to the acousmatic rather than a specific paradigmatic practice in itself, and the apposition of the 'post-'prefix, by opposition to a completely new word, is an open and clear acknowledgement of the common parenthood and strong positive influence of (at least) the first three decades or so of the acousmatic genre".[2] A set of 'nodes' is given, with particular focus paid to new works dealing with notions of time, performance, form, production, and melody and harmony in ways that run counter to standard acousmatic process.

While I am wary of self-labelling genre within my portfolio, the conception of post-acousmatic music seems a good fit for my own practice. In particular, key compositional elements within my work are pointed out as hallmarks of practices that form parts of the wider web of the post-acousmatic. Ideas of melody and harmony, formal simplicity and legibility, 'non-clean' production techniques, and a poly-genre approach to composition are all explored within my portfolio.

The pieces discussed are not presented in order of completion, but rather as a rough thematic arc, starting with pieces inspired by folk music and the sea, moving through non-folk-influenced narrative music, and finishing with pieces exploring drone and structural simplicity.

[1] Adkins et al (2016) p.108
[2] Adkins et al (2016) p.108

Compositional Concerns: An Overview

If a single concept is at the heart of my composition, it is that of multi-genre writing. As a musician, my background includes not only contemporary classical and electroacoustic music, but playing, writing, and listening to folk, rock and metal, various popular electronic styles, film scores, and the 'classic' classical repertoire. When discussing post-acousmatic music, Adkins et al. describe genre as "polyphonic, through the assimilation of other aesthetics, not in a hybrid or collage way, but in an opening up of new or divergent approaches".[3] I hope that the material within my portfolio accomplishes this - not through simply copying stylistic flourishes from outside the field of acousmatic music, but by using these ideas to suggest new directions for electroacoustic composition.

'Acousmatic music' is a term which can often be taken to mean different things. In the interests of clarity, I will use the term 'acousmatic' to refer to the broad genre of experimental electronic music that is: a) written on a fixed medium, whether digital or tape b) intended for performance via diffusion c) is often produced in an academic context, or with some contact with academia and d) can be understood in terms of gestural and textural development. I will use the terms 'electroacoustic' or 'electronic' to describe fixed electronic works falling outside this genre.

Melody and harmony

My first acousmatic piece, *Perceptual Motion* (2010) was a two-minute study which featured chordal drones set against a strongly-defined rhythmic component. Following this was *Wake* (2013), an electroacoustic piece composed around and in response to a folk song. This piece combined many 'standard' acousmatic techniques with the use of glitch, noise, and distortion, alongside recorded instruments and voice in both processed and unprocessed forms. These two works, written as part of my undergraduate study at the University of Birmingham, suggested avenues for compositional development which I am still following.

The first and arguably most important idea within my own music is the use of melody, harmony, and (to a lesser extent) rhythm within a (post-)acousmatic context.[4] Traditionally, these areas are somewhat less well explored within the acousmatic canon, and often seem to be relegated to 'flavours' that are placed alongside the more conventional devices of gesture and texture.

[3] Adkins et al (2016) p.108
[4] This was inspired in no small part by my first encounter with Denis Smalley's work *Pentes*.

Acousmatic music's roots in experimental art music, particularly music which rejected the mathematical techniques of serialism, led to a style which highlights the musical potential of all sound, and (traditionally, at least) "begins with the concrete (pure sound matter) and proceeds towards the abstract (musical structures) ... [in contrast to] instrumental writing, where one starts with concepts (abstract) and ends with a performance (concrete)".[5] While this has led to a wide range of new musical ideas and ways of perceiving, classifying, and organising sound, 'mature' acousmatic music has generally continued to avoid the traditionally musical.

My music is principally concerned with highlighting and exploring the interaction between the concrete and abstract compositional paradigms, and generally displays several key elements that reinforce this idea:

- **Use of recorded instruments:** Instrumental (and/or vocal) recordings form a key element of all work within my portfolio. These recordings are simultaneously treated as statements of abstract compositional material and as concrete sound objects, and they form the primary driver of the interactions between compositional styles.
- **Focus on tonal acousmatic material:** The more 'traditionally' acousmatic material often highlights sounds with strong pitched or tonal elements. This is intended as one of the mechanisms to tie disparate material together. While not all of this material is tonally-focused, it often works alongside or against the pitch content of the melody.
- **Harmonic simplicity:** While it cannot usually be understood as functionally diatonic, much of my music is harmonically simple and can be interpreted as pandiatonic or modal in its approach to melody and harmony. This decision has its roots in my background of listening to folk music and film scores, but also serves a functional approach in directing the listener towards the timbral, textural, and gestural elements of the work.
- **Drones:** The use of pitched drones is common within much of my work, although the music cannot readily be described as 'drone music' due to the inclusion of a wide range of other material. Drone material within my work can be traced to an interest in folk music, as well as the instrumental works of Giacinto Scelsi.

As a complementary concern to the use of melody and harmony, my music often also takes a multi-genre approach to composition, with elements of other musical genres used freely alongside acousmatic elements. In particular, pitched drones are a common feature across much of my work, drawing on my background in folk music. Several pieces also include elements of predictable rhythmic writing or passages with quasi-cadential functionality.

[5] Dhomont (1995)

Formal simplicity and narrative

Concepts of formal and structural simplicity and legibility are also an important aspect within my music. As with my use of melodic material, this draws on musical genres from outside the acousmatic - many pieces include semi-independent sections of three to five minutes, a length common within popular music (though my pieces do not adhere to a pop structure of verse and chorus). The use of leitmotifs is also common, with melodic elements recurring throughout a work in different guises. Particularly in later works within my portfolio (*Cantus Firmus for the Beheading of St. John the Baptist, Munich Fragment,* and *The Bones of the Earth*) the structure of the music is incredibly simplified, often to one or two direction-oriented sections.

Ideas of narrative, mood and emotion, atmosphere, and programme music are also important formal principles within my work. Inspired by my background listening to and composing music for film and games, I attempted to bring similar principles to my composition of acousmatic music, using mood and emotion as primary structuring principles. In practice, this 'cinematic' structuring technique meant that, for most pieces, I began the composition process with an idea of trajectory - an arc of emotions and tension that I wanted to evoke. For most of my pieces, this involved an extramusical idea as a touchstone, though this extramusical material did not always take the form of a 'story' I wanted to tell. As a composer working with a range of somewhat disparate styles and techniques, I felt that the primacy of mood and emotion allowed me greater flexibility to juxtapose and combine a wide range of sonic material without losing a sense of coherence within the piece. As a result of this cinematic approach, I tended to work in terms of three basic structural elements:

- **Setting:** Primarily texture-led music, concerned with evocation of atmosphere and landscape.
- **Action:** Primarily gesture-led music, concerned with ideas of tension and motion.
- **Character:** Primarily melody-led music, concerned with thematic, melodic, and abstracted presentation and development.

While initially inspired by my background in soundtrack music, this approach also has roots in the use of theme, structure, and emotional affect in Romantic-era instrumental music (as does the style of orchestral film score common throughout much of the twentieth century). For example, in his discussion of Schumann's Second Symphony, Anthony Newcomb summarises a range of nineteenth-century critics discussing the work in terms of narrative, and claims that "we do well to think of the thematic units partly as characters in a narrative,

transformed by the requirements of various different contexts".[6] This leitmotivic approach to thematic development can be heard throughout my portfolio. By applying these ideas to acousmatic music, I hoped to explore methods of development explicitly based on narrative forms, while still making use of the additional range of discourses made available by gestural and textural material.

Most of the pieces within my portfolio utilise this cinematic approach to form; this commentary explores the concept further when examining the pieces *Hyperborea* and *A Bright And Shining Future Has Passed Us By.*

While this use of cinematic structuring is partially a personal aesthetic choice, I also hope that this provides a level of accessibility within my work, particularly for listeners unfamiliar with the conventions of electroacoustic music for whom the 'acousmatic experience' may be confusing. The narrative framework allows for the listener to orient themselves within the piece, as well as allowing the use of material that the audience might find more difficult without the supporting narrative. My 2013 piece *Wake* was an extreme example of this, with a second movement making extensive use of harsh distortion and noise, and a similar though less extreme approach can be heard in *Hyperborea, A Sleeper,* and several other portfolio works.

Glitch and Framing

The pursuit of noise-free sound is (somewhat paradoxically) one of the primary concerns of traditional acousmatic music, which champions the use of any available sound - when recorded well and making the medium of recording and transformation invisible. As such, the production styles common within much acousmatic music tend to highlight wide dynamic ranges, transparency of media, and high-quality recordings. While I make use of all these attributes in my own music, I also work with stylistic features that run counter to these.

When recording material, I make use of a wide range of spaces and techniques. Much of the source sound for my portfolio was recorded in the studios at the University of Birmingham, and tends towards a clean, high-quality aesthetic, but a significant proportion was also recorded in non-ideal conditions using microphones of various quality. Often, this non-clean nature is disguised via extensive processing, but there are also instances of noisy recordings being highlighted - in particular, in *A Bright And Shining Future Has Passed Us By,* a piece which is constructed around the clash between clean audio and noisy, technologically-mediated material.

[6] Newcomb (1984) p.237

Glitches - the “aesthetics of failure”, to borrow a phrase from Kim Cascone[7] - are a regular feature in my work, though not ubiquitous. *A Sleeper, dream//visitation, Cantus Firmus for the Beheading of St. John the Baptist, Munich Fragment* and *The Bones of the Earth* all feature glitch material, distortion, or other ‘noisy’ processing techniques as significant elements within the musical discourse (*Hyperborea* and *Submerged Objects*, meanwhile, were explicit attempts to write glitch-free music). This is not generally intended to signify or represent ideas of failure (and, from a composer’s perspective, almost all the ‘glitch’ material in my work is the result of the use of plugins or processes designed to create these effects - so not in fact failure at all, but the ‘correct’ operation of technology). Instead, I approached this material in one or more of three ways:

- **As acousmatic gesture:** Endeavouring to divorce the glitch material from its extramusical connotations, this presents the material as ‘just another sound’.
- **As process:** Techniques of glitch can be viewed as ‘process music’ in a minimalist, Reich-ian sense.
- **As a means of drawing attention to the digital nature of the music:** Glitch as an exclusively digital (or rather, post-digital) sound draws attention to the media, rather than the material. This allows for compositional discourse involving the ‘frame’ of the media, as discussed further below.

Glitch can be understood as a process in musical terms, separate from what we might call ‘material’ - the glitch is applied to the material. Scott Haden Church draws a parallel between this and the minimalist process music of composers like Steve Reich, claiming that glitches draw the listener’s attention towards “texture and repetition” rather than “musical function and form”.[8] As my own music involves a level of traditionally-musical function that is often absent in the acousmatic genre, I found that the tendency of glitch to draw attention towards textural material was a useful means of generating contrast and creating a ‘counterweight’ that drew melodic material back towards the realm of the gesture/texture paradigm.

Glitch techniques, by their nature as errors in the technology used to create and present electronic music, draw the listener’s attention towards the musical frame, and therefore allow a discourse that can feature multiple frames - a glitch can “render apparent that which is transparent by design”.[9] In several pieces within my portfolio, I aim to use glitch to draw the audience’s attention to the ‘frame’ of the music, an approach which has its roots in my interest in using narrative techniques within music. Elizabeth Hoffman draws on Erving

[7] Cascone (2000)
[8] Church (2017) p.322
[9] Boyle (2015) p.13

Goffman's concept of framing, a key element of literary and narrative analysis that describes an "organisational boundary that we acknowledge through cognition".[10] Examples of a frame in literature would be a novel, or a poem. Transposing Goffman's concept of framing to computer music (and paraphrasing Goffman), Hoffman describes frames in computer music as representations of reality that are "to do with the audio recorder and not what it is the audio recorder takes recordings of".[11] Hoffman discusses framing in computer music primarily when dealing with "environmentally suggestive" musics, setting out four "propositions" that describe different perceptual realities available to composers:

- Proposition 1: There is only one universe, ours. Any fictional one is a substitute, extension, or hidden aspect (including a memory) of the "real."
- Proposition 2: There are two closed universes, the original and a simulacrum.
- Proposition 3: There are two closed universes, the original and a fabrication.
- Proposition 4: There are two or more distinct universes that are mutually permeable. Characters from any of these universes may communicate or move across frame boundaries.[12]

While these propositions are somewhat useful, Hoffman describes examples primarily in terms of sonic material within a piece, rather than the properties of the presented audio recorder (which, of course, may not actually exist, instead being constructed by the composer). Building on these ideas, I would like to rework propositions to specifically deal with the conceptual 'sound recorder' - or the thing that is hearing the sounds represented in the piece.

- **Representation** - A soundworld which (largely) conforms to our lived reality. We can imagine a sound recorder capturing what we hear, even if the soundworld is constructed (proposition 1).
- **Simulacrum** - A soundworld which does not conform to reality, but is nonetheless 'realistic'. Despite evidence of a constructed soundworld, it still seems possible that a sound recorder captured what we hear (proposition 2). This could be seen as an equivalent of 'suspension of disbelief', the process whereby an audience accepts the 'reality' of a work of fiction.
- **Fabrication** - A soundworld which is clearly fantastical, with no possibility of a physical sound recorder capturing what we hear (proposition 3).

[10] Hoffman (2012) p.43
[11] Hoffman (2012) p.44
[12] Hoffman (2012) p.44

These categorisations link to Denis Smalley's concepts of surrogacy,[13] and Trevor Wishart's discussions of real and unreal sound objects and sonic landscapes.[14] In particular, these can be seen as an 'inversion' of first-, second-, and third-order surrogacy, dealing with the 'hearing object' rather than the sounding object. *Representation* and first-order surrogacy both involve realistic causal relationships, *simulacrum* and second-order both involve explicitly constructed realism, and *fabrication* and third-order both invoke ambiguity and surreality. To discuss this process within my own music, I will also use the following terminology:

- **Transparent frame:** where the frame is not a part of discourse.
- **Frame-highlighting:** usage of glitch, noise, or other technologically-derived sound to call attention to the frame.
- **Frame-shifting:** transitioning from a state of transparent framing to frame-highlighting, or one state of frame-highlighting to another.
- **Frame-mixing:** presenting multiple, contradictory frames: transparent, highlighted, analog, digital, live, etc. Analogous to Hoffman's Proposition 4.

Combining these with the three descriptors of the characteristics of frame, we can speak of - for example - a *transparent fabrication*, which might be a wholly synthesised and abstracted sound world, or a *frame-highlighted representation*, which could entail a field recording that includes microphone handling noises. Glitches, as material that can only be created thanks to the sound object's state of existence as a digital artefact, draw attention to this state of existence and therefore constitute frame-highlighting. Other methods of frame-highlighting might include the use of hyper-compressed recordings, inclusion of exaggerated start/stop gestures, or inclusion of microphone handling noise or wind noise - examples of these can also be found within my portfolio, but these are not explored as thoroughly as glitches.

This approach ties in to my interest in using narrative elements within music, and is most apparent in *A Sleeper, A Bright and Shining Future Has Passed Us By*, and *Munich Fragment*. *A Sleeper* uses this technique of frame-highlighting to create a dream-like sense of surreality; *A Bright and Shining Future* uses manipulations of noise to shift frames several times throughout the music; and *Munich Fragment* slowly moves from transparent to highlighted framing. Each of these examples is discussed in further detail within the relevant sections of this commentary.

[13] Smalley (1997) p.112
[14] Wishart (1985) p.146

Accessibility

Accessibility has also become an important consideration for me in terms of audio production. Concepts of accessibility, listenability and portability of media have shaped many of the technical aspects of my work, particularly mastering and use of multichannel techniques. I have usually used compression and limiting during the mixing and mastering phase of composition to bring my music to higher volume levels than are often found in acousmatic music (although keeping a wider dynamic range than, say, a pop recording).

This was a deliberate choice to bring my music to dynamic ranges more suitable for non-ideal listening environments. This was largely in response to my own listening habits: I often found myself listening to acousmatic music on earphones while travelling on foot beside traffic, or on a train, and unable to find a comfortable listening level without constantly changing the volume control. My hope - and personal performance practice - is that, during live diffusions, the diffuser will then be able to use the faders to broaden the dynamics in the piece, allowing for a greater range of dynamics in an 'ideal' environment while simultaneously making the music easier to listen to in situations that make up most people's usual listening environment.

These considerations have also led me away from the use of extensive multichannel composition, in favour of an almost completely stereo portfolio. This is again due to issues of portability, as stereo files can be played back on any audio system while multichannel files are much more difficult to listen to outside of a diffusion environment. Where multichannel works are presented (*Hyberborea, A Bright And Shining Future Has Passed Us By*), stereo versions of the pieces also exist.

Hyperborea (2015, revised 2018)

My piece *Hyperborea* is, in many ways, a continuation of ideas from my 2013 piece *Wake* - both are at least partially based on folk music, both contain elements based on instrumental recordings, and both involve narrative elements. However, *Hyperborea* moves further with its narrative elements than *Wake*, using leitmotifs and using sung and spoken word to suggest the presence of a character within the audio narrative.

The story of *Hyperborea* is that of a historical event - that of Franklin's expedition through the Northwest Passage (a sea route around the top of Canada and Alaska) in 1845. While detailed accounts of the expedition do not exist, we know that the ships were trapped in pack ice in 1846 and the surviving crew had attempted journeying south on foot in 1848,[15] and this timeline influences the structure and motivic development throughout the piece. Coincidentally, the wreck of one of the ships - the HMS *Erebus* - was discovered in September 2014, while I was beginning composition of *Hyperborea*, and the wreck of the HMS *Terror* was discovered two years later.

Source material: spoken word, song, and leitmotif

Hyperborea is my first piece to include spoken word. All of the spoken word elements are quotes drawn from a variety of sources, including contemporary newspaper articles, Ancient Greek poetry and prose, and surviving notes discovered during subsequent investigations into the Franklin Expedition's fate. The use of the contemporary articles and expedition notes is an obvious inclusion, while the Greek material is more metaphorical in subject matter.

Ancient Greek mythology and natural history held that a land called Hyperborea existed in the far north, and was a paradise where the sun shone for twenty-four hours per day. For instance, Pliny the Elder wrote that “behind these mountains and beyond the north wind there dwells (if we can believe it) a happy race of people called the Hyperboreans, who live to extreme old age and are famous for legendary marvels. Here are believed to be the hinges on which the firmament turns and the extreme limits of the revolutions of the stars, with six months' daylight and a single day of the sun in retirement”.[16] While this myth was discredited long before the 1800s, the idea of an open polar sea was still a leading scientific theory, and its discovery would have meant fame for the explorers alongside the economic benefits of a shipping route that avoided the much longer path around the tip of South

[15] Neatby & Mercer (2008)
[16] Pliny the Elder, trans. Rackham et al. (1949), book 4, chapter 12

America.[17] I found myself struck by the similarity between both of these historical ideas, which both must have seemed a promise of glory to contemporary explorers, but now seem outdated when compared to modern data (although, ironically, global warming has resulted in a far more navigable Northwest Passage and the possibility of an ice-free north pole in the not too distant future).[18]

As with *Wake*, *Hyperborea* includes a folk song as a major thematic element and, as with *Wake*, the song is a whaling ballad. Variously titled *The Twenty-Third of March*, *The Whale Catchers* and *Whalecatchers*, it was published in the Penguin Book of English Folk Song, and has been recorded by folk artists such as A. L. Lloyd and Martin Carthy. I was initially attracted to the song due to the shifts between the major and minor mode in the melody. The version that appears in *Hyperborea* is my own arrangement of the song, which I have been performing in folk contexts for several years. I altered the pulse of the song from straight 4/4 rhythms to a more driving 5/8 time, generally reinterpreting four crotchets into two dotted quavers followed by two straight quavers. Harmonically, the arrangement makes great use of open fifth chords, allowing the vocal melody to freely switch between major and minor modes. I recorded a full arrangement of the song in order to source a variety of instrumental sound for *Hyperborea*: as well as the vocal line, I recorded two guitar tracks, a mandolin track, an assortment of percussion including the bodhran and tin and cardboard boxes, and a sampled drum kit.

For *Hyperborea*, I opted to change the lyrics of the folk song slightly in order to fit the narrative of the piece - specific references to whaling in the song are altered to be more general, and the date that opens the folk song is changed to the date that Franklin's expedition departed Britain. This only required the altering of one or two lines per verse, as most of the folk song deals with the trials and tribulations of the sailors on their voyage rather than the actual act of whaling. I was careful to note that these changes were made in the programme notes for *Hyperborea*, and in addition I recorded the original lyrics alongside the altered version, with my arrangement of the folk song with original lyrics planned as a 'b-side' of sorts for any future self-published release of the piece.

Musical leitmotifs are also an important aspect of *Hyperborea*. As well as the motivic use of the folk song and its associated instrumental timbres, three more leitmotifs appear throughout the piece. The first leitmotif is a six-note chromatic melody that descends a minor sixth over its course, used to represent the desolate Arctic wilderness. The second leitmotif is harmonic rather than melodic - a series of seven chords that suggest the Lydian mode that

[17] Luedtke (2015) p.131
[18] BBC News (2007)

begin to appear approximately halfway through the piece, and generally signify death. Each motif also has its own associated timbre. The wilderness motif often appears on the electric guitar played with a slide and an EBow, accompanied by processed chimes and low synthesised drones. The death motif, meanwhile, often features a piano that has been treated with EQ and reverb to create a chiming timbre. This motif also highlights the sound of a bowed pint glass, pitch shifted down and mapped across a keyboard, resulting in a virtual musical instrument that shares some timbral similarities with a chamber organ (although with a greater fluidity of tone across sustained notes) along with synthesised material. The third leitmotif is a purely rhythmic idea that is associated with the idea of the ships.

The spoken word elements that occur throughout the piece are left untreated (except for subtle use of compression, delay, and reverb to ‘polish’ the voice) in order to better suggest a narrative presence, and highlight the separation between this presence and the environments that form the narrative of the music. In the 5.1 version of the piece, the voice is the only element in the centre channel, with all other musical elements coming from the two pairs of stereo speakers and the LFE speaker. The piece also exists in a version allowing for a live performer, or allowing the diffuser to record their own rendition of the vocal part - this would be my preferred approach to performing the piece. By encouraging performers to rework the voice part for their own use, I hoped to include an element of reinterpretation and draw closer parallels to the folk materials used within the music.
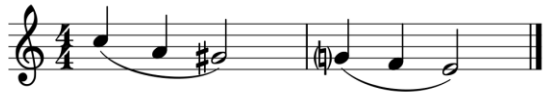


Figure 1: Arctic Theme
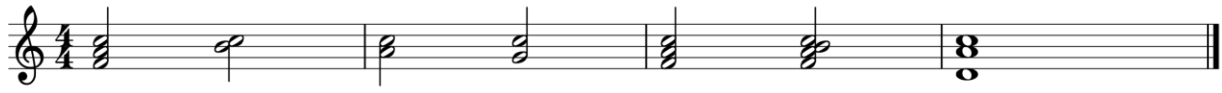


Figure 2: Death Theme
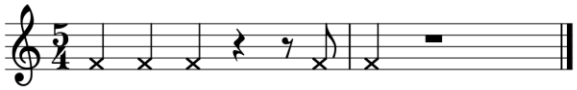


Figure 3: Ships Theme
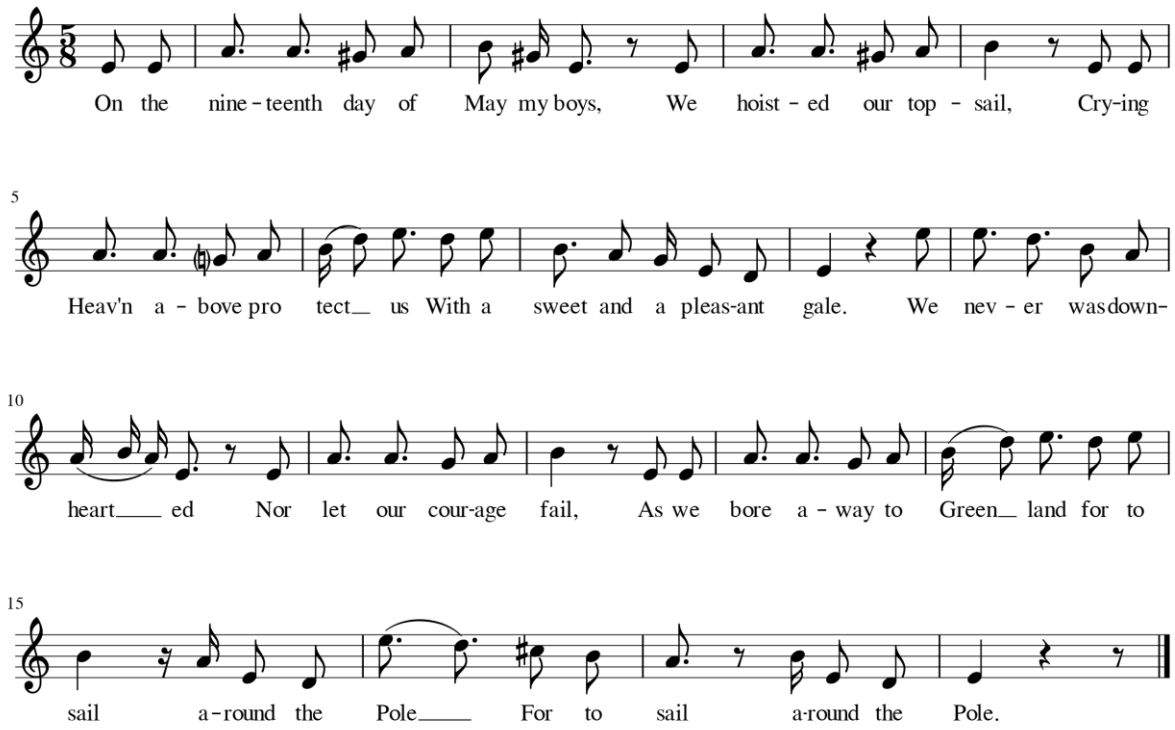


Figure 4: *The Whalecatchers*, modified version

Location and narrative perspective

The idea of place is important in *Hyperborea*, though I wanted to avoid the use of naturalistic soundscape or environmental recordings (with the exception of a brief soundscape passage towards the beginning of the work). Instead, I decided to treat the two important locations in the narrative (the ships and the Arctic ice) as characters in their own right and compose music that uses rhythm and timbre to suggest aspects of that character, rather than a simple 'aural photograph' approach that would be suggested by environmental recordings.

There are two major sonic areas in the piece, which can crudely be described as "inside" and "outside" (or alternatively "human" and "inhuman"), with "inside" being within the ships of the expedition and "outside" being the Arctic wilderness and ocean. These two locations utilise very different sonic sources and processing to give articulation to their characteristics and interplay. I was keen to use these sonic areas not only to create a sense of setting, but also to experiment with creating a sense of a character, a perspective, and of interaction with the settings.

Electronic music often implies a point-of-view, that of the ‘hearing object’ that records and arranges what we hear. Elizabeth Hoffman uses terms from literary theory to talk about

possible interpretations of these auditory points of view, as a *narrator* or as a *reflector*.[19] The narrator of electroacoustic music can be thought of as the agency that presents the sound material of the piece, a directorial or compositional voice. The reflector, meanwhile, is a point of view that is presented to us by the narrator, a character that "reveal[s] idiosyncratic sonic distortions or locational markers".[20] Hoffman argues that computer music is possessed of "uniquely transparent "transport"... a listener stepping (figuratively) into the ears of the director".[21] When writing *Hyperborea*, I aimed to use these soundworlds to encourage the listener to identify with a reflector-character, that of a sailor aboard the ships. The choice of sound material, with contrasts of timbre, gesture, energy, and tonality, defines not only the two locations in the narrative, but also the Sailor's perception of those two locations. As listeners, we do not hear what is - instead, we hear a representation of the Sailor's physical experience and state of mind.

Leitmotif, timbre and rhythm all come together to create the soundworlds in *Hyperborea*. The "inside" soundworld is an umbrella of representation that signifies the ships of the expedition and their human crew, and is generally derived from musical instruments and 'everyday' sound sources - nails, an ironing board, and a cardboard box are all examples. For this soundworld, recognisability was a primary concern. While the heard space the sounds occupy is obviously non-naturalistic, the sounds themselves are relatively unprocessed, allowing naturalistic timbres to be heard despite the artificial layering. This serves to distinguish the sonic material from the other soundworld described below. The folk song recordings also form part of this soundworld, with the instrumental recordings recurring throughout the piece.

This music also makes great use of rhythm and short-duration material. As discussed above, the folk song features a driving 5/8 compound rhythm which serves as a marker for this soundworld, and many of the other sounds used are short-duration - hits, scrapes and knocks that last for seconds at most. Other elements here are longer, but no less energetic - objects rattling in boxes, for instance. The only sonic objects to have a noticeable sustain in this soundworld are the instrumental recordings, which are themselves rhythmically articulated as they are derived from a song recording and are exclusively plucked or strummed strings, which naturally have a strong attack/decay envelope.

The "outside" soundworld primarily represents the Arctic, and is starkly contrasted to the "inside" sonic environment. Stillness is a major part of the musical language here - I attempted to imply that the human sounds were transient and insignificant compared to

[19] Hoffman (2012) p.47
[20] Hoffman (2012) p.47
[21] Hoffman (2012) p.46

natural world, and one method of doing this was to contrast the active and busy rhythms of the human with blocks of sound that only shift very slowly, suggesting the difference between a human perception of time and geological timescales. This contrast between rhythm/transience and stillness becomes a major factor in the narrative, as the short transient sounds are slowly subsumed by the unmoving material.

Timbrally, the "outside" soundworld is very different to the "inside" one. I did not attempt to include naturally-occuring timbres associated with the Arctic or the ocean here, instead focusing on sounds that were somehow inhuman in order to contrast with the musical instruments and everyday bumps and rattles that signify the human. The primary sound sources for the "outside" were therefore synthesisers, along with chiming bells and bowed glasses artificially extended far beyond their usual amplitude envelopes through granular processing and non-naturalistic reverb. These all share the characteristic of a fairly clean and pure spectral profile, in contrast to the noisy human soundworld. An electric guitar is also used to signify the Arctic - despite being an instrument and thus associated with the human soundworld, it is transformed almost beyond recognition by the use of a slide and EBow, and its anachronistic nature sets it well apart from the acoustic guitars and mandolins of the human folk music. As well as this, the mechanical processes of the EBow - using electromagnets to cause a string to resonate at a particular harmonic - give a more spectrally pure sound when compared to plucked or naturally-bowed strings, as well as removing direct human contact from the method of sound production. The Arctic leitmotif is also strongly associated with this instrumental timbre.

These drastic differences in both temporal and timbral quality give these two soundworlds a contrast that is heard not just as a surface dissimilarity in sound but as a much deeper clash between representations of reality. While both soundworlds are clearly not directly representational, the familiarity of timbre and amplitude envelope in the "inside" soundworld gives it a sense of reality that is subverted into a surreality by the distinctly artificial sustained and/or synthesised tones of the "outside" soundworld (the concept of real vs. surreal has been explored by John Young[22] and Trevor Wishart[23]). Far from a purely musical method of creating conflict and thus musical interest, this contrast between real and surreal also serves to portray the worldview of the Sailor character whose point-of-view the listener follows - the ship's interior is recognisable and familiar, whereas the unexplored Arctic is otherworldly, alien, and devoid of any sense of humanity.

[22] Young (1996)
[23] Wishart (1985)

There are two exceptions to this narrative perspective, both occurring at the very beginning of the piece. Firstly, the prologue section offers an early look at the Arctic soundworld, though it lacks a clear point-of-view character. Instead, the point of view presented suggests that of an omniscient narrator: there has not yet been enough of the piece heard to demonstrate the contrasting sound material that creates the impression of a reflector-character.

Immediately following this is a brief section of naturalistic soundscape - waves, seagulls and creaking ship timbers with a distant musician improvising on a fiddle. This serves to anchor the listener's point of view to that of the Sailor character by presenting his auditory perception as a musical event - for a brief moment, the listener literally hears through his ears. Although the music swiftly moves away from this naturalism, it focuses the listener on the perspective of the Sailor, a perspective that remains throughout the more abstract soundworlds of the rest of the piece.

This approach to building soundworlds to represent perspective and setting bears some resemblance to the frame-shifting ideas discussed in the opening, primarily in the construction of real and surreal (or, to use the terminology defined there, simulated and fabricated) sound worlds, and it is certainly a precursor to my exploration of those ideas. However, from a narrative perspective it would be inaccurate to describe this as frame-shifting: the perspective of the Sailor forms a frame that is transparent and unbroken for the duration of the piece (with the exception of the prologue, as discussed above).

Structure

Hyperborea is largely episodic in structure, consisting of eleven sections. Musical motifs are shared throughout these, and transitions are generally smoothly elided. The opening half of the piece generally maintains the separation between different sound worlds as outlined above, while the second half begins to combine these soundworlds. The table below gives a brief overview of the sections, as well as describing areas as *setting, action,* or *character* as discussed in the opening of this commentary.

Section	**Event**	**Leitmotifs**	**Characteristics**
1 *0:00 - 1:19*	Prologue	Arctic	*Setting* Introduction to arctic soundworld
2 *1:19 - 2:47*	Crew boards ships	Ship	*Setting, Action* Environmental sounds; introduction to ship soundworld; embodiment with reflector-character

3 *2:47 - 4:21*	Setting sail	Song (v1)	*Character, Action* Unprocessed folk material; move to processed folk material
4 *4:21 - 6:19*	Arrival in the Arctic circle	Arctic	*Setting* Return of droning material
5 *6:19 - 9:14*	Ships trapped in ice; winter passes	Ship; Song (v2)	*Setting* Interior sound return, but sparser, with subtle synthetic drone background
6 *9:14 - 11:29*	Ships stay trapped	Arctic	*Setting, Character* Full statement of Arctic theme
7 *11:29 - 15:03*	Death of Sir John Franklin	Death; Arctic	*Character* Introduction of death motif; wordless vocalisations form a large part of the texture
8 *15:03 - 16:01*	Interlude	Song (v3)	*Character* Statement of third verse of song
9 *16:01 - 18:53*	Ships are destroyed	Ship	*Action* Build to aggressive rhythmic texture
10 *18:53 - 21:38*	Crew leave the ship, write note	Death	*Setting, Character* Drone-based section, highlighting accordion and sustained guitar timbres - assimilation of the human into the Arctic soundscape. Moves into statement of death motif that leads into final section.
11 *21:38 - 26:58*	Crew attempt to walk to safety, die in the attempt	Arctic; Death	*Action, Character* Consistently slowing rhythm placed alongside death theme. Musical elements slow down and die away.

The seventh section marks a turning point within the piece. This functions as an introduction of the death motif, presented played on a piano set against a drone constructed of wordless vocalisations. This is the first time that either of these sounds has been heard within the piece, but both form key elements from here on out. From a narrative perspective, this represents a death but also a change in perspective on behalf of the hypothetical crewman: the journey has ceased being an adventure, and has become something more sinister.

From here, the interior and exterior sound worlds gradually begin to merge. Key moments in this process are the introduction of a synthesised bass - characteristic of the exterior soundworld - against interior-sound rhythms at 16:59, and the prominent use of accordion and buzzing sustained guitar to create an Arctic-theme drone at 19:15. This process reaches its conclusion in the final episode, in which the Death motif, sustained synthesised drones,

rhythmic material, and granular and distorted tin whistle all combine, creating a clash between the traditionally-musical material associated with the humans and the stillness of the Arctic theme. Slowly, the rhythmic pace slows down to a crawl and dies out entirely, leaving just the drone material to close the piece.

Submerged Objects (2017)

Submerged Objects is a companion piece to *Hyperborea*, drawing on similar source material and with a related programmatic idea. During the early stages of working on *Hyperborea*, the wreck of one of the expedition's ships was discovered by sonar, and I considered the possibility of including sounds inspired by sonar in *Hyperborea.* However, I was not happy with the results of this. Later, a visit to the Portsmouth Historic Dockyards and the wreck of Henry VIII's ship *Mary Rose* provided further inspiration, and *Submerged Objects* began to take shape as a piece exploring the idea of shipwrecks, and the way objects recovered from shipwrecks have been changed by their time under water.

When composing *Submerged Objects*, I decided to move in a different direction to my two previous works (*A Sleeper* and *dream//visitation*, discussed later). Instead of glitch and distortion, I focused more on granular processing; I included a broad range of instrumental timbres rather than using only those available from one source; and I used more real-world referential sounds. Many of the sounds used were also used in *Hyperborea*, and several gestures and even whole passages that were originally written for *Hyperborea* but - for one reason or another - discarded. I found this repurposing to be an interesting link to the piece's extramusical inspiration: as with artefacts from shipwrecks, these musical ideas were once lost and are now discovered and re-represented in altered forms.

Sound material

I intentionally used a wide variety of sound sources when composing *Submerged Objects*, however the material used can be broadly divided into five families:

- **Sonar:** A synthesised ping treated with reverb that is reminiscent of a ship or submarine's sonar. This was then further treated with additional reverbs, delays, and convolution effects to suggest sonar returns.
- **Instrumental:** Recordings of a variety of instruments, including guitar, mandolin, accordion, dulcimer, tin whistle, and percussion. Some of these are drawn from recordings I took while working on *Hyperborea*, while others are new.
- **Environmental and water:** Field recordings of water and sea birds, mostly taken in and around St. Ives. Related to these are hydrophone recordings of water being poured into and out of a bucket.
- **Vocal:** Folk song derived elements occur throughout the piece, both from *Hyperborea* and newly recorded. Unlike *Hyperborea*, however, the lyrics are generally disguised.

- **Other:** A range of other material, mostly short-duration transient hits, from a variety of sources. Usually, sounds from this family are only heard in combination with other more distinctive material.

Structure

Submerged Objects is structured in three main sections, each of which consists of several episodes. The first and third sections are more texture-led, with a more gesture-led second section. The use of the sonar ping material and the inclusion of a large-scale harmonic progression also help to define structure, which is laid out below, including sectional definitions in terms of setting/action/character.

Section	Time	Tonality	Characteristics
Introduction	0:00 - 1:24	D (open)	*Setting* Sparse, focus mainly on pings, silence, space
1.1, 1.2	1:24 - 2:48	Em^7	*Character*, transition to *Setting* First instrumental passage (1.1), smooth transition to first environmental soundscape (1.2) triggered by ping at 1.52. 1.1 features a motivic chord progression
1.3	2:48 - 3:28	Em^7	*Action* Crescendo based on ping material. The ping at 3:28 breaks the regular pattern, arriving late
1.4	3:28 - 4:37	Em^7	*Setting* Second environmental soundscape, coupled with 'ambient' instrumental and vocal material
2.1	4:37 - 5:15	Em^7	*Action* Transition to second section signalled by break between crescendo and ping, giving impression of lateness. Irregular repeated percussion placed against 1.1 chord progression
2.2	5:15 - 5:26	n/a	*Setting* Third environmental soundscape
2.3	5:26 - 5:49	E (open)	*Action* High textural material and low -> high transition derived from mandolin instrumental material
2.4	5:49 - ~6:30	Am	*Character* Instrumental passage, highlighting guitar and accordion alongside both irregular and regular rhythmic material. Smooth transition into 3.1
3.1	~6:30 - ~7:05	Am, D	*Setting*

			Sparse, still textural material. Transition from Am to D
3.2	~7:05 - 8:19	D	*Setting, Character* D drone, with recontextualised 1.1 chordal motif and granular instrumental and vocal material. Anticipation of resolution
3.3	8:19 - 9:57	D	*Setting, Character* Return of ping motif, now as tonic rather than seventh. Presentation of folk-song material. Resolution of extended cadential progression

Submerged Objects is structured around two main elements: the repeated, synthesised sonar ping; and an extended harmonic progression. The sonar ping recurs every twenty-eight seconds for the first three minutes of the piece, dividing the music into brief episodes. Most other gestural elements within the first section are timed around these pings, which function in either an interruptive or climactic fashion. I became interested in using this distinctive material to explicitly articulate and punctuate structure within the music, a concept which I will refer to as a structural signifier. These structural signifiers can be found in several pieces within my portfolio.

The first deviation from this pattern comes in section 1.3, where the ping is spun out and developed into an extended crescendo passage. This crescendo builds to another unprocessed ping, but this breaks the regularity of the repetitions as the ping arrives late. While this is not immediately discernible while listening to the piece, it marks the beginning of a process of deconstruction that rapidly becomes more obvious throughout the second section. The next deconstruction element is much more obvious: at the beginning of section 2.1, the standard crescendo-ping motif is set up, but there is a significant gap between the end of the crescendo and the actual ping, in which other gestural material is placed. Following this, the ping ceases its role as a structural signifier and is instead integrated into other gestural material. The ping only returns at 3.3, returning in its original and unaltered form to create a sense of resolution (and, due to the progression of harmony within the piece, is now pitched at the root rather than the seventh). This is also a return to the role of structural signifier, as it falls at the climax of a crescendo and signals a shift from a thick drone to a more ambient, spacious tonal texture.

The harmonic progression within the piece can be understood as a modally-altered cadential progression. The sonar ping, pitched at D two octaves above middle C, takes on the function of a pedal note, supplying a sense of harmonic tension that is resolved at the end of the piece. The tonal centres serve to define the three main sections within the piece - after a

short introduction, the first section is based around E minor with a prominent seventh. The sixth note of the scale is also raised, giving an impression of the Dorian mode. The final section of the piece is centred around D major, allowing the sonar ping to be heard as the tonic and creating a sense of resolution. The second section of the piece is generally more gestural and less focused on a single tonality, though the final part of the second section features a strong tonicisation of A minor via the use of an extended accordion line. A minor is the modally altered dominant of D, and this tonality's prominent use before the introduction of the tonic completes a cadential progression of pre-dominant - (modal) dominant - tonic.

Motifs

Several smaller motifs recur throughout the piece, though with less prominence than the sonar ping. These include a harmonic progression, the use of soundscape, and song fragments.

A chordal motif recurs throughout the work, appearing prominently in 1.1, 2.1, and 3.2. Usually played against a drone, this progression can be interpreted as either i^{5}-IV-i-VII^{add9} or $ii^{5,7}$-V^{add4}-ii^{7}-I^{add9} depending on the pitch of the drone. From a perspective of motivic development, I was not interested in chordal transformations - all three instances of the motif use the same notes and are in fact derived from the same sound recording. Processing on all the instances remains fairly similar as well, with filtering and granularisation used to colour the sound rather than radically transform it. Instead, I was interested in the effect that changing the drone beneath the progression would have, and so the progression appears first over an E drone, then with no drone, then over a D (mirroring, to an extent, the overall harmonic progression within the music). While somewhat limited in options, I found this to be an effective way of ensuring continuity between sections and generating interesting chords.

Three passages within *Submerged Objects* feature relatively unprocessed environmental textures, which are a somewhat unusual feature in my portfolio. These recordings were mostly taken in St. Ives, and feature lapping waves and seagulls. As the piece progresses, these sections become more distinct from the surrounding abstract material: the first passage, 1.2, is smoothly mixed with the previous instrumental section and blends the sounds of seagulls with granular mandolin notes. The second environmental passage, 1.4, is left more bare, with only processed dulcimer notes and granular vocal material alongside. The third passage, 2.2, is left as purely environmental sound material. This was intended to create an impression of separation, dividing the purely naturalistic sounds from the processed material.

Submerged Objects also features material from two different folk songs. One is *The Whalecatchers*, discussed in my overview of *Hyperborea*. Here, the song is treated with granular processing techniques, and never appears in an intelligible form. However, the modal E tonality forms a large part of the first section of the piece, and the material forms the basis of both drones and voice-based gestures.

The second folk song, which takes a more important role in the piece, is the sea shanty *Shallow Brown*. This song is thought to have its origins in the West Indies. Some versions have the narrator as a slave planning to jump ship, while others are more generic laments for a lost love. As with the song excerpts in *Hyperborea*, the lyrics and melody are taken from my own arrangement of the piece, although *Shallow Brown* has been re-interpreted less than *The Whalecatchers*. A single verse from the song appears at the very end of *Submerged Objects*, mixed to appear distant and almost overpowered by the other material, but still just audible:

Cross them silver mountains,
Shallow brown
I'll pump that crystal fountain,
Shallow, oh, shallow brown!

However, section 3.2 is also derived from the folk song, with granular treatments of the song both sung and played on tin whistle placed above a tonic drone. Unlike in *Hyperborea*, the lyrical content of the song is less important here, as it is not taking on the role of a storyteller or narrator. However, the mournful nature of the melody and poetic lyrics were intended to mirror the emotional arc of the piece, and suggest a human presence among the more abstract drones and synthesised material.

A Sleeper and *dream//visitation* (2016)

A Sleeper is a long piece consisting of five episodes, all concerned with the extended exploration of a single sound source. This is in contrast with the majority of my portfolio, which generally tends towards the use of a wide range of sources, often linked thematically. In keeping with the theme of melody and harmony running through my portfolio, I chose to sample a music box. While not all of the sound material in *A Sleeper* is derived from this initial source, the additional material was chosen carefully to complement and blend with the music box's sonic characteristics and timbre. *dream//visitation* forms a companion piece, derived from a discarded draft of a section within *A Sleeper*, and will also be dealt with within this section.

The first step was finding an appropriate music box to record. From the outset, I was keen to write my own melodic material for the piece, which ruled out most music boxes as they tend to play only a pre-set piece. Fortunately, I was able to record a music box that played melodies from holes punched into a sheet of paper, and I set about writing what would become the main melodic theme of the piece. I was limited to the C major scale by the mechanism of the music box, and I decided to embrace this and write an entirely diatonic theme.

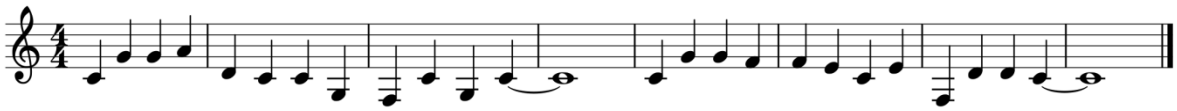


Figure 5: *A Sleeper*, main theme

I recorded two variations of the theme - one solo, one an octave higher with accompanying chords - as well as every individual note available from the music box. Having the individual notes allowed me to create a MIDI-playable version of the music box, using Native Instruments' Kontakt sampler, which I used heavily throughout the piece and particularly for passages where I wanted stable rhythms. In addition, I recorded a wide range of noises from the music box mechanism, including the sound of cogs, handles, the body being tapped, and the sound of blank paper passing through the mechanism.

Melodic development

The 'concrete' in *musique concrète* is often defined in opposition to architectural or abstracted music, which can be expressed in terms of relationships between notes.[24] 'Traditional' acousmatic music tends to avoid this level of abstraction, instead dealing in

[24] Harrison (1999)

concrete sound objects. I became interested in exploring and bridging this conceptual divide between abstract and concrete development methods by finding and using equivalencies between written and computer-based transformations.

The first step in this process was creating the abstract transformations - I decided to focus on the basic serial transformations of retrograde, inversion, and retrograde inversion, as these were all readily available from the music box by feeding the punched paper through upside-down or backwards. The inversion that this generated was a mirroring over the diatonic range of the music box rather than a perfect inversion of individual intervals, although I felt that this method both kept to the spirit of the process and made better use of the idiosyncrasies of the music box.

Once I had recorded these transformations, I subjected them to the computer-based equivalents of each process. The retrograde transformation lent itself well to simple reversed playback, and gave a characteristic reverse-attack sound that I had been intending to use ever since first deciding to write a music box piece. The inversion transformation required a little more experimentation. My initial idea was to simply mirror the whole frequency range around its centre, but this transformation was unsuccessful as it placed all useful information too high in the frequency range to be readily audible. Instead, I used a similar process of spectral inversion, but with the mirror frequency set at various pitches of C: 261.63Hz, 523.25Hz, and 1046.5Hz. These generally gave more useful transformations, with a range of interesting characteristics: the melodic notes tended towards microtonality, particularly when closer notes had been inverted; and the very quiet, low-pitched rumble of paper being fed through the mechanism became much more audible and formed a gentle, high-pitched ambience.

I applied these digital transformations to the recordings of all variations of the theme, and ended up with sixteen different transformations of the thematic material (each in monophonic and harmonised variants):

	Prime	**Inversion**	**Retrograde**	**Ret. Inv.**
Prime (no processing)	**1:** Prime theme	**2:** Inverted theme	**3:** Retrograde theme	**4:** Retrograde inverted theme
Spectral mirroring	**5:** Microtonal variation - inversion	**6:** Microtonal variation - prime	**7:** Microtonal variation - ret. inversion	**8:** Microtonal variation - retrograde
Reverse playback	**9:** Retrograde theme played by ‘reversed’ music box	**10:** Ret. inv. played by ‘reversed’ music box	**11:** Prime theme played by ‘reversed’ music box	**12:** Inverted theme played by ‘reversed’ music box

Reverse playback & spectral mirroring	**13:** Microtonal variation by 'reversed' box - ret. inv.	**14:** Microtonal variation by 'reversed' box - retrograde	**15:** Microtonal variation by 'reversed' box - inverted	**16:** Microtonal variation by 'reversed' box - prime

As composition work on *A Sleeper* progressed, I found that the microtonal variations created by the mirroring process were meshing less and less well with the piece's diatonic atmosphere, and eventually I removed almost all elements of them, with only fragments of the mirrored paper rumble atmosphere remaining.

Form and structure

My initial plan was to compose an episodic piece, with each episode presenting the theme in a different transformation - moving from prime, inversion, retrograde inversion, retrograde, and returning to prime at the finale. However, as composition continued, I moved away from this initial idea, instead using each episode as an exploration of a different style of sound, with the transformations of the theme taking on a secondary structuring role.

Section	**Sonic material**	**Theme variations**
1: *Overture* 0:00 - 3:57	Presentation of theme and material	1, 11
2: *A Machine for Dreaming* 3:57 - 7:15	Mechanical sounds: derived from cogs, paper moving through mechanism	2, 12
3: *A Silence, Broken* 7:15 - 9:49	Resonances and decays: music box material with sharp attacks removed	1
4: *Night Terrors* 9:49 - 12:22	Glitch material: entirely digital, or other material transformed to unrecognisability	3, 9[25]
5: *Lullaby for a Sleeper* 12:22 - 16:00	Melodic and harmonic material	1, 11

In the final version of the piece, each episode focuses on a different 'family' of sound available from the music box. The actual notes from the box can be heard in some fashion in every section, while the surrounding material changes. The first section functions as a presentation of material, and foreshadows the elements that make up each subsequent section. It also features the theme in its unaltered state, both monophonically and

[25] While these variations formed the basis of a range of the material in this section, they are not readily identifiable in the finished piece.

harmonised. When adding harmony to the theme, I used the version recorded with chordal accompaniment but also added a second layer of harmony. This layer used reverb and delay to turn the theme into a tone cluster wash, then used a vocoder to create a subtle pitched texture. This pitched texture was then used to create droning chords, which are prominently featured in the first and last sections. Harmonically, these are IV-vi-bVII-ii, a modal progression that features a flattened seventh (clashing with the diatonic music box) and comes to rest on the submediant. This gives an impression of bitonal harmony that gives the theme an 'untethered', ambiguous feeling that I found appropriate for a piece exploring ideas of sleep and dreaming.
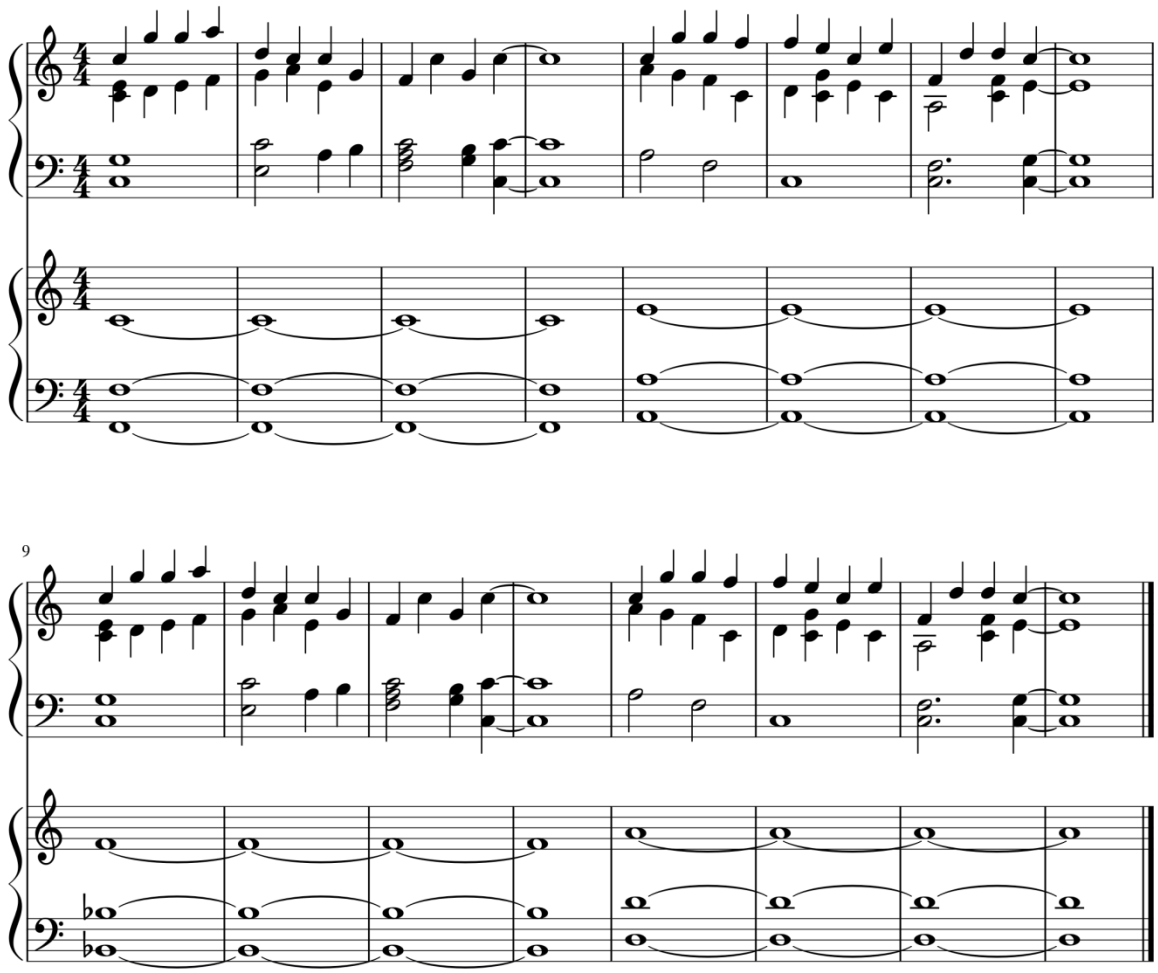


Figure 6: Harmonised variant of main theme

The second section explores in greater detail the material derived from the mechanical action of the music box, while also featuring the theme in its inverted form. This section generally uses dense layering of textural recordings, which have been pitch-shifted, and extensively compressed and boosted in volume. On top of this, individual hits have been placed at a broadly similar volume level, creating an effect that is more timbral than dynamic. The central part of this section also features the use of bit-reduction and distortion,

temporarily transitioning into a lo-fi soundworld that further foreshadows the glitch material that will occur later.

The third section showcases the timbre of the music box, divorced from its characteristic attack-decay shape. A variety of reverbs and delays were used to ‘wash out’ the sound into metallic clouds that - broadly speaking - mirror the pitch shape of the melody. Alongside this, the monophonic prime theme is placed. Here it is played via MIDI programming of the music box samples rather than a live recording, creating a more regular sound, and further processed to soften the material. A second version occurs at the same time, which has been subjected to bit depth reduction and mixed very quietly, adding a slight gritty edge to the otherwise clean and smooth material.

The fourth section further extends the glitch material that has been present within the other episodes. While the other sections used these ideas in moderation, the fourth section lets these sounds overpower the other elements completely. This section can be seen as more traditionally gestural than the others, as the clicks and pops build up and fall away again. Distortion is also a key element here, and is used as a transformative processing element on a variety of material from earlier in the piece. The heavy use of distortion and glitch creates a dense, dark and aggressive atmosphere, a strong contrast to the rest of the piece and in particular the quiet section that immediately precedes this.

The fifth and final section is in many ways a recapitulation of the opening, as it brings the focus back to the melodic material, presented in its prime and reversed-prime forms as at the beginning of the piece. The primary difference here is one of arrangement: the sounds used are thicker and generally simpler, giving the theme an almost child-like simplicity that is juxtaposed with the stuttering glitch material. This functions as a counterpart and relaxant after the tense, dark and complicated fourth episode, and serves to bring the piece to a close.

I also investigated the use of sectional signifier material, as discussed in *Submerged Objects*. In this case, the main structural signifier was a growling, spectrally complex, synthesised bass note. This sound is radically different from any of the other material within the piece, which tends towards higher pitches and is rarely heavily distorted. The bass note recurs throughout the piece, generally signifying transitions between sections within each episode: it marks the first climax and the ending of the opening episode; falls on either side of the distorted section of the second episode; and marks the finale of the final episode. It does not occur in the third episode, and is itself developed as part of the source material in the fourth episode.

Integration of glitch material

Glitch effects are a major part of *A Sleeper*, forming a developmental tool that helps to define sections and a distinctive counterpart to the more natural textures derived from the music box. There are several distinct families of glitched material that recur throughout the piece, each having its own function:

- **Stutters:** Primarily applied to the music box melodies. These were intended to form a (post-)acousmatic counterpart to the primarily abstract thematic identity of the melodic material.
- **Bitcrushed:** Various materials throughout the piece are subjected to bit and sample depth reduction, resulting in harsh, distorted material. These sounds are often mixed quite quietly, lending extra 'bite' to their non-processed counterparts.
- **Distortion:** Distorted material forms a key transformation, particularly in the fourth movement, however gentler distortion appears throughout the piece.
- **Clicks:** I sampled a variety of clicks and cuts, removing the originally-processed sound to leave just the glitch material. I then imported these into the Kontakt sampler, allowing them to be triggered via MIDI, and used these to create gestural material.
- **Hardware:** Sampled noises and feedback from a variety of cheap hardware synthesisers and sound devices, these sounds added a layer of pitched, dirty instability and are particularly prominent in the fourth movement.

I have been interested in using glitch music as an element in my own composition ever since my undergraduate degree, however most of my previous pieces working with glitch techniques had tended towards aggressive and harsh material. In *A Sleeper*, I was interested in exploring the quieter soundworld available from glitch music, highlighting clicks, pops, and stuttered material rather than the crushed and distorted atmospheres of my earlier work.

In his critical reading of the glitch music group Oval, Scott Haden Church argues that glitch techniques "subvert conventional music by shifting the aesthetic terrain from musical function and form to sonic texture and repetition".[26] Particularly within the more melodic sections of *A Sleeper*, I was aiming to use this aesthetic subversion to create a juxtaposition of musical information. On one hand, the simple diatonicism of the music box, heightened by the extramusical connotations of childhood lullabies and the piece's title, invites the listener to a relaxed, calm state. This is contrasted with the complex, stuttering glitched material that instead suggests a more involved, detail-oriented, and textural mode of listening. This

[26] Church (2015) p.322

juxtaposition of listening mode is intended to work alongside the interplay of abstract and concrete developmental techniques within the piece and help to create *A Sleeper*'s dream-like atmosphere.

This contrast of listening mode is also reinforced by the use of frame-highlighting. The glitch material draws attention to the piece's digital nature, and this sets up a juxtaposition with the very human-sounding music box - which constantly varies in tempo and features loose, staggered timing of chords. The overture presents both aspects of the music in fairly equal relationship, with no aspect gaining the upper hand, while later movements tend towards one extreme or the other.

dream//visitation

While composing *A Sleeper*, I worked on several other drafts of episodes that did not find their way into the piece, in particular an exploration of the microtonal variations and a drone-based study of granular transformation. I decided not to include these in the final version of *A Sleeper*: the microtonal episode did not seem to fit with the piece's sustained diatonicism, and the drone-based section was simply too long to fit alongside the other episodes without unbalancing the overall structure. Instead, I decided to expand these into 'companion pieces' - the drone music became *dream//visitation*, while the microtonal episode is still being recomposed.

dream//visitation features two primary elements: the granular transformation of the music box, and a low, synthesised drone. The granular elements consist of several layers of processing, including a smooth, slowed-down layer and several layers that focus on single chords from within the harmonised theme, some left unprocessed and others treated with bit-reduction. Over the course of the piece, these build in intensity and density.

The drone is constructed from a single low A synthesised note, which is sent to a variety of different distortion processes. Of particular note is sample rate reduction, creating aliasing artefacts at a higher frequency that are then subjected to further distortion as the music progresses. Approximately halfway through the piece, the drone transitions to a chord progression, and higher distorted elements (suggesting electric guitar tremolos but, in fact, processed music box notes) enter, sustaining a higher drone. This is then followed by a repeated melodic line.

Within *dream//visitation*, as with *A Sleeper*, I was primarily interested in the creation of atmosphere. Unlike the mostly quiet and meditative *A Sleeper*, however, I wanted to create an impression of awe and size. To accomplish this, I used a slow crescendo that lasts for a

large proportion of the piece (a simple idea that I later returned to for *Cantus Firmus for the Beheading of St. John the Baptist* and *The Bones of the Earth*). Unlike those pieces, however, the crescendo within *dream//visitation* is primarily accomplished timbrally. The bass synthesiser progresses from a clean and relatively pure tone to layers of distortion, however compressors and limiters were used to keep the volume fairly consistent throughout (with the output then volume controlled again to add some dynamic motion back). I hoped that this technique would give an impression of 'over-filling' - the audio equivalent of a glass full of water having more liquid poured in. This is further emphasised by the bass-heavy mix, in which the more delicate sounds are purposefully almost overpowered by the synthesised drones.

A Bright And Shining Future Has Passed Us By (2017)

I wrote *A Bright and Shining Future Has Passed Us By* to explore the idea of creating a piece of music based entirely around another piece of music. This is an expansion of techniques I used in other pieces - *Submerged Objects, Hyperborea,* and *A Sleeper* all involve extended explorations of melodic material. However, *A Bright and Shining Future* takes this concept a step further, by using the individual tracks from a 'pop' recording as the basis for acousmatic transformation. Thematically, the piece is also rooted in my appreciation of science fiction and deals with ideas of nostalgia, anachronism and imperfect reproduction.

Theme From A Bright And Shining Future

The composition process began with an entirely different composition. I wrote a pastiche of 1980's sci-fi scores, with my two major touchstones being Brad Fiedel's theme from *The Terminator* and Vangelis' score for *Blade Runner*, in particular the end credits suite. I ended up with a 4:30 piece of music that included two statements of a melodic theme and a variety of connecting material.[27] I was then able to export individual tracks from this piece, providing me with a range of melodic, harmonic and percussive material. I opted to create my own piece at this stage to give me greater control over the material I would be working with, as well as to sidestep any copyright issues that could have arisen from using another composer's work.

Although I approached this as a pastiche, I was not overly concerned with technical and technological fidelity. When creating this piece I primarily relied on digital software synthesis (mostly using Native Instruments' Massive synthesiser), which is obviously not 1980s technology, however I felt that the sounds I created captured at least some of the character of the scores in question. At the time of composition, I had not yet decided on the use of additional sonic material derived from tape recorders, VHS machines, and dial-up internet, and on reflection this use of modern digital synthesis is perhaps a missed opportunity to complement this technology-referential material.

[27] This piece, titled *Theme From A Bright And Shining Future*, can be found on the accompanying media.

Structure and narrative

A Bright and Shining Future Has Passed Us By can be divided into four sections:

0:00 - 1:52	**Part 1**	Primary focus on degraded/framing sonic material; presentation of motivic ideas
1:52 - 4:17	**Part 2**	Shift to sonic clarity; motives transformed; build to first climax; *Blade Runner* sample acts as turning point
4:17 - 7:34	**Part 3**	Continued focus on clear material and motivic transformation; build to second climax; revelation of modem samples
7:34 - 9:24	**Part 4**	Return to degraded framing material; continued motivic transformation

My initial concept for the music did not include many of the elements of the completed work. I started off with a simple approach, relying primarily on granular synthesis to expand on the synthesised multitracks. One of my initial sketches found its way into the final piece, forming the opening of part 3, however I was not fully satisfied with this approach as I felt the resulting music was unconvincing. As a result I decided to contrast the 'musical' material with a variety of technological sounds, primarily revolving around audiovisual media, which provided a sharp and jagged counterpart to the smooth synthesised material.

Thematically, *A Bright and Shining Future* attempts to explore ideas of anachronism, nostalgia, and fantasy through a science fiction context. I was interested in expressing aurally the experience of 'sinking into' a work of fiction. Key to this is the transition between different states of sound, both in terms of source material, timbral quality, and implied recording technology, and I attempted to use these to encourage the audience to listen in different ways throughout the piece. This has its roots in my use of contrasting sound worlds to build a reflector-character in *Hyperborea*: in a similar way, the transition between 'noisy' and 'clean' material within *A Bright and Shining Future* is intended to portray movement between perceptual and emotional states on the part of the point-of-view within the piece. Unlike *Hyperborea*, however, this point-of-view is not a defined character.

I was also interested in working more explicitly with narrative ideas, and in part structured the piece around Joseph Campbell's concept of the monomythic narrative template, in which:

> A hero ventures forth from the world of common day into a region of supernatural wonder: fabulous forces are there encountered and a decisive victory is won: the hero comes back from this mysterious adventure with the power to bestow boons on his fellow man.[28]

This structure can, according to Campbell, be seen in a wide range of myths, legends, and stories (famously, and perhaps relevantly for a piece dealing with science fiction, *Star Wars* was consciously modelled after this framework). It was not my intention to comment on the cultural applicability of Campbell's monomythic structure: it has attracted criticism for being too generic, primarily male-focused and ethnocentric,[29] and tacitly supporting despotism and tyranny by granting heroes a "divine or mystical right [to rule]".[30] However, the basic structure struck me as having significant similarities with my intention to portray the experience of becoming absorbed by a work of fiction, and so I decided to model events within the piece around the monomyth template. The structural table above could therefore be reworked to interpret the piece in terms used by the monomythic structure:

0:00 - 1:52	**Departure**	The real world; presentation of motif in degraded form represents the call to fantasy realm.
1:52 - 4:17	**Initiation**	Crossing the boundary into fantasy; 'trials' interpreted as crescendos, increase and decrease in tension.
4:17 - 6:30		Build up to symbolic 'death' - modem noise completely interrupts the musical material, moment of greatest challenge.
6:30 - 7:34		Rebirth - sudden return of musical material, expressing completion of the quest.
7:34 - 9:24	**Return**	Return to the real world; previous degraded motivic material remains in a transformed state.

The introduction is focused on the presentation of 'real world' sounds, primarily derived from tape machines, but also including musical material presented diegetically. I composed a

[28] Campbell (1949) p.23
[29] Crespi (1990) p.1105
[30] Brin (1999) - science fiction author David Brin specifically calls out *Star Wars* for its use of the monomyth, contrasting this to his reading of progressive and egalitarian themes in *Star Trek*.

short ‘jingle’, suggestive of the music which might accompany the publishers’ logos on a VHS tape, and surrounded this with sounds arranged in a realistic manner - a cassette being inserted into a machine, hissing tape playback, buzzing amplifier noise. EQ and speed alterations helped complete the illusion of realism in the opening seconds of the piece. The strictly realist illusion is quickly broken by granular transformations of the ‘noise’ material, but the analog-noise aesthetic remains unbroken even when further musical elements are introduced.

The transition at 1:52 marks a key moment within the piece. For the first time, the music moves from ‘noisy’ to ‘clean’ - or, from a soundworld that prioritises noise and artefacts to a soundworld that prioritises the traditionally musical material that I have chosen to process. This is the transition from the introduction to the first main section of the piece. Granular synthesis is featured heavily here, with large grains and a long, randomised delay on the playback of each grain. In addition, I make heavy use of reverb as a sonic shaping tool, creating large washes of sound from the melodic and chordal synthesised material. This tonal texture moves from quiet to loud to quiet, forming the structural backbone of this section, and is placed against more gestural granular material derived mainly from percussive sources. This transition from noisy to clean is designed to imply a shift from the real world to a surreal, imaginary setting: the sounds of tape media that accompanied the music have vanished, and left the illusion of the fantasy-world complete.

The surreal, clean setting continues into the second section of the piece, which continues to draw primarily on the melodically-derived material, but also includes more of the technological elements. The material drawn from *Theme* here is also developed using granular processing, though the processing is much less transformative. While the first section completely washed out the material into textural atmospherics, here the rhythmic and melodic contours of each line are still easily discernible. This creates an additional layer of direction and purpose within the texture. Within this section, sounds derived from dial-up modem connections slowly enter and suddenly interrupt the music, dropping the listener suddenly back into the ‘real’ world. This forms a moment of disconnect with the fictional reality, triggered by technology that we know is outdated. This is a direct reference to the specific form of broken suspension of disbelief that can occur in science fiction, when outdated technology shows up in an ostensibly futuristic setting (typical examples come from William Gibson’s 1984 novel *Neuromancer*, which features three megabytes of computer storage being valuable enough to sell on the black market, and an intelligent supercomputer using an airport payphone to contact a character[31]). However, the surreality of the

[31] Gibson (1984)

synthesised soundworld rapidly returns and comes to dominate again, transforming the outdated modem sound into an element of the synthesised musical material. In terms of the monomythic structure, this represents the symbolic death and rebirth at the heart of the story.

An important thematic element at the centre of the piece is the sample taken from *Blade Runner* - the opening phrase of the famous 'tears in rain' speech at the climax of the film. I attempt to use my piece, with its exploration of outdated technology and reinterpreted music, to recontextualise the quote "I've seen things you people wouldn't believe" as a multilayered statement on the appeal, cultural status, and occasional flat-out silliness of science fiction.

The fourth and final section of the piece is a return to the 'noisy' soundworld that defined the opening. In terms of the monomyth, this is the return of the hero from the realm of wonder back into reality - or, the return of the reader to the real world after being absorbed in a story. However, the material here has changed: granular transformations of the opening 'jingle' can be heard, running through a chordal pattern amongst the analog noise, suggesting that something encountered on the journey has returned to reality.

The interplay between 'real world' and 'fictional surreality' can also be understood in terms of narrative framing. Although *A Bright and Shining Future* does not involve glitch techniques, the treatment of analog noise material is conceptually similar, as it uses the noise to draw attention to the framing medium. In this case, however, the framing medium that is expressed is itself a simulacrum - a constructed world that nonetheless largely conforms to our expectations of reality. A further frame exists in the form of the surreal science-fictional world that is presented, this one existing as a fabrication - or, in Hoffman's words, a world which "departs explicitly from our own reality framework".[32] Conceptually, these are nested as follows:

- **Frame 1:** The entirety of the music, as a digital artefact
    - **Frame 2:** Simulacrum: the 'real world' as presented in the music, an outdated reality featuring analog technology
        - **Frame 3:** Fabrication: the fictional surreality of the science fictional world

Frame 1 must by necessity exist, as it encompasses the whole of *A Bright and Shining Future* as a digital artefact. Frames 2 and 3 constitute the constructed realities within the work. These frames frequently interact with each other, often taking on an interruptive role, but other times functioning harmonically or in gestural counterpoint. Frame 2 primarily

[32] Hoffman (2012) p.45

constitutes the first and last sections of the piece, and is characterised by the noise material; frame 3 is dominant for the central section of the work, and is characterised by the clean material. The piece also makes use of an explicit framing device, in that it opens with the sound of a VHS tape being loaded into a machine and playback being started, and finishes with the tape playback being stopped. This was intended to draw the audience's attention to the use of framing early on, and therefore encourage more consideration of these elements as the piece progressed. Additionally, the immediately-apparent datedness of the sound also helps to highlight the 'retro' nature of the rest of the material that will be present within the music.

The piece neatly encapsulates what is, for me, the appeal of science fiction: at once a fantasy, full of wonder and unbelievable things, but also encouraging a change in our perception of the real world. *A Bright and Shining Future Has Passed Us By* aims to take the listener on that journey.

Cantus Firmus for the Beheading of St. John the Baptist (2018)

Cantus Firmus for the Beheading of St. John the Baptist was written as part of a concert that featured music reinterpreting works of art in the Barber Institute of Fine Arts, in a programme that combined instrumental and acousmatic music. I chose to compose a piece based on Pierre Puvis de Chavannes' 1869 painting *The Beheading of St. John the Baptist*. I was immediately attracted to several aspects of the work that I felt offered parallels to my own compositional practice. In particular, the strong sense of narrative and the simplified, iconographical style that references earlier artistic styles were areas in which these connections were easy to make. I was also interested in the painting's juxtaposition of motion (the man swinging a sword, on the left hand side of the work) and stillness (St. John, depicted centrally), which I felt would be an interesting challenge to reflect musically.

As with my other works that involve a narrative, I was not interested in a literal, 'sound effects' approach, and opted to avoid any sounds directly suggested by the content of the painting (for example, metal scrapes for the sword or leaves rustling in the tree). Instead, I wanted to express a sense of inevitability, with a juxtaposition of movement and stasis, and of violence and meditative peace. Structurally, I decided to experiment with ideas of predictability and simplicity.

Plainchant and cantus firmus

The primary source material for *Cantus Firmus* is a short (around six second) sample of plainchant. From the earliest stages of composition, I had known that I wanted to include references to sacred music, inspired by the painting's references to older, iconographic art. My initial experiments used the chant as a recognisable quotation, however I quickly discarded this idea - I felt that composing a more traditionally acousmatic piece with fragments of chant scattered through was somewhat unsatisfying.

Drawing on choral music of the Renaissance, I opted for a structural allusion to sacred music rather than the surface-level use of quotation or sampling. I also wanted to build on my previous exploration of equivalence between abstract and concrete transformation techniques, and therefore decided to investigate the use of cantus firmus. A cantus firmus is a voice in a choral composition (often the tenor) performing a plainchant in notes of long duration around which other, faster lines are composed. As with my investigation of serialist development techniques in *A Sleeper*, I decided to approach the idea of cantus firmus from a concrete, rather than abstracted, perspective.

I used Paulstretch to take the plainchant fragment and slow it down so that it played out over a period of almost four minutes, and created a version with added transpositions at 1, 1.5 and 2 octaves. Crossfading between these layers, and adding a variety of reverb effects, I was able to create a shifting, tonal texture that maintained a timbral resemblance to the initial choral material. I also reversed the chant in the course of this processing, so the notes of the cantus firmus appear in retrograde from their original form.
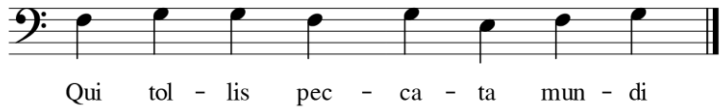


Figure 7: Fragment of plainchant

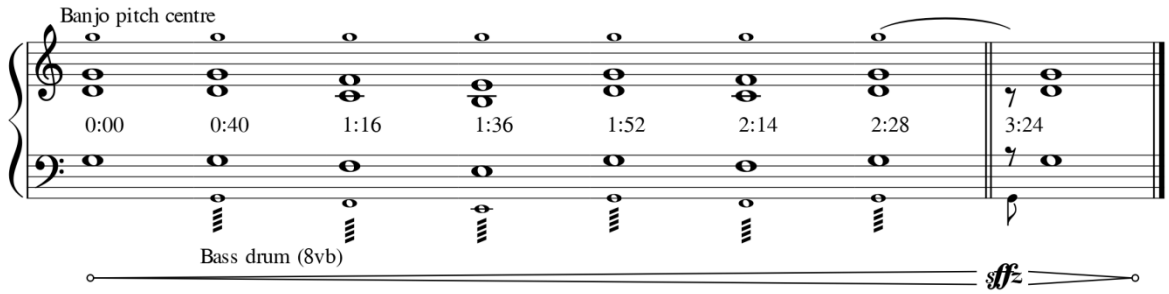


Figure 8: Score overview of *Cantus Firmus*, showing retrograde plainchant

Other material

As the plainchant-derived texture was already very rich, I opted to limit my use of other musical material, relying entirely on a digital emulation of a TR-909 electronic bass drum, a short metallic resonance, and a banjo played with a violin bow.

Played this way, the banjo has a wailing and metallic timbre, somewhat reminiscent of the Turkish yaylı tanbur, medieval stringed instruments, or a violin played *sul ponticello.* Additionally, the relative looseness of the strings meant that microtonal pitch bends and fluctuations were nearly impossible to avoid while playing. I found this overtone-heavy sound was able to cut through the thick choral textures without becoming overpowering, and I also liked the way its timbre brought to mind a variety of ancient or unusual instruments, without being directly identifiable as a particular one. I aimed to use this sense of almost-familiarity to suggest the listener experiencing some ancient, mystical event.

I recorded several layers of bowed banjo improvisation, which survived into the finished piece with minimal processing. As I was writing the piece for inclusion in a concert programme which included both acoustic and acousmatic music, I was anxious to ‘bridge the

gap' between live and pre-recorded music, which I accomplished by treating these banjo lines as instrumental recordings in a 'traditional' sense - thus creating a strong sense of source-bonding and suggesting to the audience that the instruments heard are real.

The musical material played by the banjo is modal and centred around G. For most of the piece, the Dorian mode is highlighted, however a short recurring four-note motif switches mode to include E flat and B natural, and other chromatic notes can be heard scattered throughout. Towards the end of the piece, I recorded multiple layers of measured tremolos on open-fifth chords, which add to the increasing feeling of rhythmicity.

Much of the material in *Cantus Firmus* is either ambient or unmeasured in nature, giving the piece a feeling of stasis. Inspired by the painting's juxtaposition of motion and stillness, I also opted to include a bass part derived from a digitally-emulated TR-909 bass drum. This drum part plays throughout almost the entire piece, with a continuous semiquaver rhythm at 120 bpm. However, for most of the piece it is almost inaudible due to a combination of volume automation and low-pass filtering, resulting in a pulse that is almost subliminally felt rather than heard. Throughout the piece, the volume increases, the filter opens, and distortion is added to the sound, resulting in a steady crescendo that eventually overpowers the ambient material almost entirely. The bass part is also pitched to follow the pitch centres of the cantus firmus texture, reintroducing an abstract rather than concrete transformation of the plainchant.

Structure

I was interested in expressing the key ideas of the piece structurally as well as through choice and treatment of sound material. In particular, I wanted to evoke a sense of inevitability in order to reflect the content of the painting: on viewing the painting, it is immediately obvious what is about to happen, and the viewer seems to be 'stuck' in the moment just before. In order to reflect this musically, I decided to experiment with a massively simplified structure:

0:00 - 3:24	Crescendo
3:24	Impact
3:24 - 3:45	Decay

My intention was to ensure that the audience understands this structure from as early on in the music as possible: all musical parts increase in intensity throughout the piece, whether in volume, density of events, or both, and continue on more or less the same trajectory throughout, with additional layers entering gradually as the piece progresses. Distortion also forms a key element of the musical structure, particularly towards the climax. I chose to feature distortion as a sharp contrast to the (semi-)naturalistic choral and strings material, and to draw together the bass drum with the rest of the material. Distorted versions of the choral material enter from 2:34, and gradually begin to overpower the clean versions. I also treated these distorted sections with a square-wave LFO controlling volume, giving a stuttering effect that mimics the rhythm of the bass drum. The sharp cuts also resulted in a variety of clicks and pops which I did not edit out in order to further heighten the increasing intensity of the rhythm. A final element in the crescendo is a full version of the piece, time-stretched back to around six seconds in length. In effect, this reverses the extension within the cantus firmus and restates the initial pitches of the chant - however, this ended up mostly inaudible and the shortened piece serves mainly to add momentum to the last few seconds of the crescendo.

After the crescendo is a short decay passage, in which most elements of the piece rapidly drop out, leaving just a few high-pitched elements: a solo banjo line, slowly-decaying reverb, and a vocal chord that enters a moment after the climax. This vocal chord was intended to suggest an ‘amen’, as a tonic vocal fragment that enters after the main piece is completed (though it does not use the stereotypical IV-I amen cadence).

Munich Fragment (2017)

Munich Fragment was written to commemorate what would have been the 90th birthday of electronic music pioneer Delia Derbyshire. As a starting point for this piece, I visited the Delia Derbyshire Archive at John Rylands Library, University of Manchester, where I was able to look through a wide range of documents and sketches left by Derbyshire. I based *Munich Fragment* on a short piece of music labelled ‘Munich’, discovered within the Archive. This sheet contained a five-note melody and four chords, which formed the basis for all the pitched material heard within *Munich Fragment*.
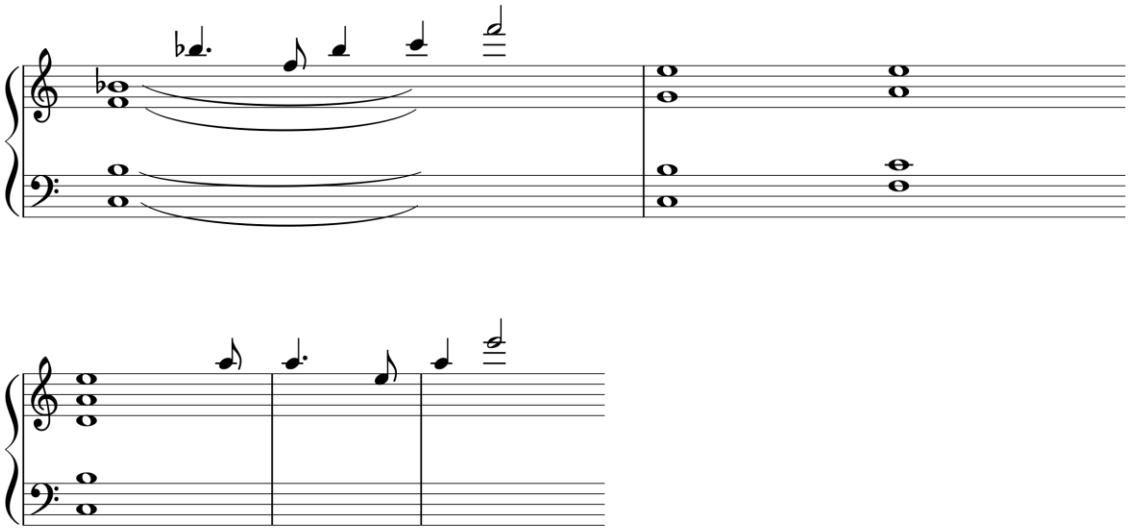


Figure 9: Transcription of 'Munich' manuscript

Munich Fragment can be readily divided in half, with both sections contrasting each other in a variety of ways. The first section focuses more on the synthesised material, with the piano-derived material appearing sparsely, and is centred around a low, droning C. The second section foregrounds the piano material, particularly a chord progression derived from the original manuscript. It also uses distinctively digital processing, unlike the first section which used more transparent processing techniques. In particular, the granular glitch-based material that dominates the second half of this section would be impossible to reproduce using analog techniques. Both of these sections are quite static in terms of structure, each gently rising and falling in terms of dynamics.

The primary sound sources for *Munich Fragment* are a piano, and analog synthesis - both sampled from hardware and emulated. Most of the gestural material in the first half of the piece is derived from analog synthesisers, and focuses primarily on pitched material modulated with extreme filter or pitch sweeps, although noise-based material is also present.

These sounds were intended to be reminiscent of old-fashioned ‘science fiction’ style sound effects, in homage to Derbyshire’s role in arranging the *Doctor Who* theme tune while at the BBC Radiophonic Workshop (a piece which formed one of my first experiences of electronic music as a child). While in other contexts these sounds could be regarded as comical or dated, I hoped that the juxtaposition and blending with the more complex drone material, as well as the audience’s knowledge of the piece’s intent to commemorate Derbyshire’s unique role in electronic music, would allow these sounds to be heard in a non-comical way.

These gestures are placed alongside a shifting, drone-based texture that consists of two main layers. The first is a synthesised low C, inspired by the bass C that occurs in three out of four chords on the original manuscript. This is passed through reverbs and delays that fade in and out, giving a subtle changing timbre over time, and gentle distortion that is used to shape the dynamics and timbre further. The higher textural layer is made from processed piano notes, and quotes the four original chords, with individual notes used as stacked and extended suspensions into the next layer. This means that the four notes present in the high texture do not always exactly assemble the original chords, but also give hybrids that combine notes from two adjacent chords. A third, more sporadic, layer consists of processed variations of the fragment’s melody, appearing pushed back into the mix.

At about the halfway point of the piece, a crescendo leads the transition into the second half. The low drone layer drops out suddenly, leaving the higher chordal elements to continue alone, and a solo piano enters. Piano-derived sound material has been used throughout the first half, however this is the first time a piano appears relatively un-processed (with only EQ and reverb). The piano plays a eight-chord repeated figure. These were derived from a matrix of pitches of the original four chords, as follows:

	Chord 1	**Chord 2**	**Chord 3**	**Chord 4**
Voice 1	Bb	E	E	A (with E above)
Voice 2	F	G	A	D
Voice 3	B	B	C	B
Voice 4	C	C	F	C

I assembled each chord in the new progression by reading vertical and diagonal arrangements of four pitches. When selecting chords and voicings, I was choosing freely rather than sequentially, and arranging the voices to ensure movement by step, with occasional leaps, particularly in the outer voices. In particular, the B flat note does not appear in any of the chords within this sequence. This is because the original melody from

the manuscript fragment appears alongside the chords, and I wanted the B flat within the melody to appear as slightly out-of-place, therefore highlighting the melody.

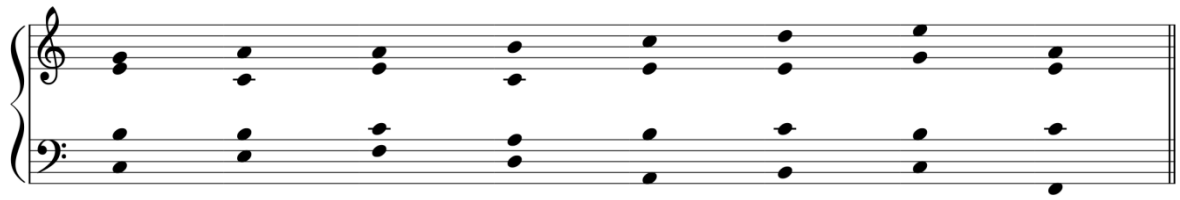


Figure 10: Derived chord progression

The main developmental process within this section is the introduction of a layer of granular processing. Unlike the smooth granular processing used in several of my other pieces, the grains here have very sharp attacks and decays and are very short, creating glitch effects and sometimes additional notes on their own. This processing layer also responds to the piano, as the high dynamics of the note attacks trigger the filling of an audio buffer, which then holds until the next attack. This granular layer increases and then decreases in intensity, creating a wave-like structure against the repeated cycle of chords. Eventually, the glitched, granular material dies away, and the piece ends with a statement of the original theme on the Munich fragment, which finishes on an unresolved note.

Munich Fragment can also be understood in terms of narrative framing, as the music moves from a state of transparent framing through to highlighted framing. In keeping with the simplified structure, this is also a simple transition that works in combination with the other elements of the music to emphasise the transition from analog to digital sound material.

The Bones of the Earth (2018)

As a composer working regularly with instrumental recordings, I have generally not felt the need to write mixed-media works, as my fixed works cover similar sonic material. *The Bones of the Earth* is an exception to this - the opportunity to write music for organ and electronics seemed too good a possibility to ignore, and I felt the organ offered unusual avenues for exploring the interactions between live and 'tape' sound.

My initial inspiration for the piece came about largely by accident: while experimenting with an organ sampler instrument, I left a diatonic cluster chord sustained for a long time and noticed that I was increasingly attracted to the beating between the notes. This led me to begin work on a piece including organ samples, which transformed into a piece for live organ and electronics.

Writing for organ

The organ part in *The Bones of the Earth* is based around five chords and a descending bass part that imply a key of B minor. These chords, while built from the notes of the D major scale, freely use added tones and tone clusters. While I was interested in using cluster chords in my work, I was also looking to continue ideas of simplicity and tonality explored in *Cantus Firmus for the Beheading of St. John the Baptist*, and so decided to approach the instrumental composition from a (pan)diatonic standpoint, rather than exploring chromatic cluster chords.

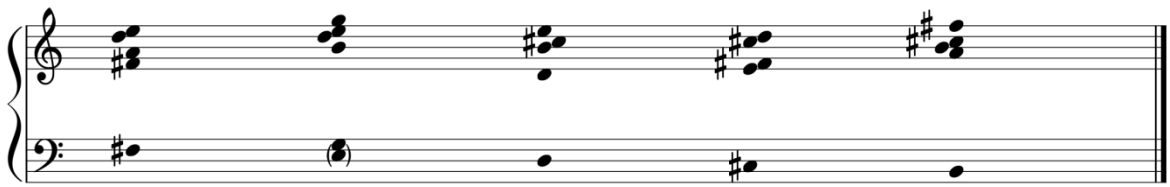


Figure 11: Basic chords used in organ part

Alongside these sustained chords, I added an aleatoric element to the piece: short cells are repeated freely and loosely timed, creating ostinato figures heard alongside the chords. These are pitched to the same range covered by the chords, and played on a different manual on the organ. I was interested in exploring the shifts in timbre that occurred when the same note was played on two different manuals, and the ostinato figures interlocking with the chords formed - to me - an interesting way of approaching this.

The decision to write for organ presented me with a more fundamental compositional decision alongside the notes themselves - namely, what was I trying to do that I could not accomplish by working in my usual sampled-instruments style? I felt that justifying this compositionally would be a crucial aspect of the piece, and I decided to justify the presence of live performance by allowing for a good range of freedom on the part of the performer, both in terms of registration and the aleatoric material (the non-specific registration directions also allow for a greater degree of 'portability' - the piece can be performed on any two-manual organ). This decision has echoes of my earlier works for instruments - my works *Confluence II* (2012, for string ensemble and percussion) and *Transitions* (2013, for chamber orchestra) both included ostinato cells that were played at a freely-measured tempo, which I felt was an effective method for creating effects that somewhat mirrored granular processing.

Synchronisation between organ and electronics was accomplished by the simple method of giving timings during the score and supplying the performer with a clock (during performance at BEAST FEaST, this was linked to the diffusion system, but in theory a stopwatch would work just as well). I decided on this simple approach rather than a more complex interactive system as it would increase the piece's portability.

Electronics

The electronics within the piece are - on a large scale at least - quite simple. The source material was initially the sample-based organ instrument that inspired the piece, and a short vocalisation. Both of these were heavily processed throughout the piece, and do not appear in their original form.

The organ based material is derived from the placeholder MIDI track of the live part. I used Reaktor to isolate overtones of the chords, resulting in high-pitched sustained tones that subtly reinforce the live organ part. As the music progresses, these high notes are treated with more and more distortion, eventually resulting in a sound reminiscent of electric guitar feedback. At the same time, the live organ becomes fuller, with changes in registration resulting in a louder and thicker sound.

The voice based material is largely textural, and moves in slow crescendoing waves that link up with the live chords. Primarily, these are based around convolution reverb and delay processing, in order to create large washes of sound. This material remains fairly stationary throughout the piece, however it is also used as source material for two further textural layers. A distorted variation of the choral material slowly fades in as the piece progresses, creating a further thickening of the texture, and the vocal layer is also used as input for a glitch-based layer.

The glitch layer was created in Reaktor, and uses granular-based processing alongside distortion, bit-crushing and randomised parameter modulation to create a constantly shifting texture that occasionally fades into near silence and occasionally leaps out. I was happy to leave this layer random, rather than bouncing to a fixed sound file - as the inputs to this layer are defined and modulated over time in a fixed way, the result after each export was largely predictable. This also makes the creation of multichannel variations of the work easier, as well as complementing the semi-aleatoric organ part.

The Bones of the Earth is also interesting to consider in terms of narrative frame. While an approach that dealt with frame as an element of musical discourse (as in *A Bright and Shining Future*, for instance) was not a primary goal, the interactions of live organ, processed organ samples, and glitch material do present an interesting interaction of frames. Contained within the overall frame of the music, there are two additional frames present, that of the live music and that of the electronic part. The electronic part presents us with a contradiction that creates a sense of frame-mixing. The voice and organ material implies a transparent framing, particularly when combined with the live organ - the combination of live and sampled and processed organ in particular encourages these frames to be considered together. Against this, the glitch layer works to draw the audience's attention towards the electronic nature of some of the sounds, encouraging the perception of separate frames. I aimed to use this uncertainty of framing to suggest a sense of perspective - in keeping with the piece's geographical subject matter, I hoped that this would imply a sense of uncertain but vast distance, that we cannot tell how far away (metaphorically speaking) the live organ is, as the electronic layer shifts its relationship around it.

Structure

My concept for *The Bones of the Earth* involved the portrayal of 'geographical' time scales, and I wanted to express this structurally as well as through the use of textural and sustained sounds. I returned to ideas I explored in *Cantus Firmus for the Beheading of St. John the Baptist*, in particular the concepts of stillness and predictability. The piece makes use of a similar simplified structure, with a steady increase of dynamics throughout the music. However, there is an additional element of process music involved in *The Bones of the Earth* as well - cycles and ostinatos of various lengths are prominently featured in the music.

For clarity, I will refer to the individual ostinato bars as *cells* and each time-defined chord and its associated cells as a *unit*.

On the smallest scale, the aleatoric ostinato cells form the most audible repetitive system, being reiterated two to four times before another cell overtakes them. These surface level

ostinatos work as a ‘signpost’, drawing attention to the larger-scale structural repetitions that organise the piece, as well as providing subtle changes in the timbre of the units.

The next-largest cycle is the unit of the sustained chord. Each chord lasts for the same length of time, and has the same gap before the entry of the next chord. This period is mirrored by gentle crescendos in the textural, voice-based electronics. While the pitch content of each of these chords is different, the similarity of timing and shaping creates a structural unit that audibly repeats itself. In a sense, this cycle functions in an acousmatic rather than abstract manner - it is defined by textural shaping rather than relationships of notes.

The largest set of repeating cycles is the sequence of five units that defines the tonality of the piece. There is no exact repetition within this sequence - instead, every instance of the sequence includes additional voices within the chords, and an increase in registration and therefore dynamics. However, the basic harmonic context within the cycle remains the same - this sequence works in an almost entirely abstract way, as opposed to acousmatically.

One final sequential process affects the piece. Every fourth unit is altered, via filtering in the electronic part and octave transposition and registration changes in the instrumental part, to sound more quietly, focusing more on the higher pitches. This creates a large-scale phasing of elements when heard against the five-unit chordal sequence, and the scale of this phasing pattern helps to suggest the scales of time that I wanted to express: as a result of the phasing, the listener only hears a fraction of one complete cycle of all elements during the piece.

The glitch material was also intended to highlight the cyclic and process-based nature of the structure. Glitch-based transformations can be perceived as a musical process and therefore encourage a listening state focused on texture, repetition, and temporality, mirroring the techniques of minimalism in instrumental music.[33] As *The Bones of the Earth* is already defined by process and cycle throughout its structure, the addition of a glitch layer functioning as a process atop the vocal and organ-sampled parts seemed a natural addition.

The piece’s climax breaks free of the cyclic patterns, instead presenting a i-VI-iv-i progression that is altered with a range of added notes. This is supported by an increase in dynamics and density of the electronic part, and the introduction of synthesised bass notes doubling the organ’s bass pedals. This occurs after almost fourteen minutes of steady crescendo - finally fulfilling the expectations introduced at the beginning of the piece. The

[33] Church (2017) p.322

diagram below breaks down the structure visually, displaying the units and one possible interpretation of the chords played. The aleatoric cells are not displayed.

Cycle 1 0:00 - 5:06	**00:18 - 01:02**	**Unit 1:** $D^{add2}/F\#$
	01:14 - 01:58	**Unit 2:** Em^{7}/G
	02:12 - 02:56	**Unit 3:** $Bm^{add2,4}/D$
	03:10 - 03:54	***Unit 4:*** *$C\#m^{add2,4}$ (Filtered)*
	04:08 - 04:52	**Unit 5:** Bm^{7add2}
Cycle 2 5:06 - 10:40	**05:06 - 05:50**	**Unit 1:** $D^{add2}/F\#$
	06:04 - 06:48	**Unit 2:** Em^{7}/G
	07:02 - 07:46	***Unit 3:*** *$Bm^{add2,4}/D$ (Filtered)*
	08:00 - 08:44	**Unit 4:** $C\#m^{add2,4}$
	08:58 - 09:42	**Unit 5:** Bm^{7add2}
Cycle 3 10:40 - 13:48	**09:56 - 10:40**	**Unit 1:** $D^{add2}/F\#$
	10:54 - 11:38	***Unit 2:*** *Em^{7} (Filtered)*
	11:52 - 12:36	**Unit 3:** $Bm^{add2,4}/D$
	12:50 - 13:34	**Unit 4:** $C\#m^{add2,4}$
Ending 13:48 - 15:45	**13:48 - 14:10**	Bm^{7add2}
	14:10 - 14:32	$G^{add2,4}$
	14:32 - 14:54	$Em^{7add4,6}$
	14:54 - 15:16	Bm^{7add6}
	15:16 - 15:45	B (single note)

Performance

The Bones of the Earth presented additional challenges during performance, especially with regards to timing and balancing the different elements of the piece. During the piece's

performance, I found it necessary to diffuse a large portion of the music at a lower volume than I had expected in order to allow the organ to be heard. After this experience, I considered reducing the volume in the tape part in order to better suggest the necessary diffusion. However, due to the varying capabilities of different organs and different diffusion systems, I decided to leave the music as it was initially mixed, as it would be easier to adjust the volume down rather than up during a live performance setting.

Conclusion

The pieces within this portfolio represent a process of development on my part, and highlight avenues for further musical experimentation as much as they explore the concepts I was interested in. In particular, I feel that I have only skimmed the surface of a narrative-based approach to structure, and this is an area that would repay further exploration in the future. Likewise, the use of melody within the field of electroacoustic music remains a field with many avenues for composition, both for me and other composers. I believe that, far from being antithetical to acousmatic music or worthy only of being included as 'flavour' alongside an acousmatic discourse, the inclusion of melodic and harmonic material alongside gesture and texture allows for a breadth of musical expression not fully accessible by remaining wholly within either style.

The concept of framing discussed within this commentary is an area that would repay further examination, from both analytical and composition-based perspectives. While I hope I have offered a solid basis and set of terminology for discussing framing within acousmatic music, analysing works from the acousmatic repertoire with this perspective in mind could refine these ideas further and either expand or focus the terminology discussed here. I also aim to build on ideas of framing further through composition. The compositions within this portfolio were in many ways exploring framing as I was conceptualising the ideas, and as such approach a discourse of framing in an experimental rather than mature manner. Further music built around mixing, combining, and juxtaposing frames could also serve to build and refine these ideas.

A narrativist approach to structure is a key element of my portfolio and can be heard influencing the large-scale structure of every piece presented, though many of the pieces used narrative ideas as guides in creating fairly free structures rather than as stricter formal principles (the exceptions being *Hyperborea* and *A Bright And Shining Future Has Passed Us By*, in which narrative concerns were more strictly adhered to). As with framing, I would like to take ideas grown over the course of composing this portfolio forward, and use more developed concepts of narrativist structuring to create music which will further explore and refine these ideas.

On a more personal level, I am also keen to draw on lessons learned writing my later-composed works and apply them to the folk-influenced style of my earlier pieces. *Hyperborea* was the final piece completed for this portfolio, but was also the first piece I started writing - a break of several years, during which I completed the rest of the music within my portfolio, gave me a broader and more concrete concept of style and technique

that allowed me to revise the two existing sections of the piece and compose a coherent central section. This process also generated several other ideas for integrating folk and acousmatic music, which did not fit the needs of *Hyperborea* but are nonetheless avenues for investigation, particularly in combination with the further exploration of narrative and frame-based structures.

Much of the music within this portfolio can be understood in terms of repurposing. Many of the ideas that formed the basis for pieces can be understood in terms of repurposing ideas external to the acousmatic world, and finding novel approaches to composition using the tools of acousmatic music. Repurposed melodic material is at the heart of all the music within this portfolio, derived from a wide range of sources: folk song, original compositions, works by other composers, and even unused sections of other pieces within the portfolio. Perhaps more broadly speaking, my use of (post-)tonal melody and harmony could be considered a repurposing: casting a fresh eye on ideas which - on paper and in notation - appear simplistic and played out, and revitalising them through their mixture with acousmatic techniques.

This, then, may be the appeal of the post-acousmatic, a strand of which runs through the music presented here. The rich heritage (and arguably conventions and classicism) of acousmatic music forms neither a prescription of rules for composition or a cliché to be avoided. Instead, I find a lens through which a whole range of genres, idioms, conventions, and musics can be reinterpreted, reflected, and repurposed into something vibrant and new.

Appendix: Programme Notes

Prelude

A short recording of a piano improvisation, becoming something more...

Hyperborea

I: "Here are the hinges on which the world turns…"
II: "I love to sail forbidden seas…"
III: "We hoisted our topsail…"
IV: "A Hyperborean land…"
V: "Wintered in the ice…"
VI: "...and here are the limits of the circuits of the stars"
VII: Midnight Sun
VIII: "When we find this path…"
IX: Erebus and Terror
X: "Lat. 69°37'42" Long. 98°41'"
XI: The Road to the Assembly of the Hyperboreans

1845: Sir John Franklin led an expedition to navigate the Northwest Passage, an uncharted sea route through the Arctic Sea, from Greenland around the north of Canada to Alaska. The ships of the expedition became trapped in sea ice for almost two years before the crew abandoned them and attempted to journey south on foot. The entire expedition - one hundred and twenty-nine crew members - were lost amongst the ice.

Submerged Objects

Slow, mechanical sonar pings reveal submerged objects and wrecked ships, changed by the sea into something rich and strange.

A Sleeper

I. Overture
II. A Machine for Dreaming
III. A Silence, Broken
IV. Night Terrors
V. Lullaby for a Sleeper.

A Sleeper is a five-movement piece that takes as its primary source material recordings derived from a music box. The overture introduces all the material for the piece, and each family of sound is expanded on in the episodes that follow. Whirling cogs, the metallic resonances of the box, glitches and sound synthesis, and finally the diatonic melody of the box itself, are all transformed into sonic dreamscapes.

dream//visitation

> *"I've dreamt in my life dreams that have stayed with me ever after, and changed my ideas; they've gone through and through me, like wine through water, and altered the colour of my mind."*

dream//visitation is a companion piece to my 2016 composition A Sleeper. It is derived from the same source material - a music box, alongside synthesised elements. Unlike the episodic structure of *A Sleeper*, however, *dream//visitation* is primarily drone-based and uses a single extended crescendo as its structure, with different elements coming to the front and fading away again.

A Bright And Shining Future Has Passed Us By

The year is 2018.

It is the future.

What do you see?

Cantus Firmus for the Beheading of St. John the Baptist

(based on *The Beheading of St John the Baptist* by Pierre Puvis de Chavannes)

I was immediately fascinated by two aspects of Puvis' work - the juxtaposition of motion and stillness, and the archaic and iconographic style of the figures. Inspired by this, I chose to base my piece around the Renaissance church music technique of cantus firmus. Traditionally, this meant using a plainchant as the basis for a polyphonic choral composition, with the chant in the tenor voice as long, held notes. I took a short sample of plainchant as the basis for my piece and timestretched it, forming a harmonic centre around which the rest of the music revolves. Other sound sources include drum machines, metallic resonances, and a banjo played with a violin bow.

Munich Fragment

Four chords and five notes, taken from a fragment of manuscript labelled “Munich”.

The Bones of the Earth

There's something geographical and permanent about the organ - it sits in the concert hall like a mountain on the horizon. Like a mountain, sometimes it draws the eye and sometimes it becomes nothing more than part of the scenery. Just like a mountain it will still be there long after we're gone, waiting in the dark for another group of people to come and sit by its feet.

The Bones of the Earth is my first major work for instrument and electronics, and uses a cell-based, partially aleatoric score.

Bibliography

Books

Campbell, Joseph. 1949. *The Hero with a Thousand Faces*. Princeton: Princeton University Press

Gibson, William. 1984. *Neuromancer.* New York: Ace Books

Goffman, Erving. 1974. *Frame Analysis.* New York: Harper and Row

Pliny the Elder, trans. H. Rackham, W.H.S. Jones, D.E. Eichholz 1949 *Natural History.* Cambridge, MA: Harvard University Press https://web.archive.org/web/20161229101439/http://www.masseiana.org/pliny.htm

Williams, Ralph Vaughan & Lloyd, A.L. 1959 *The Penguin Book of English Folk Songs.* Harmondsworth: Penguin Books

Wishart, Trevor. 1985. *On Sonic Art.* York: Imagineering Press

Articles

Adkins, Monty. Scott, Richard. Tremblay, Pierre Alexandre. 2016. Post-Acousmatic Practice: Re-evaluating Schaeffer's heritage, *Organised Sound* 21(2): 106-116

Appleton, Jon. 1996. Musical Storytelling, *Computer Music Review* 15(1-2): 67-71

Atkinson, Simon. 2007. Interpretation and musical signification in acousmatic listening, *Organised Sound* 12(2): 113-122

Brunson, William. 2012. A Narrative Stance - Making a Case for Narrativity in Electroacoustic Music. Electronic Music Studies Network Conference 2012 http://www.ems-network.org/ems12/abstract.html#B

Boyle, Casey. 2015. The Rhetorical Question Concerning Glitch, *Computers and Composition* 35: 12-29

Cascone, Kim. 2000. The Aesthetics of Failure: "Post-Digital" Tendencies in Contemporary Computer Music, *Computer Music Journal* 24(4): 12-18

Church, Scott Haden. 2017. Against the tyranny of musical form: glitch music, affect, and the sound of digital malfunction, *Critical Studies in Media Communication* 34(4): 315-328

Crespi, Muriel. 1990. Film Reviews: People of the Klamath / The Hero's Journey, *American Anthropologist* 92(4): 1103-1105

Haworth, Christopher. 2016. 'All the Musics Which Computers Make Possible': Questions of genre at the Prix Ars Electronica, *Organised Sound* 21(1): 15-29

Hoffman, Elizabeth. 2012. "I"-Tunes: Multiple Subjectivities and Narrative Method in Computer Music, *Computer Music Journal* 36(4): 40-58

Kendall, Gary S. 2010. Meaning in Electroacoustic Music and the Everyday Mind, *Organised Sound* 15(1): 63-74

Kendall, Gary S. 2014. The Feeling Blend: Feeling and emotion in electroacoustic art, *Organised Sound* 19(2): 192-202

Koopman, Constantijn. 2004. Response to Bennet Reimer, “Once more with feeling: reconciling discrepant accounts of musical affect”, *Philosophy of Music Education Review* 12(1): 60-63

Luedtke, Brandon. 2015. An ice-free Arctic Ocean: history, science, and scepticism, *Polar Record* 51(257): 130-139

Maus, Fred Everett. 1997. Narrative, Drama, and Emotion in Instrumental Music, *The Journal of Aesthetics and Art Criticism* 55(3): 293-303

Myatt, Tony. 2008. Editorial: New aesthetics and practice in experimental electronic music, *Organised Sound* 13(1): 1-3

Nering, Marguerite. 2004. Response to Kingsley Price’s “How Can Music Seem to Be Emotional?”, *Philosophy of Music Education Review* 12(1): 71-75

Newcomb, Anthony. 1984. Once More “Between Absolute and Program Music”: Schumann’s Second Symphony, *19th-Century Music* 7(3): 233-250

Price, Kingsley. 2004. How Can Music Seem To Be Emotional?, *Philosophy of Music Education Review* 12(1): 30-42

Reimer, Bennett. 2004. Once More with Feeling: Reconciling Discrepant Accounts of Musical Affect, *Philosophy of Music Education Review* 12(1): 4-16

Risset, Jean-Claude. 1996. Real-World Sounds and Simulacra in my Computer Music, *Contemporary Music Review* 15(1-2), 29-47

Smalley, Denis. 1997. Spectromorphology: explaining sound-shapes, *Organised Sound* 2(2), 107-126

Truax, Barry. 1996. Soundscape, Acoustic Communication and Environmental Sound Composition, *Contemporary Music Review* 15(1-2), 49-65

Wanke, Riccardo. 2017. The Emergence of an Ecstatic-materialist Perspective as a Cross-genre Tendency in Experimental Music, *Organised Sound* 22(3): 428-436

Young, J. 1996. Imagining the Source: The Interplay of Realism and Abstraction in Electroacoustic Music, *Contemporary Music Review* 15(1): 73–93

Web pages

[All sites accessed 19/09/2018]

BBC News. September 2007. Warming 'opens Northwest Passage' http://news.bbc.co.uk/1/hi/world/americas/6995999.stm

Brin, David. 1999. "Star Wars" despots vs. "Star Trek" populists, *Salon*. https://www.salon.com/1999/06/15/brin_main/

Dhomont, Francis. 1995. Acousmatic Update. https://web.archive.org/web/20110815151147/http://cec.sonus.ca/contact/contact82Dhom.html

Harrison, Jonty. 1999. Diffusion: theories and practices, with particular regard to the BEAST system. https://econtact.ca/2_4/Beast.htm

Neatby, Leslie H. & Mercer, Keith. 2008. Sir John Franklin, *The Canadian Encyclopedia*. https://www.thecanadianencyclopedia.ca/en/article/sir-john-franklin