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PORTFOLIO OF COMPOSITIONS

Alex Pozniak

Volume One

ANALYTICAL NOTES

A portfolio submitted in partial fulfilment
of requirements for the degree of
Master of Music (Composition)

Sydney Conservatorium of Music
University of Sydney
2008
Statement of Originality

I declare that the research presented here for this complete submission is my own original work and has not been submitted to any other institution for the award of a degree.

Signed: [Signature]

Date: 31/08/08
Abstract

My Masters research has been to the aim of my development as a composer of original music with an individual voice that is nonetheless informed by the musical and aesthetic currents alive in our contemporary society. This paper is an exegesis on my portfolio of compositions, written during my Masters candidature from 2006-08, in which I pursue a generally-consistent language towards a music that situates itself across a number of dualities with the aim to resolve their opposing strands, while exploring a wide range of thematic and philosophical concerns. The musical analyses contained within demonstrate my compositional technical apparatus which bridges between microstructural cellular detail and an organically unified whole, and promotes a consideration of metaphorical issues that arise through further aesthetic contemplation.
I would like to thank the following people who have made various aspects of my compositional research possible. Dr. Matthew Hindson for his supervision and guidance, John and Teresa Pozniak for their support, Andrew Batt-Rawden (chronology arts), Roland Peelman, Arthur Bridge (Ars Musica Australis), Charles Davidson, and Matthew McGuigan for providing opportunities for my music to be heard, as well as the performers who generously gave their time.
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Volume 2 – Compositions

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1. Introduction

Research into musical composition is a project that requires the composer to look and listen both inwardly and outwardly. This paper is an exegesis on my portfolio of compositions, composed during my Masters candidature from 2006-08 and that best display my growth as a composer, technically, stylistically and aesthetically. An important part of my research has been motivated by seeking new mediums and contexts for my ideas, testing a number of technical concerns, and finding practical solutions through workshop and performance opportunities. Most importantly however, I have been conscious to follow my own ideas and consolidate my compositional approach to display my individual voice, rather than to follow in the footsteps of any particular composers, school, or aesthetic dogma. These new mediums and contexts have included a number of firsts: my first solo violin work (Strung Metal Lines), my first string quartet (Cloud Sketch), my first work for ensemble and prepared electronics (Waveforms) and my first vocal composition (Construction). Technically and aesthetically I have aimed towards a refinement of my musical language, drawing upon a number of musical influences that have gradually been assumed into my own stylistic language. This includes drawing from aspects of musical modernism, the influence of non-classical styles such as heavy metal and Noise music, and discoveries from working with electronic music.

My compositional process across time tends to alternate contrasting approaches and musical impulses. My creative work under my candidature in 2006 began in this manner, with the slow moving, quiet and harmonically guided Spectres for string orchestra following from works of a more extrovert nature in my 2005 Honours portfolio. Likewise, Hybrid Loom was composed with rhythmic drive in mind, in stark contrast to the smooth, suspended nature of Spectres. Furthermore, across works of similar instrumentation, contrasting musical impulses/modes are a driving factor in compositional decisions. This is best exemplified by comparing Strung Metal Lines with Cloud Sketch, both works that deal with string instruments, exploring the instruments’ timbral and mechanical possibilities, though each defined by almost
opposing musical directions and intensities. This general trend towards exploring opposites and, through music, attempting to bridge the gaps between them is a fundamental concern of mine.

Music is after all an ambiguous mode of communicating ideas. It is itself the organisation of sound in time, therefore presenting sonic information in a, to some degree, necessarily sequential manner. As an art form, it is an aesthetic object with centuries of tradition established, on one level (and the most relevant in the context of this paper), through the Western classical music tradition, which has responded to life, nature and culture in crafting human expression. As related to the act of composing, music is notation, a specific form of language that rationalises the parameters of duration, pitch, dynamics, timbre, and texture. The sonic result from notation leads us back to sound and sensory perception by which we subjectively understand a musical phenomenon. These many layers of music as a form of communication create a complex starting point that has not even considered qualities of musical content that evoke all manner of relative responses among people. On this note, one recalls Goethe’s famous words – music begins where words end – which sum up the ineffable, intangible and immaterial power of music.

In the face of music’s rich and uncertain nature, my exegesis puts forth my own contributions to music, which display my attitudes to musical material, and the use of them as a gateway to considering metaphysical ideas. The analyses of my compositions contained within hover between formalist considerations of their objective musical elements as well as certain representational aspects stemming from music as a form of artifice. This brings into focus ideas on art, poetry, rhetoric, the psyche, dreams, love, nature – those larger issues that we consider, though may not comprehend, and that influence the way we live. Needless to say, I claim no conclusive responses to these; however my grappling with them is enough to suggest a central humanism in my compositional approach.

My own musical journey can be summed up as follows. I began learning piano at the age of seven, under the Suzuki method, which privileges the act of listening to the music of piano works before learning them through notation. This discipline of listening fostered a keen interest in the act of listening, and the active pursuing of new
musical paths and sounds. While I continued to learn piano music solely from the classical keyboard tradition (Bach, Mozart, Beethoven, Chopin, Debussy, Ravel, etc) throughout my schooling years, I embarked on a separate path of listening from an entirely unrelated world, beginning with underground Hardcore Punk music. The trajectory of this path¹, along with a running commentary, was:

- **hardcore punk** - characterised by energy and intensity and the distorted guitar sound (my interest stemmed from the local Australian underground hardcore scene, including defunct bands from the mid-1990s such as Arms Reach, Forward Defence, Found My Direction)
- **extreme heavy metal** - a more musically interesting and extended version of hardcore punk (with bands such as Cryptopsy, Nile, Meshuggah)
- **psychedelic rock** - more stylistically open than the confined generic approaches of punk and metal, with longer song structures and a more experimental tendency, especially true in 1970s German ‘Krautrock’ (Faust, Can, Amon Düül II)
- **free jazz** - exceedingly experimental, open forms, extended passages of time (John Coltrane, Cecil Taylor, Evan Parker)
- **free improvisation** - stemming from free jazz, though experimenting with different sounds/intensities to the intense ‘energy music’ characterising free jazz (the Sydney nownow scene, the Japanese ‘Onkyo’ movement, including sound artists such as Toshimaru Nakamura, OtomoYoshohide, Sachiko M, also the guitarist/multi-instrumentalist Keiji Haino)
- **Noise** - a combination of the sound world of hardcore punk/heavy metal, structural and aesthetic elements from psychedelic music, and the freedom of approach from free jazz/improvisation (Japanese Noise musicians Merzbow², Masonna)

¹ This ‘path’ does not attempt to sum up all of my listening tastes outside of classical music, merely those making the most impact on my compositional journey.
² Merzbow, regarded as the ‘King of Noise’, is the musical project of Masami Akita, active since 1979 and having released in excess of 300 recordings. My 2005 Honours Research Paper *Music in a Non-Musical Way: Merzbow’s Compositional Use of Noise* analysed music from the 1994 Merzbow album *Venereology*, and assimilating a wide portion of his currently available musical output has occupied me since 2003. Merzbow’s endless documentation of the musical potential within ‘noise’ has had a large impact on my philosophical musical outlook and my openness of mind to seek new sounds.
In hindsight, this path pursued a quality of sound and energy that was not available in the classical music I was brought up on. Each demonstrates a strong degree of dissatisfaction with previous musical models and increasing degrees of intensity - hardcore punk, metal and psychedelic rock exceeding the traditional rock music format, free jazz exceeding jazz/hard bop, and Noise exceeding ‘music’. Most importantly this path follows an increasingly experimental approach to sound. Rather than an endpoint, however (which Noise arguably is), this path led me to a renewed fascination in contemporary classical music through a yearning for a more structured/composed approach to the diverse sounds available to us. I feel at a stage where these two musical paths, classical and non-classical, have converged and I hope that both continue to inform my compositional practice.

In Australia, as a result of its island status (and its distance from Europe and America), I believe there is a sense of greater freedom with one’s compositional approach, especially when compared to dominant aesthetic currents in Europe. As a student of composition, this can be daunting as one truly needs to search for one’s voice rather than feel compelled to continue along the path of an established tradition. This situation has been compounded in recent history with the rise of mass media, the internet, and the abundance of recordings available that document ever expanding musical trajectories across all genres/styles\(^3\). The speed of access and consumption associated with these media developments result in a broader degree of listening options that inevitably must influence the composer of the contemporary age where musical diversity is in abundance.

Given this context, I will summarise consistent musical features that can be seen across my works, to consider now my own stylistic language. As noted above, my interest in exploring and bridging the gaps between dualities informs my approach across musical parameters. This can be seen in a general trend between exploring

\(^3\) In particular, this relates to music outside of the classical tradition. An example, relevant to my musical tastes, is the current (for lack of a better term) underground scene in Japan, where a multitude of acts have given rise to hybrid musical styles that cannot be easily categorised. Acid Mothers Temple, one such band, thrive on an eclectic approach which stems from a retro fetishising of psychedelic rock and results in music that combines space-rock, free jazz/improvisation, heavy metal, world music, and elements from experimental noise, drone and ambient musics, performed on electric, electronic and acoustic instruments. Their freedom of approach is an inspiring extension of the logic of rock music and the possibilities of the rock ensemble, and is an example of an increasing trend in the musical underground towards stylistic diversity.
closed and open formations, motivated by a concern for drama, in the sense of staging conflicting aspects that lead to (arguably emotionally) heightened results. Organicism shapes the way that such conflicts gradually unfold, drawing relationships between disparate elements that pertain to a greater whole. Resulting from my pianistic background, harmonic concerns underpin the music’s teleology through reference chords and harmonic progressions that situate themselves over large portions of the music. As part of my harmonic language I am interested in dissonance as a sonority that is rich in pitch material and that functions according to its own extended colourful logic. These facets contribute to the musical macrostructure.

On the microstructure, though pertaining to organic thinking, much of the music’s pitch material can be traced back to small pitch-cells used motivically and that are often presented in the works as a musical starting point. Within themselves there is a tendency towards closed and open configurations; for example in the use of the [0,1,4] cell, the combination of the adjacent minor-second and the slightly more open minor-third. When used vertically or in succession, minor-seCONDS give way to cluster formations, while minor-thirds span further outwards. Inversions of these intervals give rise to new possibilities, and linear threads based on such cells gives rise to melodic utterances. The flow of music between the micro and macro structural levels is determined through motivic development negotiating a state of becoming, towards affirming harmonic endpoints both in a vertical harmonic sense and in a metaphorical yoking together of opposites.

Turning momentarily away from my own style, one recent movement in the Western classical music tradition has served to inspire some of my philosophical musical ideas, if not yet infuse my technical apparatus. This is the spectral school of thought arising in the latter half of the twentieth century through composers such as Gérard Grisey and Tristan Murail. By deriving compositional materials from the inherent acoustical properties of sound, the difference between materials and form is annulled, for both stem from the same acoustic phenomenon⁴. As Grisey notes, the starting point for spectralism was ‘the fascination for extended time and for continuity’ and ‘to try to find a better equation between concept and percept - between the concept of the score

and the perception the audience might have of it.⁵ The seamless link between objective musical material and the subject’s perception of it, underpinned by a concern for functional and global organic relations, resonates with my own musical interests. A work of Grisey’s that brought about my interest in spectralism is his *Vortex Temporum* (1994-96) whose three movements stem from, as Philippe Hurel notes, an arpeggio motif from the ‘Lever du jour’ of Ravel’s *Daphnis et Chloé*. The repetition and metamorphosis of this arpeggio served as part of Grisey’s ‘investigations on the application of the same material to different…time fields’.⁷ The first movement begins by looping the material of this seven-note arpeggio in a variety of metrical contexts, which is contrasted in the third movement’s reprise of the opening, where the arpeggio’s form is literally pulled apart at the start in ‘the dizziness of the sheer duration’, dissolving metrical time. The second movement is governed by an incredible dilation of time, where the initial seven-note arpeggio is heard once, spread out over the whole length of the movement, akin to an imagined experience of zooming into the atomic level of the music’s fabric. Grisey speaks of sounds as:

> force fields given direction in time. These forces…are infinitely mobile and fluctuating; they are alive like cells, with a birth, life and death, and above all tend towards a continual transformation of their own energy. There exists no sound which is static, immobile, any more than the rock strata of mountains are immobile.¹⁰

This brief outline of an example deriving from the spectralist approach serves as an analogy to my own musical concerns with cellular material, patterns that repeat and morph, the perceptual basis of music, energy, temporal continuity and organic unity.

Aside from my interest in spectralism, I have investigated a wide range of music from the latter half of the twentieth century. Though a detailed explanation of musical

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⁹ Ibid., pp. 13-14.
influences is beyond the scope of this paper (as none directly bear on any of my portfolio’s compositions), I will nonetheless list composers whose music I have investigated and been drawn to during my candidature to contextualise my own developing compositional sound within contemporary classical music – Olivier Messiaen, Toru Takemitsu, Iannis Xenakis, György Ligeti, Witold Lutosławski, Krzysztof Penderecki, Gérard Grisey, Philippe Hurel, Salvatore Sciarrino, Kaija Saariaho, and Michael Finnissy. Of these in recent times I have gravitated most to Xenakis and Hurel largely due to their music’s oft rhythmic energy. Hurel in particular synthesises the spectalist’s interest in time, through the morphing of loops of material, with dense textural webs of sound and a driving rhythmic language, where 'the complex play of variation and transition depend on the tension between ornamental foreground and structural background'\textsuperscript{11}. The energy and density in works such as \textit{Six miniatures en trompe l'œil} (1990/91), \textit{…à mesure} (1996) and \textit{Tombeau in memoriam Gérard Grisey} (1999) have inspired me towards a more bold and extroverted approach to music.

Before moving onto a closer analytical overview of the music contained in my portfolio, I will list the compositions that I have completed during my candidature, in order to put the folio’s works (whose titles are stated in bold) in the context of my recent musical activities:

2006: \textit{Spectres} – five movements for string orchestra - 15’
\hspace{1em} \textit{Hybrid Loom} - sextet (Bb Cl, Vln, Vln, Vla, Vlc, Cb) - 6’
\hspace{1em} \textit{Hybrid Loom} - clarinet in Bb and string orchestra - 9’
\hspace{1em} \textit{Stakhanov} - piano - 6’
\hspace{1em} \textit{Abandon by Sea} - quintet (Fl, Bb.Cl, Vibr, Pno, Cb) - 13’

2007: \textit{Sketches on Britten} - ten players (Fl, Bb Cl, Ob, Bsn, Hn, Pno, Vln, Vla, Vlc, Cb) - 8’
\hspace{1em} \textit{Construction} – five voices (S, S, T, Ba, B) - 8’
\hspace{1em} \textit{Dream Space No. 2} – electronics - 7’22”
\hspace{1em} \textit{Strung Metal Lines} – violin - 9’30”

2008: \textit{The Man-Bull Fight} – octet (Fl, Bb Cl, Hn, Perc, Hp, Pno, Vln, Cb) - 6’
\hspace{1em} \textit{Stygian Return} – electronics - 4’
\hspace{1em} \textit{Tower of Erosion} – piano and drum kit - 12’
\hspace{1em} \textit{Waveforms} – quintet (Fl, Bb Cl, Pno, Vln, Vlc) and electronics - 9’40”

The seven works included in my portfolio best demonstrate the development of my compositional voice. We begin with two pieces for string instruments, a solo work followed by an ensemble work - *Strung Metal Lines* and *Cloud Sketch* – and conclude likewise with two pieces for keyboard instruments - *Crush* and *Polychroma*. In between these two pairs are three works exploring different sonic mediums in a path from the technological back to the human (though thematically this path is arguably inverted as we move through the ‘organic’ from ‘dreams’ to ‘machines’) – electronic music (*Dream Space No. 2*), electroacoustic music (*Waveforms*) and a cappella vocal music (*Construction*). My commentary begins with a detailed analysis of *Strung Metal Lines* to serve as an example of technical concerns that are evident across my works. This is contrasted in the gradually more figurative discussions of *Cloud Sketch* and *Dream Space No. 2* dealing with wider metaphorical, aesthetic and philosophical issues. The remaining works in the portfolio balance these two perspectives, touching on issues of art, poetry and nature either as direct reference points or else relevant asides, in a way that reflects the workings of my mind which in turn gives rise to my music.
2.

Strung Metal Lines

Following two experiences of composing for string orchestra in 2006 (Spectres and Hybrid Loom), I wanted to extend my understanding of string instruments and how to write idiomatically for them, and so turned to the solo violin for Strung Metal Lines, composed from October to December, 2007. From the outset I had in mind to write a virtuosic work for the violinist Thomas Talmacs and considering both Thomas’ and my own interest in extreme heavy metal music (notably death metal, a subgenre of heavy metal), I took inspiration from its own angle of virtuosity and technical flamboyance relating to its use of the electric guitar.

I should note from the outset that the influence of death metal is not intended to be noticed in a directly literal manner, as in the mode of pastiche, but rather as a quality of sound that has infused the music’s subconscious. Two particular points of background behind this influence show the way in which this infusion into Strung Metal Lines works. Firstly, on a more direct level, there is the influence of the guitar material found in the genre of ‘technical death metal’ (also known as brutal or progressive death metal), typified by bands such as Suffocation, Cryptopsy, Nile and Origin. Technical death metal differs from more traditional death metal through a greater complexity in rhythm and song structure, which is often comprised of a variety of high speed angular and tonally unspecific guitar riffs/passages. It is the form of death metal which bears the least resemblance to the conventional verse-chorus structure of rock music in its aim to maximise on speed, virtuosic playing techniques, heaviness and aggressive delivery, and therefore is already some steps away from heavy metal’s origins in popular music. The second point of influence stems from an extract of an interview with Masami Akita, in which he discusses the Merzbow Venereology (1994) album:

I'm influenced by Death Metal from the early ‘90s. My biggest influence was Grind drumming.... For Merzbow, it's more abstract influenced as speed [of] Grindcore, the edge guitar sound of Death Metal.... Venereology was my
first release on a Death Metal label. So, my target was ‘Death Metal’ itself…. 

[T]he tone of Venereology was lots of overlevels and dirty sound…. These essences are all influenced by Death Metal. But not musically. I liked something more extreme than the Death Metal rules. 12

Masami Akita’s meta death metal perspective as exhibited on Venereology, which is an album of unrelenting harsh noise, made me reconsider my own approach to displaying the influence of heavy metal in my music: away from modes of direct reference or quotation, and towards a more material and abstract conception of its musical qualities.

Without the aid of drum kit, growling vocals, or guitar distortion pedals, the music of Strung Metal Lines was my attempt to convey the ‘essence’ of extreme heavy metal - its speed of information, interest in noisy timbre, angularity, aggressive rhythmic attack - in a classical music context. As a work for solo violin, this required coming to terms with the mechanical qualities involved in playing the violin so to be able to compose these qualities of sound idiomatically for the instrument. Deriving from such though, the work’s title reflects the material quality of the violin, with its taut metallic strings, punning both on the linear nature of the instrument’s strings versus the linear trajectory of the work’s musical material, and on the violin’s metal strings versus the music’s heavy metal influence.

The work begins conveying both qualities of heaviness and speed, with the two lowest strings bowed together, including an open-G, (the instrument’s lowest pitch following the symbolic value in death metal of the lowest open guitar string as conveying ultimate heaviness), and an extended tremolando passage fingered on the D-string. The insistent repetition of the low-G tropes on the repeated picking of guitar notes in death metal as a rhythmic/percussive effect. Rhythmically, the collection of alternating groups of three values (three quavers, three triplet quaver, three dotted quaver, three semiquaver) present a malleable quality whereby the music struggles against the weight of the figuration. Despite this, the music persists as a single, dense

band of sound, more suggestive of Japanese Noise, whose sustained walls of sound are continually in flux, than the controlled semiquaver precision found in death metal. The pitch material of the opening overtly derives from my favoured [0,1,2] and [0,1,4] pitch sets, presenting the dissonance of adjacent semitones together with the ‘dark’ quality of the minor-third in a direct and insistent manner (though as with the rhythm, these sets attain a malleable quality under the pressure of the insistent figuration).

By virtue of this piece being for a single instrument, a particular goal was to explore the violin’s relatively limited register to its full extent. The distribution of the pitch material in register therefore presents an ongoing musical argument in Strung Metal Lines between closed and open pitch configurations. The opening figuration presents a certain contradiction. The first two vertical collections in m.1 present the lowest possible presentation of the [0,3,4] (an inversion of [0,1,4]) and [0,1,2] sets on the violin when simultaneously utilising the mandatory (for ‘heaviness’) low-G. However, these vertical sonorities are not in closed form of a reduced pitch set, rather containing the open intervals of minor-sixth and major-seventh (rather than major-third and minor-second) respectively. Therefore the lowest and most dense presentation of these two pitch sets must to some degree be open. This degree of openness despite an underlying impulse to density presents the contradiction of the opening regarding pitch with respect to register, a contradiction that continues to fuel the musical argument.

Against the fixed nature of the opening passage, the introduction of glissandos continue to characterise the condition of the malleable, providing in mm.1-3 the pitches F and F# above the tremolandos, so that the entire passage is encapsulated on its outer edges by the [0,1,2] set. These glissandos challenge the closed formation of the opening passage, and subsequently instigate a hyperextension of register to the instrument’s upper limits. As part of this glissando expansion, we have, at m.9, a decidedly open presentation of the opening cell (this time as [0,1,4]), with three parallel minor-9ths (separated by one major-6th) stating the wider major-3rd as its first interval. At the culmination of this registral widening, from m.11, the music is reduced to a single pitch thread, boiling down, via the [0,1,2] set of [E, F, F#], to a semitone glissando (mm.13-14), the most minimal pitch/registral gradation thus far. Finally, the peak of this upward surge presents a melodic figure unraveling from the
[0,1,4] set, at m.15, exhibiting an expanding/centrifugal two-part logic, with an underlying chromatic impulse. This is the first significant melodic motif that builds upon the opening pitch sets and is used as an important melodic thread throughout the work. Though for now, the music returns to closed pitch formations (mm.18-20, which mimic the first six notes of the melodic motif heard at m.15) and a recurrence of the opening tremolando material (mm.21+). The tendency towards openness shapes this recurrence, with the bow crossing over strings to sound both open strings adjacent to the fingered string in heightened intensity as the introduction concludes.

At m.30, the work’s line proper begins to be strung out. Like the melodic motif at m.15, this current melody is spawned from the [0,1,4] set, though now at the bottom of the violin’s register (and in the absolute sense with the lowest presentation of [0,1,4] possible on the G-string). The melody, (heard for the first time in full in m.34), chromatically fills the space of a tritone [G-C#], and exhibits its own two-part logic, though this time centripetal – filling in rather than expanding out. Against this inwardly directed impulse, the line plants the seed for its undoing with the natural harmonic at m.29 challenging the line’s fixed low register. The registral game/paradox derives from the twofold possibility of stopping a note as a fundamental pitch versus lightly depressing to produce a natural harmonic – both lower and higher pitches thus being available from the one fingered position. This transgression organically blossoms, incrementally through features additional to the melody (natural harmonic → natural harmonic glissando → stopped glissando) and ultimately to the melody itself which climbs upwards (from m.36, with the trill trembling at the introduction of the thus far foreign D#) to resolve the registral paradox, ending at m.40 on the B – the same pitch as the work’s first natural harmonic in m.29.

This melodic passage is thus far confined solely to the G-string. The trope of the ‘line’ was explored in the introductory section by confining certain material to a single string, for example, the tremolando figures sul D (mm.1-4), and glissandos as an apotheosis of an extended pitch thread across one string. This concept is prioritised in mm.29-40, uniting the metaphors of the ‘line’ and ‘string’ into the one passage, and indulging in the string/strung pun, with the material intended to sound increasingly insecure as it rises up the G-string. Notably at the top of this line, the melodic motif
from m.15 returns, two octaves lower than before, though still around the upper limits of the respective (G) string. The inward logic of the m.29 melody therefore gives way to outward logic in another exploration of the ‘closed’ tending towards the ‘open’.

With the increasingly wound up spinning of pitch/motif reaching an endpoint, the musical line quickly spreads across all four strings, virtually covering in mm.41-42 the violin’s entire pitch range, with four glissandos each on a different string, spanning four octaves. This prompts an extended series of passages (mm.43-80) developing motivic material, launching off with sequential treatment of [0,1,4] at m.43, transposed thrice up a perfect-5\textsuperscript{th}, accessing eleven of the twelve chromatic pitches from a single position shifting across the four strings. (The twelfth pitch to complete the chromatic set casts us back to the tremolando figuration of the opening, and by linking with the trembling trill at m.36, the line hesitates once again in the face of the material’s inexorably centrifugal drive). Some notable features include the introduction of quintuplet semiquavers at m.47, once again to signify malleability of line resulting from material pressure. The end of m.49 (at the end of the line’s longest uninterrupted utterance in sixteenths) presents an inversion of the outward melodic motif from m.15, followed in m.50 by an inversion of the inward melody from m.31. The minor-3\textsuperscript{rd} tremolo figure is chromatically rendered in mm.46, 51 and 53, a variation on the two intervals of [0-1] and [1-4] at a maximum speed of pitch oscillation.

Having hovered around the violin’s mid-to-low register, the line now fulfils the promise of rising register initiated in mm.43-46 and the energy required for this upward thrust is facilitated by returning to glissandos and double-stops. A new dimension to the play of registers is added by the double stop feature introduced in m.63 and expounded from m.67. Originally, in the form of down bows, it refers to the characteristic chugging sound of palm-muted electric guitar chordal-strumming, incorporating the open lowest string. From m.67, the double stops, themselves two-part in nature, present a distinct two-part mould chopping between high and low registers. A brief moment between the two unites both strands in an idealised quadruple stop – a desired simultaneity of registers, strived for through overbowing – from which the work’s most sprawling passage thus far figuratively stems. By the time this overbowing returns at mm.75-76, the pitch space of just over three-octaves
opened up by the chopping double-stop mould is filled by semiquaver threads with almost all the available chromatic pitches. Rhythmically, the introduction’s malleable quavers (≈ heaviness) and the second section’s malleable semiquavers (≈ speed) are brought together in alternation.

While this accumulation of pitch across register is an apotheosis of openness thus far in the work, this passage, functioning in the rhetorical sense as an accumulatio, posits a paradox in the work’s musical development. The work so far has been forged directionally through repeating material, and through continually questioning the fixed/closed nature of this recurring material. To sum this up, via an accumulatio, would be to reiterate reiterating material. We therefore hear the music having cycled, and continuing to cycle, albeit attempting to renew itself. ‘Renewal’ is arguably the mission statement of stringing this line. However the question begs, how long is a piece of string? How long can this material continue to cycle and vary, and therefore, at what point does this function of pitch-production reach its functional endpoint? Is it through an exhausting of configurations that retain their fidelity to the original (maintaining ‘string’ness despite the string’s ever increasing length)? Or rather than risking an overexposure to this information, can an endpoint be staged through some other allegorical means?

The music opts for the latter, overcoming ultimate exhaustion at m.77 by metonymically substituting noise for the overabundance of pitch material. Metaphorically, white noise transcends perceivable pitch by combining too many frequencies. So at mm.75-76, overbowing transcends the pitched content of the now broken tetrachord which, as it first appeared, functioned figuratively to weld together the violin’s register across the four strings. Following the headstrong optimism of the accumulatio’s summary however, the logic of the eternal return now evinces a low groaning under the weight of it, which negates its lofty pitch statement. This overbowing is then complemented by a registral inversion of the chugging double stops of m.63, this time rising in pitch via glissando. While previously the glissando

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13 The five pitches between E4 and G#4 are the only pitches omitted between G3 and A7). Notably these omitted pitches are within the dominant register of the work’s opening tremolando figures in mm.1-4. This detail symbolically confirms the openness of the present passage in contrast with the fixed space of the opening.

14 In rhetoric, an accumulatio presents points made previously in a compact, forceful manner.
summarised/included all notes within a directional pitch contour, it is now undone through the act of repeated down-bowing, which must inevitably exclude some intervening pitches as the left hand fingers slide up the strings. The music is ever-open, still insistently searching, and looks towards attaining its registral pinnacle (B8, as stated at the peak of the melodic motif in m.15). In contrast, the noise produced by vigorous down-bowing and the symbolic ‘silence’ (pitches lacking between down strokes) look towards disappearance. Both are simultaneously resolved in m.80, with the double stop halved, reducing back to a single pitch-strand, which problematically (from a pitch-perspective) strives up to B8. The material reaches its climax, although the aural result, given its position at the very top of the violin’s register, is climactically weak – like a flame snuffed through a lack of oxygen.

Functionally, the recycling of material has determined that openness can never fully be substantiated. By dramatising this crisis, through accumulation, we result in overexposure, which is practically ultimate openness, though through which the function reaches its end point, closing in on itself and thus dissolving in entropy.

Having established a climax, the work continues in a mode of contrasts and relations. At m.82, we return to hesitancy and soft dynamics through natural harmonics that span a registral gap through a glissando, but one that starts\(^\text{15}\) and ends sounding the climactic B8 pitch. This glissando then repeats through fully-depressed stopping, again exploring twofold possibilities. The glissando then reinflates as a sound-object in its own right, culminating in overbowed noise at the violin’s bottom register. A hesitant line from mm.94-108 gradually assembles fragments of the 13-semiquaver pattern from mm.66-67, heard in full in m.98, and sequentially\(^\text{16}\) rising, sul G. This passage serves as a flashback, coloured by the use of molto sul-ponticello, indulging in a ghostly quality, most importantly recalling the sul G passage from m.29 that launched the work’s melodic line proper. Though with the added hesitancy marked by

\(^{15}\) A natural harmonic at G5 sul E produces the B8 pitch.

\(^{16}\) The F at the start of m.103 is the one foreign note in this sequential thread, changed from the expected D#, a detail added simply to make the sequence sound less obvious. After the many varied linear/motivic possibilities of the previous section, the line required a more straightforward assemblage, hence the use of sequence. However, six versions of the one pattern merely transposed would contradict too strongly the quasi-improvised quality established by the preceding material and the hesitancy promoted by the use of rests in mm.81-108). The use of a 13-semiquaver loop helps to offset recognisability, and the given F provided a simple solution, which in combination with the two pitches before refer to the \([0,3,4]\) set and with the two pitches on either side to the \([0,1,4]\) inversion of this set.
rests, and having already fulfilled a climax, the upward motion of the line cannot continue with the same characteristic violence as before.

The response is a melodic passage that flowers in the violin’s lyrical upper register, in contrast to the earlier aggressive treatment of this register, which (aside from mm.15-16) was typified by dissonant double stops (especially major-7th/minor 9th) or accented strokes. This lyrical passage derives from variations of the open melodic motif of mm.15 and otherwise from almost obsessively reiterating the [0,1,4] set. Double stops momentarily grasp this melody, as part of its energetic upward thrust, and risk implosion in m.112. Though to reach its peak, the melody releases itself from this dense undercurrent, to become lighter and more lofty, more singularly expressive as a line. Alongside this the rhythmic pace decelerates significantly from m.112 onwards to finally cast aside the energetic raison d’être and provide sufficient space for the expressive mode. Within the work’s narrative, we are furthest from its metal origins, moving ever further along the musical chain away from reference and towards essence – now the essence of the expressive solo violin.

Paradoxically, in open/closed terms, the emancipated line characterised by open intervals and an expanding intervallic variation of the closed motivic material (m.114) still seeks chromatic saturation when reduced to pitch class values. In mm.114-117, all chromatic pitches, aside from A, are presented once, with (up to the third crotchet beat of m.117) A#, C, and C# appearing twice and B thrice. Following this brief, triumphant melodic utterance, the line once again takes up the dissonantly cloying double stops, albeit descending and staging a relaxation of pitch content through them. The double stops derive from major-7th, sliding down in minor-3rd.

The lower part’s shift from F-Eb (mm.117-18), however, converts the major-7th to a minor-7th. The significance of this is seen in the cadential moment in mm.118-19, where the final five pitches sounded – C, E, Bb, G, C# - hint harmonically at the C-major triad with an added minor-7th and coloured by a dissonant minor-2nd. The

17 The addition of a foreign note to a conventionally stable pitch collection has been influenced by Toru Takemitsu’s ‘long established precedent of enhancing modally derived collections with chromatic notes as well as freely combining them to produce his own highly distinctive harmonic palette.’ (Peter Burt. The Music of Toru Takemitsu. Cambridge, New York: Cambridge University Press, 2001. p. 87). An example is the use of the octatonic mode plus a foreign B at the start of For Away for solo piano (1973), a trend which characterises much of the work’s pitch content. Takemitsu’s favouring of the 7-
reference to a conventional triadic seventh-chord marks a sense of cadence while referring to the open and consonant natural harmonic series, and in a quasi-spectral manner with a higher overtone included\(^\text{18}\). The importance of C at this stage ties back to peak of the lyrical melody, which asserts itself in mm.116-17 through the C pitch, a reading which classifies the exceeding C# as a chromatic upper-neighbour-note, a mere inching higher in the upward trajectory.

By this same reading, accepting the crucial C as an endpoint, melodically and harmonically/cadentially, the true value of the C# can now be addressed. Indeed it was the peak of the melodic arc, and cadence does come to rest on it with the diminished-fifth in m.119. The hint at spectrally-minded C-harmony, and the logic of the C# as a high upper partial (17\(^{\text{th}}\) harmonic) of C, brings us into an extended series of double-stopped natural harmonic glissandi, relating by metonymy to this C#.

Punning again on twofold pitch possibilities, the diminished-fifth, coming out of the harmonically ‘relaxed’ minor-7\(^{\text{th}}\), segues through the finger’s half-depressing to a natural harmonic minor-7\(^{\text{th}}\) (C#7-B8). The C# is the common tone between the two intervals, and furthermore leads to the A-pitch in the tremolando at m.120 that eluded the chromatic sum at the lyrical melody’s climax. The tremolandos offer a flashback to the work’s opening passage, though in a lighter manner of ghosts/spectres. (An abstract presentation of \([0,3,4]\) can be seen notationally [E,G-Ab] from the last crotchet value of m.121, though the sonic result [E,G#-B] lacks the dissonance of the semitone\(^\text{19}\)). And taking the logic of consonance of the harmonic series the tremolandos resolve in m.122 spelling out a perfect 5\(^{\text{th}}\) [E7-B8] an octave above E6, the work’s most consonant harmonic moment.

These tremolandos are technically difficult to sound on the violin, and their fleeting nature conditions them somewhere between presenting structurally viable pitch material and a mere sound effect (that is, tending towards ‘noise’)\(^\text{20}\). The ensuing

\(^{33}\) pitch collection \([0,1,2,3,4,6,8,10]\) in many of his works, as Burt argues, is a whole-tone scale to which two semitones have been added (Burt, p. 133).

\(^{18}\) C = 1\(^{\text{st}}\)/2\(^{\text{nd}}\)/4\(^{\text{th}}\)/8\(^{\text{th}}\) harmonic, G = 3\(^{\text{rd}}\)/6\(^{\text{th}}\) harmonic, E = 5\(^{\text{th}}\) harmonic. Bb = 7\(^{\text{th}}\) harmonic. C# \approx 17\(^{\text{th}}\) harmonic.

\(^{19}\) A clear intervallic relationship exists between the \([0,3,4]\) set and the \([0,4,7]\) major triad set, where in the latter the interval of the minor-3\(^{\text{rd}}\) \([3]\) is stacked above the major-3\(^{\text{rd}}\) \([4]\), rather than contained with in (as is also the case in \([0,1,4]\)).

\(^{20}\) A further punning on pitch, given the difficulty of producing the notated tremolando effect as natural harmonics in conjunction with a double stop, and which is evident in this folio’s recording of Strung
sequence of double stopped natural harmonic glissandos (mm.123-30) confirm the latter, and fulfill the prophecy of the first natural harmonic at m.30 towards an elemental, ghost-like plateau. This pattern simply combines (along with natural harmonics) the double stop and the glissando, which theoretically yoke together multiple registers and long streams of pitch. What results here are strings of fluctuating overtones leaping through the harmonic series during the glissandos. The pitch material is light, fleeting, (relatively) high in frequency, spectral, and to some degree indeterminate (depending on the manner of the glissandos). The idea of the elemental here returns us to the ‘metal’ in the work’s title, and a consideration of it within the larger scientific domain of chemical elements, amongst non-metals such as halogens/noble gases. Within the work’s continuing sets of contrasts, the present can be read as the work’s ‘non-metal’ segment, and by analogy, spiritual rather than material.

Amidst this gaseous state, a spectral version of the closed melody (from m.34), presents the work’s real apparition, transposed up a minor-3rd (and with a major-3rd from E-C, rather than the original’s minor-3rd) so to access the strongest sounding natural harmonics along the first half of the G-string’s length. The manner of bowing these natural harmonics sul tasto, an effect I workshopped with Thomas Talmacs, proved particularly effective timbrally, making the violin sound almost like pan-pipes. These gossamer threads are a welcome contrast to the more frequently used and edgier metallic sul ponticello bowing. The advantage of looping this particular material (eight repeats in the notation) in a way that would be unsuitable elsewhere in the piece is that it allows for small fluctuations in the left hand’s finger positions to access neighbouring natural harmonic, making this pitch mechanism rich with opportunities, albeit sonically ethereal.

With this spiritual aspect of the work attained, an expanding upward sequence (mm.138-48, an upward pattern followed by two varied versions) serves as a transition from the vaporous to the solid and into the work’s recapitulating section.

Metal Lines, is that the A6 in mm.121-23 should not sound as A6, nor should it produce any other As. This natural harmonic sul E should sound the E7 pitch. However this possibility of error reinforces the momentary importance of A as a pitch locus.

21 Sul G, D4 produces the 3rd harmonic (D5), C4 the 4th (G5), B4 and E4 the 5th (B6), and Bb4 the 6th (D6).
The recapitulating material is threefold – a variation on the tremolando opening at m.149, an extended reprise of the chugging double stops from mm.62+ at m.155, and the actual reprise of the opening at m.169. The first of these responds by conflating the opening’s band-of-sound approach with the previously attained lyrical melodic state. The descending melodious voice-leading with dilated rhythmic values at its beginning arrests the preceding build-up before it is able to reach the violent quality of the work’s first half. Registrally, the double stopped figure skips across three octaves to counter the song-like quality that this quasi-chorale briefly slips into and brings us to the second recapitulating portion, of the chugging double stops, where the music does indeed hint at the work’s prior aggression. Another rising attempt to secure this prior state is momentarily discarded from the upbeat to m.165 with the chorale restating itself. This restatement is decidedly less melodious, however, instead focusing on the registral leaping dimension.

Turning away from lyricism, we recapitulate in m.169, the third and final reprise. This time however, the flowing line of tremolando figuration is discarded (now too closely associated with lyricism), and the work’s opening pitch material is convolved with chugging triple stops, opening up the material’s range along with glissandos and quadruple stops to ultimately span the entire register, signifying ultimate openness at the work’s conclusion.

A short coda however serves as an afterthought. From the end of m.173, the line spins a final thread on the open-closed duality taking up the opening’s tremolando notion that lacked in the triple-stopped reprise. This notion, beginning humbly as a trill [F5-G5], then rising as a chromatically inflected minor-3rd in m.175, blows up in supreme hyperbolic oscillation in mm.176-79, bringing the play of registers to the limits of the performer’s/instrument’s capacity. In an ironic turn, the interval of G#3-G7 of almost four octaves that requires the performer to shift from first position sul G to the uppermost position sul E, is mechanically inverted – skipping from first position sul E to the highest position sul G – which returns us sonically to the humble [F5-G5] trill that began this coda, albeit in as strung-out a manner of producing it as is possible on the violin.
A brief spectral rendering of this oscillation in natural harmonics at m.180, using G5 as the common tone with the coda’s original trill, presents the work’s final apparition, before a hastily aggressive upward flourish delivers the work’s final blow. The coda’s pitch material can be summarised by F-F#-G - an elaboration of the [F-G] trill, which is overcome by the F# at the top of the first triple stop in m.181 – and therefore the chromatic [0,1,2] set. This pitch set is capped off by the final triple stop of [G,G#,B], announcing the work’s predominant [0,1,4] set where the G-pitch serves as a the common tone between the two sets. The significant G-pitch encloses the final bar in a four-octave parenthesis, via G3 and G7, respectively the lowest and highest Gs the violin can produce. The as yet unexplained C-pitch in m.181 underpins a hint of cadence at the work’s conclusion. If the natural harmonics in m.180 spell out the consonant G-harmonic series, and thus refer aurally to the G-major triad, then the C- and G-pitches in m.181 are two-thirds of a triad on C, therefore almost pronouncing a perfect cadence. The F# that seals the coda’s [0,1,2] outline instead replaces the lacking third (E/Eb), and the distant pitches F#, G# and B relate, as just explained, to the work’s pitch-class focus, or else as amplified spectral colour (as the 11\(^{th}\), 13\(^{th}\), and 15\(^{th}\) harmonics) in a mirage of a final, resonant harmonic chord on an absent C2 fundamental.

If this final reading were applied to the entire work, then arguably much of the dissonance is resolved by imagining some absent lower fundamental, above which the music assembles spectral particles, activating a resonant sound field. My original intention with Strung Metal Lines was to compose a work for violin and electronics, in an attempt to convey the distortion and noise of heavy metal through the electronics part. Knowing that the violin component would involve virtuosic passages at a fast pace, and given that the violin’s register begins at c.196Hz (=G3 in equal temperament), I resolved to expound on the low-frequency register unavailable to the violin in the electronics, which could most directly allude to the death metal sound. After weeks of attempting to resolve issues of balance between increasingly doom-like\(^{22}\) distorted electronics that I was preparing (detuning violin recordings) and the

\(^{22}\) ‘Doom’ here refers to the genre of doom metal, a subset of heavy metal that presents the slowest, lowest, and heaviest possibilities in metal, deriving from Black Sabbath’s slowed-down approach to rock music in the late-60s/early-70s, and reaching new heights with bands like Earth and Sunn O))). In particular Sunn O)’)s more experimental approach owes more to electronic music (such as Noise and ambient music)
relatively gentler acoustic violin sounds, I abandoned the electronics in favour of focusing on a carefully chiseled, and energetic in its own right, solo violin work. These origins are important in understanding that the work was never an attempt to continually present jarringly dissonant pitch material. Rather, it was my goal in *Strung Metal Lines* to structure arcs of sound, contrast intensities and textural approaches to register and explore some of the violin’s extended timbral possibilities, all underpinned by a tightly knit linear focus.

*Strung Metal Lines* is then a work that responds to the quality of sound of heavy metal as a sound object in its own right, and therefore removed from its generic basis as ‘heavy metal music’. This displacement of meaning is an apt metaphor for music’s ability to develop its own meaning through its shifting sonic content, which is both ambiguous as abstract sound, as well as communicative through our cultural memory. By forming and deforming one code, we reform another, giving rise to new depths.

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than the heavy metal genre, and is another example, like Merzbow, of taking sonic material deriving heavy metal towards new musical horizons).
3.

Cloud Sketch

Having explored virtuosity, linearity and solidity in *Strung Metal Lines*, my next work to use string instruments, *Cloud Sketch* for string quartet (composed in May-June 2008), was devised in complete contrast as an essay on the ethereal. The two works however are linked through their focus on building sound-shapes and also metaphorically through the titles’ visual connotations of ‘line’ and ‘sketch’. This mode of contrasting musical approaches despite underlying thematic relations across two works has shown my willingness to test new musical outcomes while strengthening a singular and individually-minded aesthetic approach.

At its heart *Cloud Sketch* is an exploration of indeterminacy, and alongside this the efficacy of minimal notational information to generate musical ‘cloud sketches’, that is, simple, suggestive, sonic forms. This involved resolving the practical issue of ensemble coordination within a piece largely designed to be free, to which I responded with unconventional notation whereby the performers must read between the lines and consider the effect of each sound they make within the music’s global flow.

My discussion of the work will be twofold; firstly, offering a more direct analysis of the music’s notable features and secondly, reconsidering the work in metaphorical terms relating to the ‘cloud’ theme.

In the broadest terms, the work follows an incremental and organic activation of material that tends from the closed to the open, digested as follows:

    cluster → fades → glissandos → tremolandos → open intervals → arpeggios
The opening cluster (mm.1-5) is a rotation of the second cluster\(^23\) (mm.6-10) which combines two voicings of the \([0,1,3,4]\) set, one on G\(_3\), and the other transposed up a perfect-\(4^{th}\) on C\(_4\). The set symbolises density and mixed colour by containing within it both minor and major 2\(^{nd}\)s and 3\(^{rd}\)s, and through its transposition up a fourth contains the perfect-\(4^{th}\) and tritone intervals above G\(_3\) - therefore summarising all possible intervals within the octave in closed voicing. The combination of these intervals (which can be thought of as adjacent complementary colours, for example a minor-3\(^{rd}\) as dark and a major-3\(^{rd}\) as light) produce a neutral grey sound, which colours the quality of the initial aural cloud form. Significantly, it is not a completely chromatic cluster, which would be too neutral a sound for the purposes of the work’s subsequent spinning-forth.

The original chord in m.1 however begins vertically with a tone – \([0[0,2,3,4] + 5[0,2,3,4]]\) – and slides down to \([0[0,1,3,4] + 5[0,1,3,4]]\) in m.6. This slide within the cluster can be read as the work’s first activation of material (the fixed cluster chord), and in a mode of opening out, the voicing of the chord among the instruments widens such that the intervals of the doubles stops in viola, violin II and violin I expand from M3→P4, M2→m3, and m2→M6 respectively (only the cello remains fixed with its m2). The fades and silences in mm.1-10 signify the disappearance of material, and introduce the work’s central paradox – the material and immaterial simultaneously inherent in the ‘cloud’ object. From m.11 however, the notion of fading functions as an active textural device constructing the cloud’s malleable form which is transferred to the pitch domain with the glissandos in m.12 and tremolandos in m.17.

Contrasting with the grey cluster sound, and originally led to through glissandos, is a lighter form of cluster, filling the major-3\(^{rd}\) of \([G5-B6]\), a variation on the original major-3\(^{rd}\) span of the \([0,1,3,4]\) set based on G\(_3\) (as at m.6). This cluster, spanning only a single major-3\(^{rd}\) is symbolically half of the original cluster in its first appearance from m.14. In its second appearance from m.20, it is (symbolically) a further fraction lighter being presented through harmonics (the harmonics stem from lightly depressing the pitches from the lower half of the original cluster). The play of

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\(^{23}\) Although this order of material is seemingly the wrong way around, it suggests metaphorically that we begin with material that is less structurally solid before moving onto the more significant and more lingering material, which was my intention.
registers is similar to that seen in *Strung Metal Lines* with glissandos and natural harmonics offering gateways to new pitch strata, and these strata being bridged by common means (in this case identical finger positions moving between stopped and natural harmonics).

Structurally, the next degree of openness is heard with the violins’ double stops from m.22, based around minor-6th’s (an inversion of the major-3rd), which present the work’s main ‘theme’\(^{24}\), reappearing in mm.42, 45 and 63. The melodic top line in each violin part takes an m2+m/M3 contour - intervals stemming from the original set. These open intervals stem into arpeggio fluctuations that stretch more openly beyond the active pitch fluctuations of the tremolandos, which in themselves are closely aligned with the grey clusters, as witnessed in the dilated oscillation, dissolving at m.29. Instead, the arpeggios breathe a newfound energy into the existent musical shapes, able to stretch out from the symbolically locked cluster and idiomatically across the instrument’s four strings. These arpeggios give rise to both dense/grey (from m.35 and m.57) and lighter-coloured (from m.39 and mm.52+) formations. The latter combines two major triads – A7 and C – which becomes a thematic thread in its own right. The reference to the harmonic series is evident from m.52 giving rise to the work’s climax from mm.55 where, through spectral logic, exploration of sound/noise transcends the pitch-plane. The particular colours offered by A- and C-major have a particular relation in my mind to warm and luminous colours – red and yellow respectively\(^{25}\), which act symbolically here as light reflecting on clouds and colouring them, as at sunset. However, the warm colours of sunlight quickly transform into blinding colour as the listener’s gaze makes contact with the sun itself, and diffuse reflections scatter through the ensemble, temporarily blinding

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\(^{24}\) Or, as is discussed later, a brief sketch of a theme rather than a theme proper.

\(^{25}\) While I do not have synaesthesia, I have since my youth identified certain major keys with certain colours. The clearest of these in my mind are: C = yellow, G/D = green, A = red, E = blue, Bb = orange-like. Eb ≈ blue, Ab ≈ red. The pitches C#, F, F#, B are less clear in my mind (for example F and F# bear traces of purple and brown, C# gold, and B brown and orange, though these all have more complex saturated/‘metallic’ qualities), and the minor keys have a greyer, less determined sense of colour. C#-major has always been a favourite colour of mine, which seemingly relates to its richer sound-colour. (As an aside, I have found an interesting inverse of colours with Messiaen’s synaesthetic sensations. For example in *Des Canyons Aux Étoiles* (1971-74), Messiaen uses E-major as ‘red’ to symbolise the canyons at Utah (as at the end of movement seven, *Bryce Canyon et les rochers rouge-orange*) and A-major as ‘blue’ to symbolise the sky (as at the end of *Zion Park et la cité céleste*). (These are discussed both in Harriet Watts and Olivier Messiaen. “Canyons, Colours and Birds: An Interview with Olivier Messiaen". *Tempo*, 128, 1979. p. 4. and by Paul Griffiths. “Catalogue de Couleurs: Notes on Messiaen’s Tone Colours on His 70th Birthday". *The Musical Times* 119 (1630), 1978. p. 1036).
our perception of discrete colours (in musical terms, pitch). (The sun here reinforces the same metaphor as the cloud therefore. While bearing stronger definition/materiality it is also paradoxically immaterial, especially when thought of metaphorically in relation to the ‘spectral’).

From mm.61+, both of the work’s predominant themes are counterpointed, with more vivid colour content emanating at m.63 through the two initiating major-6ths that together are harmonically based on the G-major triad rather than the darker G-minor from before (mm. 22, 42, 25 resulting from the Bb within the second dyad). This thematic turn, with its heightened and lighter expressiveness, lead into the work’s most ‘expressive’ moment - the cello ‘solo’ from m.65. It is a unique textural moment within the piece which has thus far been characterised by homogenous blending of quasi-free elements across the parts. For the first time we truly focus on a single line, which juts out from the surrounding soft natural harmonic glissandos, and through arpeggios and glissandos spreads powerfully and unexpectedly across a range of almost four octaves, in the work’s strongest affirmation of the open. Meanwhile, the contrasting lightness of the natural harmonic glissandos creates a wide gulf between them and the cello’s line. The latter at its registral pinnacle seamlessly blends back into the surrounding lightness and the two final sonorities in mm.71-73 recall the work’s two lightest moments from m.14 and m.25.

This idea of seamlessness between different material is akin to the eye scanning across a continuing and variegated sky. ‘Observation’, whereby the senses assimilate knowledge of a phenomenon, is a crucial structural principle underpinning the work; as is the ‘observer effect’, where the act of observing impacts the state of the phenomenon. Observation itself does not necessitate activity, akin to a fixed vertical arrangement in music, while the ‘observer effect’ suggests causality and results in a changing state, which accords with the music’s linear arrangement in time. (Artifice is of course at odds with the concept of naturalistic observation – another paradox that the work is musically aware of). In this sense, mm.1-21 can be thought of as the eye drawn between observing two contrasting phenomena – in ‘cloud’ terms, one reading would see a dense, low-lying, uniformly grey, featureless nimbostratus and a high-floating, light cirrus cloud. The former accumulates a higher degree of sonic change and more definition of form (from horizontal stratiforms towards vertical
cumuliforms) due to its denser/darker/ominous nature, while the latter is in effect unchanging – an idealised lightness. The gritty, distorted viola overbowing in m.13 suggests (in perceptual terms) a dark/violent core to the cloud (it may rain/storm), while at the same time this unexpected timbre functions causally, affecting the eye’s turning away from this darkness. A more apt reading however sees the second phenomenon not as a separate cloud, but as part of the one cloud. In poetic terms, the metaphor is the ‘silver lining to every cloud’, whereby a silver gleam of sunlight can instantly alleviate a dark cloud’s threat. This trace of light, along the cloud’s edge, relates closely to the title’s sketching of a cloud’s outline, and the importance of this metaphor is confirmed by the reprise of this silver lining at the work’s conclusion. Furthermore, seeing the two contrasting sonic strands as the one object reinforces the large scale of the one cloud, with a richer plume, and definitively malleable in nature, thus a more open form.

The open form relates through metaphor to an outline sketch, which contains blank space between the marked lines. The work’s opening material is sketchy, incomplete from a conventional musical point of view, lacking melodic and rhythmic focus as well as harmonic clarity. The ‘theme’ at m.22 fills this gap, but the theme itself is only a fragment of a theme, a brief sketch of one. It is a discontinuous moment in the work’s first broad brushstroke, a slip of the pen, though a planned one that undoes the naturalistic observation with a hint of musical artifice. These distinctions between artifice and nature are of course shades of grey along related pitch-material sets, but in this case (and in the case of the interrupting overbowing at m.13) signify the human observer, and the occurrence of concrete thought arising from observation. These subjective thoughts are foreign to the materiality of the natural phenomena; however the resulting human affect is meaningful to the subject that negotiates a thematic relationship with the matter. (The major- and minor-6th intervals are after all (along with their 3rd inversions) the hallmarks of minor and major scales/triads, and bear the strongest relationships to the ‘happy’/’sad’ musical affects). If this is the human enforcing perceptual subjectivity on nature, then nature relays perceptually an objective process on the human, that is, its dissolve from mm.25-29. The human shows its face in the music, to which the cloud retracts its own face, eluding the human. Or else, the cloud morphs into a new shape through the observer effect, the two human eyes literally pulling the cloud apart in m.29. The push and pull of our
analytical thought between these two positions is by analogy like an accordion’s bellows expanding and contracting, which itself provides the strongest musical analogy to the ultra-dilated tremolando fragment in m.29 - airy and somewhat wistful in the face of disappearance.

I think of the natural harmonics in m.25 as a different entity to the previous silver lining; in fact, as the cirrus cloud that the former proved in our analysis not to be. Rather than the slim and light outlining of the major-3rd, the current sonority has a larger vertical dimension, though with the particular lightness of sound offered by the Lydian mode with its raised (and thus slightly brighter) fourth, on C - [C,D,E,F#,G,A,B]. This fixes the cluster (for its adjacently voiced pitches define it as a cluster) by analogy to the sky’s lightest and highest cirrus clouds, which in their remoteness and greater immateriality (in comparison to the nimbostratus-cum-cumuliforms) are more easily dissolved.

Lower-lying tremolandos resume at m.30 (though this time relating harmonically to the C-Lydian collection), along with the drawn-out pitch forms that characterise the nimbostratus opening from mm.31+. Now a denser distribution of pitch-particles through arpeggio figuration continues to mobilise the formation of the puffier cumuliforms with their more defined edges and expanded verticality. The arpeggios and glissandos beg the question of what signifies greater openness in the face of the cloud metaphor. While the music’s register expands and larger intervals are filled in with pitches, suggesting an open state, the filling in of the space between an outline surely closes in on that blank space. Here is the central paradox in the title’s ‘sketch’, which for now brings ‘observation’ squarely into the realm of art. A sketch, a hasty freehand drawing, puts the original markings upon a blank space, and is often considered an unfinished work in its own right. In this case, the neutral white (/grey) cloud is transitory material, a hastily conceived natural form, depending externally on sunlight and wind to shape its vapour. In visual art, a sketch provides for the artist an opportunity to focus on an object, and to study its form by drawing a series of lines in a suitable arrangement - an outline by which the essence of something is conveyed. In observation, by assimilating sensory perceptions, meaning fills in our minds and our
interpretation shapes what we see\textsuperscript{26}. (We could conclude that the book of nature remains open, and we close it as we see humanly fit.\textsuperscript{27}) This observation is facilitated through \textit{Cloud Sketch}, a work that begins and ends, and is therefore complete. Its score’s indeterminacy puts myself the composer less in control of the music’s final aural form, requiring four players to sketch sounds with their bows, thus rendering the sketch’s original markings cloudlike – fleeting origins, shaped externally and suspended in sounds of multiple form.

Returning to the arpeggios, the defined suspended outlines of A-major-7 and C-major from mm.39+ cast new light on the sonic canvas. The musical process demonstrates once again a fixed phenomenon, slipping ever so slightly (violin II down two semitones) with the return of the human theme in the lower strings (m.42), fixed once again in m.44, but then activated through the observer effect and transforming into the human theme. This longest thematic statement searches through an increasing variety of double-stopped intervals that lead into an inversion of sixths (= thirds), and therefore subverts the human gaze, returning to more objective natural phenomena, at which point the climax blossoms. Unlike the mutable human theme, the A7+C theme is a more idealised unchanging form of harmonic colour, which as discussed before refers through objective association to the sun’s light\textsuperscript{28} at the climax. Following the

\begin{itemize}
  \item \textsuperscript{26} In a similar way (though with a stronger focus on intertextuality that is irrelevant to this current analysis of \textit{Cloud Sketch}, though plausible perhaps in another) Roland Barthes argues in his brief landmark essay \textit{The Death of the Author} (1967) that the author cannot control the meaning of a text. As Barthes states in the first paragraph, “writing is the destruction of every voice, of every point of origin. Writing is the neutral, composite, oblique space where our subject slips away, the negative where all identity is lost, starting with the very identity of the body writing.” (Roland Barthes. “The Death of the Author”. In Kearney, Richard and Rasmussen, David M. (Ed.), \textit{Continental Aesthetics: Romanticism to Postmodernism: An Anthology}, Malden, Mass.: Blackwell Publishers, 2001. p. 371). The cloud as the work’s finished product, and the cloud as a blank canvas in its own right (and only as fixed/material as a ‘canvas’ through artistic rendering, though nonetheless blank), relate to Barthes’ vision of slippage and ‘death’ (though need not be an endpoint in our analysis).

  \item \textsuperscript{27} As Barthes ends his essay, the openness available at the cost of the author is the “birth of the reader”. (Ibid., p. 373).

  \item \textsuperscript{28} At this point, it is worth noting a particular poem I have in mind in relation to \textit{Cloud Sketch}’s vision of the sun that so aptly sums up the immutable-mutable duality in the contexts of nature and the human – John Keats’ sonnet \textit{Bright Star} (1819), beginning with ‘Bright star, would I were steadfast as thou art…’. The message of the poem is far more humanist than \textit{Cloud Sketch}, in its description of the poet’s love. However, the immutability of nature drawn out in the poem’s octave exceeds these eight lines, spilling into the sestet, and colours to some degree the first five lines of the sestet, in the poet’s wishes for his love’s steadfastness (only to some degree, as ‘ripening… fall and swell… unrest’ contradict the immutability of ‘still’). The paradox is in the last line of ‘live ever’, and resolved by the association of the poem’s regularly tolling ‘still’ with the final word, ‘death’). The way in which the enduring power of nature seizes the majority of the poem in Keats’ anguished desire for immortality is a testament to its significant exceeding of the human realm. This view of nature as eclipsing the human, though related through art (in Keats’ case through the age-old poetic conceit of poetry/art as immortal), has influenced
point of these themes’ combination at m.63, the cello solo brings the work’s humanist perspective to a head, in the sense of its incongruity amidst the work’s prevalent textural approach (and through the ‘head’ pun, giving it its most direct face). The ‘problematic’ expressiveness therefore dissolves back into the silver lining, and through paradoxical resolution, we have a happy ending.

The above reading focuses on ‘light’ as a metaphor within this sketch. A reading more closely aligned to the cloud metaphor notes the A7+C theme as an extension of the cumuliforms introduced by the arpeggios. The lightness of their higher register voicing in the violins suggests in fact a cirrocumulus nature (therefore combining the densest (cumulus) and lightest (cirrus) cloud forms), comprised of repeating white cloudlets and lacking grey hues. The openness of the repeating triadic arpeggios are far removed from the greyness of the opening, though rather than mere white, present an artist’s coloured rendition of the sun’s (objectively ‘white’) light. The light in this reading is therefore part of the sketched cloud, rather than, as an aside, the sun in its own right. Furthermore, this combination of light and cloud renders at the climax the work’s most vertical, billowing cumuliform, though lit up by an emerging sun that twice (mm.55-6, m.58) peers through, or from the side of, the cloud. The music rises up ebulliently through the cumuloid’s convective energy to catch a glimpse of the sun’s uncontainable force, until the clouds close in to veil it. Shortly after this climax, the higher three instruments resort to radiant natural harmonics for the remainder of the piece. When joined by the cello’s harmonics, lightness prevails and the sketch is sealed with its silver lining.

The purpose of this metaphorical discussion demonstrates the creative concerns that motivate my artistic thought in the context of a musical work, its title, content, and, in its need to be listened to, its interpretative reflection. Music infusing the air through sound waves and our senses through perception creates concrete phenomena that

my own artistic approach to the natural world. In the present contemporary setting, following artistic Modernism’s abstraction and mathematical discoveries such as chaos theory/fractal geometry, the symbol of nature takes a more objective quality, rather than as musically poetic/expressive renditions as in Romanticism, Impressionism and Expressionism. This objective quality of nature continues to fascinate me as a foreigner to it, through my subjectivity, by which I perceive it, and render it through creative thinking, in turn foreign to it. Therefore, to return to the bright star of our solar system’s sun, I attempt to present its light, brightness, spectral quality and force by rather direct means. This objectivity is often a starting point, to which the human is subsequently added, as in the thematic combination as at m.63.
transform their image in time, with or without our knowing it, and *Cloud Sketch* serves to remind us of the liberating ambiguity at the heart of musical utterance.
4.

Dream Space No. 2

From the figurative acoustic sound world of *Cloud Sketch*, we now consider an actual electronic sound world formed to depict a/the space in which dreams occur. The earlier *Dream Space* was composed in November 2006 for the Triptych '06 Music-Poetry-Art Concert at the University of New South Wales in response to the relevant concert segment’s theme of ‘dream’. *Dream Space No. 2* reworked and fleshed out the original work in August 2007 into a more convincing whole, most notably altering the work’s beginning.

It is an example of my electronic music which, in this case, was created using Sonic Foundry’s Sound Forge stereo editing software. My manner of using Sound Forge involves creating a two-channel track and ‘mixing’ (ctrl+M) sounds together within it, structuring the available stereo space, and structuring time through a succession of events. The possibilities of detail are virtually endless, through the ability to layer all degrees of sound into the one stereo track, for the desired length of time and according to each sound’s suitable volume level, panning, stereo image, spectral content (EQ characteristics), timbral quality, and any other of sound’s conceivable aspects. Furthermore, each sound can be endlessly edited and affected to result in all shades from a sound’s origin and recognisability, through all manner of contrived connections which supercede the reference point, until the sound is no longer recognisable in the context of its former self. In Sound Forge, this includes the program’s digital effects as well as additional Waves Plug-ins, including filtering, pitch-altering, time-stretching, distortion, delay, reverberation, and other more conventional (from a point of view of audio production, rather than academic electronic music) ‘effects’ such as flange and chorus. Working with electronic music has been a liberating experience for my musical thinking, especially in relation to the discipline of listening I mentioned in the introductory chapter. The music I create in the above manner serves in a broad sense as an active listening space whereby materials of sound are analysed within themselves in their association to other
sounds/objects/points of reference, in plays of aural meaning, metaphor and metonymy.

*Dream Space No. 2* is thus a detailed rendition of sound in time and in reference to the phenomenon of ‘dream’, in both literal and figurative senses. One reading through its sound world sees four broad sections: an introduction which figuratively depicts dream (0:00 – 2:31), a passage through deep sleep (2:32 – 3:20) into a clearer more ‘objectively’ minded REM dream state (3:20 – c.5:02), and concluding through a figurative depiction of sleep. Taking up the title’s ‘space’, a play on distributing musical information within the two-channel stereo space motivates the opening, with most material in the first 28-seconds confined to the right-channel. With the start of the introduction proper (0:25+) a number of indistinct and fragmented musical details float among the canvas of sound, including softly clicking percussive sounds (0:26), pitched arpeggios (0:45), looping melodic pitches of a higher frequency (0:51), higher frequency bubbles (0:58), and distorted tones (1:03). The accumulation of details leads to a static-like interruption of transmission from 1:19 that transports the music to a noisier platform from 1:28, including elements such as anxiously fluctuating heart-like (soft) bass-drum punctuations, a presence of distorted sound waves, and a whirlwind of fragments across a large frequency spectrum (including for instance a quotation in the left-channel to a brief moment from the *Waveforms* electronic track (as heard in *Waveforms* predominantly in the left-channel at 0:43-0:49) from 1:41-50).

My goal with this section was to present a more spacious rendition of Noise in relation to some of my earlier electronic music works (such as the noisier *Pulse Manoeuvre* (2005) and *Forge of Birds* (2005)) whereby a multitude of elements sit within the stereo space (at left- and rightmost extremes and in the relative ‘central’ space between) in a hazy counterpointing of active fragmentary lines. Figuratively this noisy plateau suggests, as does the entire introduction, the fleeting and insubstantial nature of dream, the ‘freedom’ associated with it, albeit perhaps in the structured sense of Freud’s dream-interpretation, along with its free-associations, which
throw a surprising light on all the different parts of the dream, fill in gaps between them, and make their strange juxtapositions intelligible. In the end one is bound to become clear about the relation between them and the dream’s content.\textsuperscript{29}

As seen in \textit{Cloud Sketch} (and will be seen in subsequent works), music is able to resolve the difference between the material and immaterial through its ambiguous and non-referential nature. ‘Dream’ is exemplary of the same phenomenon, especially in the context of Freud’s inroads into the unconscious through their interpretation which leads furthermore to Jacques Lacan’s famous dictum that the unconscious is structured like a language, through linguistic chains of signification. The noise plateau in \textit{Dream Space No. 2}, signifies the ‘distortion’ that is intrinsic to a dream-thought’s transformation into a manifest dream - that is, the way in which underlying psychological implications of a dream (the underlying meanings, or in Freud’s words, ‘the text of the dream’\textsuperscript{30}) are condensed and displaced in the active process of dream-distortion, that results in the moderated nature of the dream itself\textsuperscript{31}. As well as figuratively depicting fleeting dream-thoughts, the fragmentary quality of the music’s introduction more objectively illustrates the Freudian analyst’s dealing with ‘resistance’ on behalf of the dreamer/patient – the hesitations, lengthy meanderings of ideas that do not contribute to an understanding of the dream, and the forgetting of parts of the dream - that explain why gaps and obscurities exist on different planes of the manifest content\textsuperscript{32}. Suffice to say, these structural concepts relating to dream, signification and analysis, inform the more figurative musical passages in \textit{Dream Space No. 2}.

The more ‘literal’ dream-space awakens as the introduction’s unwieldy material is seized and sucked magnetically from 2:15-2:31 into a black hole characterised by thick low-frequency/sub-bass content, into a world of deep sleep, awaiting dream. A mid-frequency strand of sound\textsuperscript{33} emerges in the left-channel at 3:16, lasting until 3:58

\textsuperscript{30} Ibid., p. 38.
\textsuperscript{31} Ibid., pp. 49-50.
\textsuperscript{32} Ibid., pp. 42-43.
\textsuperscript{33} This dream-like (in my mind) sound results from continuously filtering any sound wave according to the same filter settings, until the original sound has completely eroded and the resultant waveform merely reflects the quality of the used filter’s settings. In this example, we hear a fixed wafting predominantly based around c.350-550Hz, in pitched-terms sounding similar to a tritone [G4-C#5], which results from a one-band filter setting at 450Hz.
(the low-frequency rumble cuts off at 3:20), which conveys a floating passage of time, a suspended space in which random fragmentary interruptions, of a more gentle spacious nature when compared with the condensed opening, surface. The greater sonic clarity resulting from the relative lack of low-frequencies from 3:20 paves the way for the work’s central dream-space, inhabited by a sample from a recording of composer Peggy Polias singing ‘ahh’s over a clicking percussive loop and three distinct (low, medium and high) swelling tones. This recording, which was used in the original Dream Space performance, serves also in the current piece as a dream-object, deriving from Marcel Duchamp’s notion of the readymade, and considered in the Surrealist’s mode of fetishised ‘objects’ with their manifold associations. Joining Peggy is the composer Joseph Twist and a homemade recording of him singing from the tenor part to Bach’s motet Singet dem Herren ein neues Lied, BWV225. Joe’s subtle mirage appears out of the low-frequency cloud from 3:44, coming into greater prominence at around 3:54 when these frequencies dissolve (a brief snippet of ‘Al-le’ from ‘Alleluia’ can be heard in 4:11-4:12), though its almost inaudible nature suggests the lingering forms of meaning at the disposal of free association. Extending the logic of the clicking percussion in Peggy’s recording are the bass drums entering at 4:03 and repeating in groups of ten-accents (rather than the conventional eight-groupings of bass-drums in electronica).

As this dream-space is gradually activated, through resurfacing fragments, the fixed object of Peggy’s song is transformed into a dream-like state, inflated and distorting, while a bed of low-frequency drone develops from the bass-drums. The increasingly hazy/dense cloud that results substantiates the previous lingering bands of sound – low-frequency (2:31-3:20) and mid-frequency (3:16-3:58) – and permeates the final ‘sleep’ section, the point at which Peggy’s song dissolves, from 5:02, that brings the work to rest.

A final active swell emerges paradoxically from within this ultimate rest state, building up to a climax at 5:15, at which point a sustained, unchanging distorted tone is let loose for 45-seconds. While this episode may be interpreted in a number of more specific ways, I will suggest that in broader terms it is somewhat like a voice issued from the unconscious depths, a mere glimpse at a larger and overwhelming level of meaning/understanding that lies somewhat dormant beyond the comprehension of the
work’s, or our own, parameters. This unconscious ‘scream’ is housed within the soft though inflated surrounds of undefined low-frequencies, to which its definition eventually gives way, stopping suddenly in the right-channel at 5:49 (to negate the otherwise gradual and streamlined fading out, responding to its own shocking entry at 5:15) and dissolving otherwise just after 6:00.

The final 1:44 from 5:38-7:22 is structured by four low-frequency punctuations, like soft strokes of a gong, each stroke lasting around 24-seconds, the second of which sounds after the scream’s final dissolve at 6:03. Openings into melodies without substance are hinted at by the sustained tones between the second and fourth ‘gong’ strokes, more contoured and gentle than the previous sustained bands of sound, though these merely drift off into the work’s ultimate nether region, confirmed by the final death knell at 6:57 that gives rise to the work’s own sleep.

*Dream Space No. 2* presents my fascination with negotiating a specific place within a broader space. Taking ‘music’ as the broader context, which is more broadly speaking the flow of sound, a ‘specific’ place is a meaningful spot, something signified in an otherwise undefined zone. Structurally in a piece of music, it involves establishing a certain condition in which to give rise to an other condition. In the middle of *Strung Metal Lines* for instance, the material and hard-edged world of metal gives way to an expressive and spiritual place for the violin to inhabit, in attaining a culturally connoted truth associated with the violin, as a soaring and lyrically-minded instrument. This specific ‘violin’ moment, though already culturally defined through works from the violin repertoire, gains further needed definition through unexpected musical contrast. With the overabundance of information in our everyday contemporary landscape, there is the risk of a loss of meaning in signification through the simulation and replication of signs, such that another in the line of soaring violin lines loses its expressive potential. By housing it in space with which it is mutually exclusive, and using music’s shifting form through time to resolve this incongruity, we are able to resolve the differences that are defined by one another and can coexist mutually. So in *Dream Space No. 2*, activity and stasis combine to suggest a waking form within the sleep-state; or else, an unexpected voice from the real world, which would otherwise go unnoticed, stands out in relief against the secondary fragmented dream space, to reserve within it a primary quantified dream place.
5.

Waveforms

Moving now from one open space to another, though in this case a specific natural place, *Waveforms* for quintet and electronics is the work in my portfolio that spanned the longest period of compositional time. Commissioned by Ars Musica Australis in September 2006, it was written between February and June 2007, for its premiere by the Kammer Ensemble and then revised and extended in April 2008 for a Fellowship of Australian Composers concert. It is the one work in my portfolio that responds directly to the ocean, although other works written during my candidature such as *Abandon By Sea* (2006) and *Tower of Erosion* (2008) also do. Having lived next to the sea in Sydney for almost 20 years, its continuous sound and surging form have made an indelible mark on mind and attitude to music, including my interest in patterns of accumulation and dissipation, self-similarity, organic repetition and growth, noise, density, powerful impact, moments of spaciousness, and the resonance of sound.

In *Waveforms*, my first piece to combine electronics with acoustic instruments and notated music, I aimed to work both aspects into the other, rather than privileging either sonic medium. The electronics therefore provided a pitched harmonic basis (rather than mere unpitched noise) to support the instrument’s lines, which themselves were influenced by my detailed method of combining electronic sounds through various degrees of layering and editing. The endless possibilities of combining and manipulating sounds in an electronic stereo track, in contrast to scoring music for a fixed number of instruments, brought the scope and scale of the sea to mind. My goal from the outset then was to present sound and the flow of sound, just as an image of waves would depict the sea and the flow of its waters.

Musically, the pattern of a wave appears on a number of levels, ranging from the undulating pitch contour of a trill, loops, larger rising and falling pitched material, phrases guided by dynamic swells, sections of tension and release, and of course on the most basic level as the oscillation of vibrating sound waves of any nature.
‘Proliferation’ was a motivating concept for my dealing with sound and the sea - an outward growth from a single source – and shapes the work’s opening. The electronic part begins with a single sine tone, the most basic sonic waveform, of the Db-pitch. The round shape of this sine wave morphs into a sonically richer saw-shaped wave, and is then gradually squared off, introducing more overtones relating to the fundamental Db and, along with this, a more distorted sound. This Db, metaphorically gives in to the accumulating pressure and slides down a minor-3rd to Bb at 0:19. This minor-3rd bass progression repeats in a hyperbolically extended manner, whereby the fundamental tones are joined by exceedingly more harmonically related sound elements and qualities of noise, culminating in the wave’s climax at 0:50 amidst an active harmonic field. Meanwhile, the ensemble crafts music contrasting closed and open formations. A semitone clash in the cello and violin [A-Bb] gives rise to accelerating single-pitch utterances blossoming into trilling of adjacent pitches that draw the woodwinds’ overtones of the electronics’ fundamental Db inwards to an [0,1,2] set in m.7 coinciding with the sliding distorted electronic tone to Bb. The ensemble’s material subsequently blossoms in outwardly flung patterns while the piano’s trills match the fixity of the electronics’ fundamental drone. These trills themselves blossom from mm.20+ in the piano’s right-hand in a rhythmically fluctuating seven-pitch loop, elaborating on the flute and violin’s fragments in mm.17-19 (which themselves mimic frills at the top of the electronics that gush forth at 0:50 climax), whose three [C-Db-Bb] pitches reflect the work’s most important bass pitches.

Coinciding with this turn in the piano, a new element arises in the electronics from 1:01: two C-pitches an octave apart cycling out of phase, and additionally each tuned inwards microtonally (by 0.1 semitones) resulting in an interval just under and octave. This unsettled consonance is almost like a trick on the ears that I liken to a shimmering vision, a mirage stemming from comprehending the sea’s unending horizontality which the music now contemplates, casting aside the swelling waves; perhaps a play of sunlight flickering on the surface, or a close-up view of tiny wavelets. Manipulation of this material shapes two electronic ‘solo’ moments, the first of which is the rise in frequency from 1:41 (which is less of a solo in the revised 2008 version where it is softly coloured by the ensemble), and the second of which at 5:30 sees a greater proliferation of the material, in a spectral manner, where multiple
transpositions of the broken ‘octaves’ based on the harmonic series combine. It is
towards a plateau on C where the music flows, punning on the sound of C/sea, and
following a harmonic tension grounded on C-versus-C# in the ensemble (mm.154-75)
that leads to the climactic ‘rogue wave’ at 7:36, we return to an energised rendition of
the C-plateau, its electronic force exceeding the human ensemble from mm.195+.

The instrumental equivalent to the microtonally diminished-C-octave is the looped
filling in of C- and B-pitches by the piano, as at mm.29-30, which derives from the
extended trill preceding it. These loops return at mm.95+, briefly in mm.128-29 and
from mm.154+ to symbolise in a more abstract (rather than figurative) sense the
ocean’s recurring substance, spatial displacement, and continuity of form. The
woodwinds directly mimic C-octave’s cycling through their own out-of-phase looping
[C-B] diminished-8\text{th} from mm.128+.

Another noteworthy thematic feature is the piano’s pattern at m.42 based on rising
perfect-5\text{th}s settling onto a descending pattern articulating the string of third to tenth
harmonics based on a C1 fundamental. This lulling pattern forms the basis of the
music’s most mellow passage from mm.130-53, following the electronics solo, which
summarises the work’s thematic fragments in a variety of combinations. (This section
was the largest addition in the 2008 revision of the work). A dissonant variation on
this lulling pattern is heard before it, coming out of the early 0:50 climax, in mm.23-
25 in the flute, clarinet and violin in counterpoint to the piano’s unfolding trill. The
resultant descending parallel \([0,6,11] (= [0,1,7])\) chords in these three lines is a tenser
version of the perfect-5\text{th} intervals that begin the lulling pattern, and the pentatonic
descending top line [E-D-B-A-G-E] is a variation of the pattern’s subsequent descent
through the harmonic series [E-D-C-Bb-G-E].

These motivic/thematic ideas can therefore be seen as organically stemming from the
harmonic series above C1, either directly relating to it, or establishing degrees of
harmonic dissonance against it (as in the diminished-C-octave, and the \([0,6,11]\) set),
fleshing out colours of/around the sea/C. The trend in Waveforms to use of low
fundamental pitches coloured by related material layered on top of them shows an
attempt to harmonically resolve large registral spaces and flowing contrapuntal ideas
as single unified active/resonant sound fields. Through my practice of working with
electronic music and its possibilities of combining and manipulating sounds, I have become aware of the rich inner world of sounds in a way that has also fascinated composers taking after the spectral approach. In the context of Noise, one’s experience of dense and highly distorted sound is almost constantly perceptually multivalent. After exceeding a certain degree of sonic information, the question arises, to what extent are we hearing different sounds, or to what extent are we hearing one single sound that is rich in colour?

This question deals with sound as an abstract entity, aside from representational connotations, which in the context of Waveforms are inevitably there. I must admit that the analogy of sound to ocean waves was never intended as a literal depiction of any particular oceanic aspects; rather, the sea served as a metaphorical reference point of a unified though expansive and actively flowing phenomenon, a single body filled with much water. Perhaps most importantly it should be noted that the electronic music in Waveforms stems almost entirely from computer-generated sounds, and generally speaking, from very simple ones that are subsequently processed, as in the opening’s thickening of sound out of a single sine-tone. Transposition (pitch-shifting) and pitch-bending significantly shape much of the electronic material to create a more focused harmonic interaction with the ensemble’s musical material. Added to these are effects/processes such as distortion, granulation, altering of bit-depth, and delay-induced feedback. The two non-computer-generated sound sources are homemade recordings of a (significantly detuned and squared-off) toy glockenspiel (first heard stemming from Bb5 at 5:47 and more conspicuously on either sides of the 7:36 rogue wave, at 7:00+ and 7:46+) and a metal teaspoon shaking in a glass jar (introduced to activate the shimmering final expanse of electronics texture from 8:35), whose analog sounds add to the artwork’s final minutes of sonic representation a hint of added realistic depth.

Waveforms tested me as a composer to blend sounds and to acutely consider issues of balance between parts in order to achieve an oceanic whole. The 2008 revision of the original work is notable for an increased involvement in the ensemble’s lines to

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34 This detuned glockenspiel melody predominantly articulates the adjacent Bb5, C5, and D5 - rather than Db5 – pitches. It functions to overcome the work’s opening ‘Db condition’ in favour of pitches relating to the work’s magnetic C-harmonic-series, particularly Bb and C.
present a more convincingly flowing musical shape through polyphonic means. My work on Waveforms marks a point in my compositional life where I became more interested in considering musical lines as independent strands, and therefore more material in nature, to aid in the flow of a unified music. Between the original and the revised works came Strung Metal Lines with its material linear focus and Construction where, during its workshopping with the Song Company, I was continually reminded of the music’s five independent voices.
6.

Construction

*Construction*, a five-part *a cappella* song was written from July to September 2007 for the Song Company’s MODART07 young composer program. *Construction* was my first composition to use voice and my first musical engaging with text and therefore the period of writing the work was preceded by a more extended period of searching for the right poem, and considering my approach to composing for voice.

In finding the right text, I eventually narrowed my horizons down to the late-19th and early-20th centuries, and in looking in particular at texts from/relating to Symbolism, Futurism, Dadaism and Surrealism, stemming from my interest in the innovations within the visual arts from that era. Of these, Dadaism and Surrealism appealed the most to me aesthetically, however much of the poetry was a little too absurd, unhinged, or elusive in meaning for what I required. I hoped to find a poem with a more concrete aspect, whose various underlying meanings I could tease out with greater ambiguity through music. Eventually I came across the Swiss born, though French naturalised poet Blaise Cendrars (1887-1961). A fascinating figure among the early 20th-century French artistic circles, Cendrars was not aligned to any particular aesthetic school, and spent a considerable amount of his lifetime traveling the world, unable to be confined to any one place.

As summarised by one literary critic, the influence of the artistic movement of Cubism, which through formal dissection presents a number of simultaneous views on the one object, was central to Cendrars’ development as a poet:

> The device of verbal simultanism largely began with Cendrars, who was among the first to transform the ideas of simultanism, as expressed by Picasso or Braque, into a poetic language: a polyphony of simultaneous voices that say different things…. For Cendrars ‘simultaneity’ marked more than only poetic expression; it was a call for art to become practical again…by
‘asking for a new life praxis from a basis in art’... Cendrars’ simultanist writings portrayed reality as a pattern of clashing forces wholly opposed to one another.35

The poem I eventually found was Construction, the final poem in Cendrars’ Dix-Neuf Poèmes Élastique (Nineteen Elastic Poems), written from 1913-14, except for Construction, written in 191936. The poem’s subject matter depicts the painting of a portrait by the Cubist artist Fernand Léger, a friend of Cendrars’, though not a specific portrait, merely the act of doing so, or rather, the paint’s and image’s acts of being so.

Construction

De la couleur, de la couleur et des couleurs... 
Voici Léger qui grandit comme le soleil de l’époque tertiaire
Et qui durcit
Et qui fixe
La nature morte
La croûte terrestre
Le liquide
Le brumeux
Tout ce qui se ternit

La géométrie nuageuse
Le fil à plomb qui se résorbe
Ossification.
Locomotion.
Tout grouille

L’esprit s’anime soudain et s’habille à son tour comme les animaux et les plantes
Prodigieusement
Et voici
La peinture deviant cette chose énorme qui bouge
La roue

La vie
La machine
L’âme humaine
Une culasse de 75
Mon portrait

* * *

Construction

Color, color, and more color...
See Leger expanding like the sun of the tertiary epoch
And hardening
And settling
Still life
Earthy crust
Liquid
Milky

36 Dates of the poems are listed in Selected Writings of Blaise Cendrars, pp. 138-83.
All that tarnishes
Cloudy geometry
The plumb-line that retracts
Ossification.
Locomotion.
Everything swarms
The spirit suddenly comes to life and in its turn clothes itself
like animals and plants
Prodigiously
And now
The painting becomes that enormous, restless thing
The wheel
Life
The machine
The human soul
A 75mm. breech
My portrait

The poem perfectly suited my requirements and interests. Its short lines, each suggestive of a new image or state without being too wordy, would challenge my compositional imagination to conceive of the most apt musical rendition of their meaning. Most importantly, writing music for a poem about visual art opened up an exciting synthesis of creative thinking. In dealing with an external text, my initial goal with setting Construction was to compose a suitable musical response to each line of the poem which would then be combined structurally in a quasi-simultanist mode. However this heterogeneous approach was ultimately narrowed down to focus more intently on fewer elements as my understanding of Cendrars’ poem developed.

My interpretation of the poem sees a two-part structure, with two balanced twelve-line halves. The two full stops in lines 12 and 13 mark the poem’s fulcrum, along with an opposition of meaning between ‘ossification’ (hardened/unchanging) and ‘locomotion’ (with the ability to move). The first half depicts paint drying on a canvas, with metaphors such as ‘la nature morte’ and ‘ossification’ touching on death, and the second half, contrasted by images of ‘la vie’ and ‘l’âme humaine’, sees the image come to life as ‘mon portrait’. These two opposites are yoked together through the artwork/portrait and resolved through the theme of ‘the material’, consistent in both halves, through various images such as ‘la croûte terrestre’, ‘le fil à plomb’, ‘la roue’ and ‘la machine’. Industrialism and abstraction in art were both aspects of society’s modernisation, as identified by the artistic avant-gardes of Futurism, Cubism, Dadaism and in this case by Cendrars.
The poem’s first line, with its punctuation dissolve, opens out from the possibility of plural ‘couleurs’ (and the silent final consonants of the word ‘couleurs’ make it indistinguishable from ‘couleur’, opening out the meaning of the general ‘colour’ concept in dissolving letters). So musically, I made colour gradually emerge by introducing pitch out of silence and non-pitched speech (mm.3-5: closed mouth (hmm) to open mouth (la = A (in a pun on language’s meaning))), tracing of a colourfully meaningful pitch set (mm.5-7: the ubiquitous combination of minor-2nd and minor-3rd, this time as \([F,G\#,A]=[0,3,4]\)), combining plural pitches in harmony (mm.7+), and ending the line with the distinctive timbral colour of falsetto bass, at the top of the harmonic collection (mm.10-13). This phrase is akin to the artist gradually applying paint to a canvas though marked by the suspension of time suggested by the important presence of punctuation, so sparely used in the poem.

Following from the first line, my setting of the poem’s first half conveys a quality of uncertainty, which suits the poem’s underlying suggestion of the transitory quality of paint and its ultimate arrival at ossification. In its uncertainty, it prefaces the driving, machinic quality of the second half, like a period of gestation in a commentary on the process of creating an artwork. It is also a response to the poem’s concentrated and multifaceted imagery, which the reader must carefully negotiate in forming an understanding of the poet’s words, and therefore a commentary on the act of reading. Despite the direct statement of and cutting between each of these images, the music’s generally soft dynamic profile is coloured by the poetic pun involved in ‘Léger’, which in French also means ‘light’, and in the context of line 2, lightness expanding.

As stated above, my approach in Construction was to compose a musical analogy for each poetic idea, with the difference of each being gradually somewhat effaced until the end product presented a suitable analysis of the poem's overall meaning through music. In this first half, a thematic fragment is stated in m.14 and m.33, with gradually widening intervals from m2 to M3 (in mm.14-16) symbolising the expanding and rising Léger/light. Rhythmically, the music stems from simple speech rhythms, deriving from the lulling repetitions of the opening four-syllable ‘de la couleur’, matched in ‘voici Léger’, ‘et qui durcit’, ‘la nature morte’, ‘la croûte terrestre’ (though slightly lengthened in the latter two with the unaccented ‘e’ at the end of ‘morte’, ‘croûte’ and ‘terrestre’). ‘Durcit’ and ‘fixe’ are combined into a rising
process, focusing on the former which builds up to the first half’s loudest and most harmonically tense moment at m.22-23. ‘Fixe’ is merely a quick release from this state in m.23. ‘La nature morte’ and ‘la croûte terrestre’ are harmonised in dark tertian minor-tinged colour and in an earthier low-register. ‘Le liquide’ and ‘le brumeux’ contrast this earthiness with relative lightness, and are both rhythmically supple (relating to their imagery as well as their rhythmic distinction as three-syllable lines to the four-syllable trend, making them somewhat less substantial within the poem, suiting the non-solid images). The restated theme at m.33 is then dismantled chromatically and sequentially in the manner of ‘géométrie’ and ‘nuageuse’ in mm.34-37, contrasting the harder edit following ‘fixe’ with a settling into ‘ossification’. The retracting of musical material from m.37 is organised through a descent into the voice’s lowest registers, then through croaking, reverting to the pitchless sound of the work’s beginning. Furthermore, the eight-syllables in line 11 are broken into two four-syllable lots, the second of which rhythmically dilates in the baritone and bass parts, mm.38-39. ‘Résorbe’ and ‘ossification’ are linked in sound through their common ‘o’ vowel and ‘s’ consonant, as the upper three voices join in to orchestrate the dissolve. The dragging out of material here matches the five-syllables of ‘ossification’, exceeding the previous four-syllable mould and along with the first punctuation mark, lingers at this cadential point.

The work’s first half treats harmony as moments when the colour of pitches converge to reveal glimpses of composite colours in the manner of combining paints. Harmonic sonorities, such as the minor-quality chords of ‘la nature morte’ and the cluster at ‘les brumeux’ realise these moments, though in other cases a more linear focus renders the harmony more unclear, as the paint struggles between its own markings and its relationships with other markings – matter and ideas in flux.

37 The choice of different musical ‘edits’ between the poem’s lines shapes the material of the first half, as part of the negotiation of multiple images/significations. Dissolves characterise the edits from mm. 12, 17, 35, while harder cuts characterise at mm.23 and 32. The lattermost of these, is an interesting play on ‘le brumeux’, the cloud, and its (im)materiality, which relates back to Cloud Sketch. The present ‘cloud’ is formed through harmonic contraction into a cluster, albeit not a completely chromatic one (in the same way as the opening clusters of Cloud Sketch are not entirely chromatic), and thus formed as a discrete object, is cut off in the artificial/material manner of a hard edit. It is in fact the first half’s hardest musical cut, sealing the cloud’s status as a solid object in its own right.
From off to on, suddenly the machine is activated. ‘Locomotion’ begins afresh with unexpected rhythmic precision and vigour, powerfully characterised by hard-edged harmony, and focused dynamic control across the ensemble. The harmonic combination of adjacent tones in both closed and open voicings (major-2\textsuperscript{nd}s and major-7\textsuperscript{th}s) is strengthened by a supporting tritone interval in between the open intervals. This tritone pillar musically symbolises dissonance and symmetry (dividing the octave in half), which is an apt metaphor for ‘the machine’ (especially in the context of the recent Futurist’s celebration of technology, along with notions of speed, violence and war, as eclipsing human nature\textsuperscript{38}).

The welding together of seconds and tritones forms a referential harmonic sonority that typifies the work’s second half. Embedded in the chords at mm.46 and 47 are the [0,6,11] voicings of [B-F-Bb] and [Ab-D-G], which reduce down to the [0,5,6] set. The tritone, in musical set theory, is the widest interval class [=6], followed by the perfect fourth/fifth [=5]. The wide interval-class basis of [0,5,6] is gradually fleshed out in the male voices, at m.57 in bass and baritone (with the tritone/perfect-5\textsuperscript{th}), and more extensively in mm.65-69 (starting with [0,5,10] and jittering around neighbouring possibilities, such as [0,6,11]), until characterising the animated spirit in mm.76-78.

By contrast the female voices remain locked through adjacent pitches, as heard in push-pull locomotive alternation of repeated five-semiquaver patterns from m.48. The locomotive’s potential energy is typified by the tense pitch configuration of the cluster, influencing the entire ensemble’s convergence from m.52, which gives rise to swarming musical trails from mm.56+. With their adjacent patterns, the females

\textsuperscript{38} Filippo Tommaso Marinetti’s (1876-1944) Futurist Manifesto (1908) proclaims “the transcendence of speed”, where, for example, “an automobile at full speed is more beautiful than the Victory of Samothrace”, such that speed and technology revolutionise the idea of beauty in art. (Quoted in http://en.wikipedia.org/wiki/Filippo_Tommaso_Marinetti, accessed 25\textsuperscript{th} August, 2008). A Futurist artist I am particularly drawn to is Giacomo Balla (1871-1958) whose paintings celebrate technology and the machine. Balla notably explored the problem of visually representing ‘speed’ through superimposing geometric shapes (angular or curved) and repeating them in sequences to depict motion piercing through space. An example is the painting Speed of the Car (1913) (prefigured in construction by Dynamic Penetrations of a Car (1913) and followed by Automobile in Corsa (1913-14)), where Balla experiments with perspectival force (powerfully represented by excessively repeated lines) aimed at the observer, and repeated rectangular, triangular and circular forms. The motor car is both present, through the canvas’ busy markings, and absent (there is no car literally depicted), resulting from its velocity through the space, (its ‘abstract speed and sound’ to quote another of Balla’s work’s titles from the same era), a continuous moment with all its inflections thrust towards the eye of the beholder in the speed of a viewed instant.
thicken the sound of this swarming, though as we progress towards the spirit’s coming to life, the interval of the second opens out notably to a tritone (as at mm.63, 66, 73), and to become part of the wide configuration offered by the male voices, as in the section’s ultimate chord on ‘soudain’ in m.74. This chord is built symmetrically, stacking tritone, perfect-fourth, perfect-4th, tritone above the bass’ G#, its two halves mirrored at the tenor’s G, therefore utilising the five voices to construct dissonant-symmetry as a metaphor for the man-made machine. The importance of the number five will be examined in due course.

The music’s release in m.75 from the preceding mechanical precision, speed, and power accords with the human (in contrast to the machine) aspect of the immaterial spirit coming to life. But the return to semiquaver precision with ‘prodigieusement’ at m.83 recalls the machinic mode, and suggests the prodigious growth of modernity’s machines exceeding the insubstantial human spirit with its material produce. This is once again confirmed at m.93 with the start of ‘la machine’, following from the emergence of ‘la peinture’ (musically building on the floating and rising material of ‘l’esprit’), and relating back to the five-semiquaver loop of ‘locomotion’.

The musical and symbolic importance of this number five within the work requires some examination. A rhythmic pattern of five values conveys asymmetry, though when repeated acquires a new regularity, therefore offering dissonant-symmetry on the rhythmic level. Returning to the start of the work, we notice that the opening spoken contour derives from a 5/4 scheme, where the final value, a rest, is prolonged by pause. From m.5, as pitched material infuses this contour, the material cycles asymmetrically around the five voices. The asymmetry results in four values (the epitome of rhythmic regularity when on their own) cycling around five voices, with the crotchet-rest (originally a point of space/relief) now strategically operating this tauter and irregular space. This rhythmic motif of four values followed by a rest/space shapes the aforementioned four-syllable blocks of text, characterising the hesitant or lingering quality of the opening, in the paint’s state of becoming.

In the work’s second half, the surplus space of this fifth value is rationalised with ‘locomotion’, forged into a repeating five-semiquaver pattern. This forging is dramatised within the one word, where the drawn-out pitches at the tail end of the
original ‘locomotion’ in mm.46-47 are discarded through the ensuing blocks of the word’s repetition from mm.48+. This tendency towards geometrical reduction, and in a logic of simultanism, results in the jittering elisions in the male voices from mm.65+, which explore the influence of ‘everything swarming’ on the machine.

‘Prodigieusement’ is a more prodigious example of rhythmic simultanism, albeit as a sudden and focused ‘instant’, with loops of seven-, ten-, six-, eight- and nine-semiquavers in the (high→low) five voices. Such simultanism, along with the general alternations in attack and intensities from mm.46-93 (contrasting impulses/blocks arranged in time), musically characterises the attempt to resolve the paradox of ‘la machine’ and ‘l’esprit’ within the context of construction, artistic or metaphorically otherwise (like ‘man-made machine’), and the poetic ambiguities and restlessness of ‘tout grouille’ and ‘prodigieusement’.

The return with ‘la machine’ and ‘la roue’ to the five-semiquavers loops (mm.93+), marks a point of rhythmic resolve onto asymmetrically regularity (with the locomotive wheel spinning forth). The final six lines of the poem juxtapose alternating images of the mechanical and the human, which in my original attempt to present a musical analogy for each line of the poem, followed a continuing course of musical oppositions. However upon reevaluating this approach in the context of the poem’s meaning (by these last six lines the spirit and painting have already come to life, therefore these final lines express the simultanism of a viewed instant) and in the context of the work’s directional passage of musical time (to relate in general to the portrait’s becoming), I decided to maintain the energy of the work’s second half, focusing on the lines relating to the machine above those concerning the human.

Having settled on the five-semiquavers loops of ‘la machine’, and given the song’s ultimate focus on the machine, the symbolic value of ‘five’ is now relevant. The number five is significant from a humanist perspective, with regard to our five senses of perception, the body’s five extensions from its torso (arms-legs-neck/head), and the five digits at the ends of arms/legs. Therefore, while the music only briefly touches on

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39 In its all-encompassing nature, ‘everything’ is definitely ambiguous, especially in the context of Cubism’s mission to juxtapose multiple viewpoints. ‘Prodigieusement’ could refer back generally to the openness of ‘tout grouille’, or more specifically to ‘l’esprit’, or more specifically yet, to its process of clothing itself (which has its own ambiguity – is its clothing itself part of revealing itself, or concealing itself?)
‘l’âme humaine’ and ‘la vie’ (mm.101-07, for no longer than seven measures out of the 32 from mm.93-125), its presence continues in the dissonant-symmetrical landscape continues. The trace of the human is after all embedded within the machine, or the constructed object, as in the case of early modernist artistic avant-gardes, who in their celebration of abstraction and industrialisation crafted artworks by their own hands and therefore continue to comment on the human condition through human activity (expression). Particularly in Construction, the human presence cannot be denied with its five unaccompanied singers using only the most human of instruments, the voice. This being noted, the decision to minimise on the musical depiction of the human relates back to the title’s ‘construction’ and the fundamental implications of this in contemporaneous art, and in the context of human representation (as in a portrait), towards greater abstraction and a greater focus on formal and material aspects.

In a manner of machines and construction, the return to the work’s basic level of speech from mm.108+ continues with the song’s exploration of the ‘sound’ of the text as music (as likewise the Futurists celebrated noise as beautiful/poetic). In fact, the resumption of sound is spurred through conflating the text-sounds of ‘l’âme’ and ‘la ma____’, deconstructing the human soul (after the statement of ‘la vie’ (m.106)), and using the fragmented ‘la’ once again as the pivot (as at the work’s beginning) between pitch and speech. The spoken rhythms in mm.108-21 are structured around the sounds of ‘shh’ and ‘ss’ deriving from the French ‘machine’ and ‘locomotion’. This includes a five-semiquaver loop of ‘la machine’, its canonic imitation at m.110, and its counterpointing with the 4/4 loop of ‘locomotion’ in the female voices from m.112. These words begin to dissolve as the tenor enters in m.114 with ‘shh’, effacing the lengths of the loops until m.117 where all parts proceed in uniform crotchets.

40 ‘La’ is also significant in mm.33-35, in presenting one of the poem’s most important images ‘la géométrie nuageuse’ (important in its concentration of the mechanical precision of ‘géométrie’ with that which is amorphously apparent, as discussed above relating to clouds). The lengthening of the ‘la’ syllable and the descending canonic imitations entering with ‘la’, plant the seed for the first half’s ultimate dissolve into non-pitched croaks.

41 The rhythmic process can be summed up as follows. The tenor’s three-quaver loop from m.114 transforms the baritone’s ‘la machine’ via augmentation into a six-semiquaver loop on ‘ma-chine’, to lock in with the tenor, while at the same time the alto’s four-crotchet ‘locomotion, locomotion’ loop is reduced to a three-quaver ‘locomotion’ with its ‘ss’ accent counterpointing the placement of the tenor’s and baritone’s ‘shh’ accent. (Meanwhile the bass persists with five-semiquaver loops). Just as the soprano locks in with the mezzo on the third crotchet-beat of m.115, the tenors and bass shift from three-quaver loops to simple two-crotchet loop, in counter-rhythm to the female’s threes.
with dynamic envelopes swelling alternately on the ‘ss’ and ‘shh’ sounds. This rhythmically streamlined and rationalised moment is interrupted by the rhythmic return of ‘locomotion’ at m.119, the interval of the tritone in the female voices, and a buildup back into ‘la machine’.

‘Une culasse de 75’, the poem’s penultimate line, requires some historical context to understand. Cendrars and Léger both fought in WWI, with Cendrars sustaining an injury resulting in the amputation of his right arm above the elbow. Léger’s experience is summarised in his own words:

During those four war years I was abruptly thrust into a reality which was both blinding and new…. I was dazzled by the breech of a 75-millimetre gun which was standing uncovered in the sunshine: the magic of light on white metal. I discovered the meaning of machines through artillery and through the engines of war. The breech-block of a 75mm cannon lying out in the sun did more for my development as a painter than have all the museums in the world. There I was really able to grasp the object.

The cannon interrupts the irregularly pulsating semiquavers with its weightier quavers, voiced in the male’s dark lower register in m.126. ‘De soixante quinze’ in the females recalls the opening’s four-syllable quaver rhythm, and at m.130 casts back briefly to the harmony of ‘la nature morte’, forging the correspondence between the cannon/war and still-life/death. Casting aside the lengthening rhythmic impulse that characterised the opening, and resurfaces in mm.131-32, the gun energetically sprays a series of semiquavers in m.133, and suddenly announces the poem’s surprising (through its directness) twist - ‘mon portrait’, an ultimate affirmation of human/artistic life/form in the face of this violence. The final cadence resolves on a chord based around A, linking back with the work’s opening pitch material, and rising in register in the soprano voice to meet the heights of ‘énorme qui bouge’ (m.92) at which point the spirit comes to life.

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42 Selected Writings of Blaise Cendrars, p. 7.
Yet this violence cannot be so easily forgotten. Both Cendrars and Léger experienced the melding of man and machine in war and were to draw on this experience creatively. This fascination endured Léger’s lifetime as comments on his painting ‘The Builders’ (1950) indicate: ‘In The Builders, I tried to achieve the most violent contrasts by opposing minutely realistic human figures with clouds and metallic structures’."\(^{45}\). As a critic writing for a 1953 exhibition at The Art Institute of Chicago added,

> It was inevitable that he should be attracted by the beauty of unfinished steel structured and consistent that he should contrast these open geometric shapes with the same solid, anthropomorphic clouds which distinguish many of his early paintings. In addition to contrasting human and geometric forms, a problem Léger has always enjoyed, he is also concerned here with implications of growth and suggestions of limitless space."\(^{46}\).

These concerns of Léger’s, and Cendrars’ also, are an example of relationships between aesthetic thoughts across various art forms and ones that can be seen to align with some of my own concerns, in portraying the human within abstract. A logical growth from this thought towards a literally limitless space brings us to Crush.

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\(^{46}\) Ibid. p. 29.
Crush

_Crush_ was composed from December 2007 to April 2008 at the request of the pianist Zubin Kanga for a solo work to perform in a concert in York, England. Aware of Zubin’s interest in Modernist music and his expanding Modernist repertoire (most notably in a significant foray into the works of Michael Finnissy as part of his Masters research at the Royal Academy of Music, as well as works by Messiaen, Xenakis, Elliott Carter, George Benjamin, Michael Smetanin, and many others), I was encouraged by his open attitude and technical prowess to conceive of a truly demanding work requiring a very high level of virtuosity.

Through the piano’s range, and the pianist’s use of both hands, the piano is one of the most apt ‘noise generators’ among acoustic instruments with its ability to craft dense streams of sound and present multiple materials contrapuntally. My pre-compositional ideas for _Crush_ stemmed both from my interest in Noise/Merzbow, as shapes of sound in continual flux, as well as a number of virtuosic and complex twentieth-century solo piano works. Most notably these include works by Xenakis such as _Herma_ (1960-61), _Evryali_ (1973), _Mists_ (1980) (in particular _Mists_ with its more continuous linear threads, as opposed to the higher degree of pointillism in _Herma_), and by Finnissy including the _Verdi Transcriptions_ (Books One and Two, 1972/88, rev. 1995) and _English Country Tunes_ (1977). Finnissy’s ‘transcription’ piano works are fascinating reappraisals of existing musical literature (in the case of the _Verdi Transcriptions_, linked with song and lyricism) within the context of his own compositional aesthetic (which has been considered to have links with New Complexity) and his _English Country Tunes_ similarly explore the concurrence of contrasting tendencies. Ian Pace notes, regarding the latter:

The title…suggests pastoralism and ‘nice tunes’, yet it is actually a pun on the first syllable of the second word (one could write it _English Cunt, Re: Tunes_), and is part an expression of Finnissy’s anger at the taboos and hypocrisy concerning sex and sexuality in England. The piece, which is probably Finnissy’s most famous, presents arching extremes, stalactite-like contours at both ends of the piano that threaten to dwarf the individual, and a continual feeling
of unease in a situation that could (and often does) explode at any moment… [M]any passages are deeply sensual and erotic, marveling in the wonders of sexual desire.\textsuperscript{47}

Noteworthy examples from \textit{English Country Tunes} from a point of view of energy include the visceral central material in the third movement \textit{I'll give my love a garland} or the relentless violence of the work’s final movement \textit{Come beat the drums and sound the fifes}, which justifies the work, as Finnissy puts it “most simply, [as] a totentanz”\textsuperscript{48}. Upon investigating Finnissy’s piano music, I was struck at the severity in contrast between extremes of energetic virtuosity, as exceeding virtually all prior examples of technical difficulty in the piano music canon, and the haunting, distant, and at times tender musical aspects external to this vast force.

In \textit{Crush} therefore, I took influence from Noise’s attitude to sound and the fetishising of difficulty in High-Modernist and Complexist music. However, in my personal manner of entertaining paradoxes and resolving opposing strands, I was seized by the idea of including a structurally important melodic section, and furthermore, to have this section based on the idea of ‘love’, as a mutual love serenade between the two hands. This idea of counterpointing two opposite hands on the one keyboard fuels much of the work’s logic, and linking the opposing ‘complexity’ and ‘love’ tendencies within an overarching contrapuntal context. As a solo piano work, it also casts its eye back to the Romantics’ interest in musical passion and pianistic virtuosity (for example Liszt’s \textit{Liebesträume}, Schumann’s \textit{Romanzen}, or the devotional nature of that famed piano-student-piece, Beethoven’s \textit{Für Elise}).

The title \textit{Crush} refers to two major aspects of the word’s definition – firstly, an active force that destroys or deforms, or else overwhelms/oppresses, and secondly, an intense though short-lived romantic infatuation – which unite the music’s metaphorical ‘complexity’ and ‘love’ components. This unlikely union can be understood structurally as love ‘grounding’ the otherwise unwieldy musical intentions, or else philosophically as a reinstatement of subjectivity within abstract (out of Modernist) aesthetic thinking. Love is arguably the most ‘human’ and


\textsuperscript{48}Michael Finnissy’s program notes to the United Music Publisher’s score for \textit{English Country Tunes}, quoted from the UMP website: http://www.ump.co.uk/programme\%20notes/mf-english.htm (accessed 22 August, 2008).
objectively unquantifiable of all things, yet it is a consistent theme across the creative arts. In Crush the sections containing the love serenades are the work’s most easily explained from an analytical perspective which, in their communicating of love, raise questions regarding the idea of defining, or naming, a phenomenon. In broader musical terms, once something is considered a ‘love song’, what relationship does this have to the original concept of ‘love’? Love arguably becomes everything external to that song, as love, by metaphysical definition (and certainly in a spiritual sense), knows no bounds. So given this, how can we communicate love, or even understand love in ourselves?

‘Love’ in Crush (by no means offering any conclusions on the matter!), is dealt with as a powerful emotional drive, equivalent to both ‘passion’ and ‘desire’. Passion itself is a charged term which connotes, among its fonder optimistic qualities, anger, violence and suffering. Desire is an evermore loaded term, as a longing for something, in a continual state of becoming. Or more correctly, according to Jacques Lacan, desire is a state of inherent lacking in humans defined by his concept of the objet petit a (translating to some degree as the object of cause of desire, that ‘other’ object that typifies desire) which demonstrates the impossible gap between biological and psychological (subjective) existence. The implications of this impossibility between the physical and the subjective in musical terms confirms my interest in exploring the space between the material and immaterial both thematically (immaterially, with concepts such as clouds, ocean, dream and love) and compositionally (through the materials of music).

Given these unending philosophical complexities, I endeavoured to present a clear musical structure in Crush that alternates the opposing musical modes associated with ‘complexity’ and ‘love’. The result is a five-section structure: in dualistic terms, A-B-A-B-A, where B contains the love serenades, and A contains all else, typified by intense and violent material. As the scope of this exegesis does not allow for a similar detailed analysis of Crush to the above reading of Strung Metal Lines, I will nonetheless confirm that the work is very strongly based on a simple pitch cell, [0,1,4,5], which generates a very large portion of the work’s pitch material and

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passage work. I think of this cell as the work’s ‘obsession pattern’ that insistently permeates the music’s design, repeating endlessly. It contains within itself a repetition of the semitone interval, transposed up/down a major-3rd which, in the manner of *Strung Metal Lines*’ [0,1,4], facilitates both chromatic adjacency and open intervals.

The beginning positions the two hands at the opposite ends of the keyboards, so far removed, yet interfering with each other’s different sonic characteristic – an explosive flurry of pitches in the right-hand, increasingly full of crushed-notes (problematising linear density through introducing a vertical component), and crushing low register cluster-like chord in the left-hand (where the crushed/grace-notes gradually unbind verticality). From mm.5-8, this mutual interference is to some degree fused whereby each fills in each other’s rhythmic gaps. The next logical step is towards convergence of the two attractors, which occurs in mm.11-15. In closer proximity, the two hands tip-toe around each other (mm.16-20), noting their similarities, and further along their mutual contiguity in a playful glissando exchange (mm.26-27). This exchange results in a manically ornamented duet (mm.28-31 and mm.36-40), interrupted by surging pianistic noise, and concluding with the two hands mirroring their openings states (of linear versus vertical). The final glissando is symbolically a summation of much of the activity, spanning most of the keyboard’s range, and basking unabashedly in the glory of its resonance, we are able to breathe and reflect on its passing. This manner of summation and disappearance within a musical gap bears greater significance as the work progresses.

Meanwhile, within the haze of resonance, an unexpectedly restrained phrase emerges, a melodic ghost somewhat hesitant to reveal itself. Mm.44-54 contain the first spacious ‘love serenade’, presenting one theme in each hand, of uneven lengths, which loop unevenly within themselves, are joined/coloured by other lines, and interweave through invertible counterpoint. The RH-theme in mm.44-45 contains eleven pitches, and the first D of the countermelody at m.46 completes the full chromatic set. This countermelody joins the RH-theme’s second presentation and is based on the outline of [0,1,4,5], chromatically filling its perfect fourth [Bb-D#]. Fixed registral voicing within a restricted span (just over two-octaves: [Bb5-B7]) characterises this combination in the right-hand. By contrast, the LH-theme spans a wider range (over three-octaves: [B1-C#4]) with a more searching disposition, filling
in its space with scalar runs. At m.48, the two melodies swap between the hands in
textural inversion, while the hands continue to exhibit their established characteristics – the right-hand generalises the scalar smudges into a more limited register, while the left-hand’s vertical summation of its new melody spans a considerably wide range. This vertical summation, in the mode of a serenade, hints at softly strummed guitar chords, or else broken chords on a harp. Both hands condense their melodies into shorter spans of time, with less hesitation than before, though through variation from mm.50-54, these gradually come apart by the section’s end, returning to the opening’s extremes of register.

In brief summary, the second A-section dramatises the hands’ separation and distance (mm.55-61), which become aligned, or aware of each other’s space (mm.62-65), from which point a hyper-dialogue of accelerating convergence (mm.65-73) bring the hands to a point of union at which they test a more tender musical rendition, of melody and accompaniment (both based on the same [0,1,4,5] material, and a response to the ‘tip-toeing’ at mm.16-17). The music at/surrounding ‘Deathly still, strange’ (m.85), extends the notion of the musical gap that threatened to surface at the end of the first section as the piano’s resonance subsided. The hands’ unison hesitations (a variation on the material at m.62, that moment of recognition at which the hands conspired to converge) shade a feint halo that surrounds this gap, a distant narrow band of chromatic colour that somehow understands this lacuna and can gently negate it, or else function within it. Philosophically ambiguous (I am aware of the danger of arbitrarily imposing a successive cat-and-mouse narrative on a work that was never intended to be so representational, chronological or complete), this gloss on the section’s ‘end’ musically prepares the work’s second and more tender and fragile love serenade.

This second serenade is like two lovers basking in a lengthening and sultry light, or else a more wistful and (harmonically) bittersweet apparition that gradually dissolves, in the context of its ‘deathly still’ surroundings (returning at m.103). The melodic ghost slowly stretches itself apart, until it becomes a solemn, floating open space, where the hands make free music together, the keyboard’s entire range at its disposal, and cascading colours filling its frame.
The languorous ‘deathly still, strange’ resumes at m.111 with the hands drawn into the piano’s central register. Like a slowly awakening heart, a expanding musical sequence looping previous material gives life once again to heightening desire (mm.111-29). These shapes, gathering force, function to fill the ethereal space that surrounded the second love serenade, imposing a directional assemblage of rigid notation and hardening dynamism.

In a twist of logic, true crushing power is unleashed onto the piano from m.130, and we depart from the specific minutiae of notation in favour of broad brushstrokes of sound. This is at the sake of some aspects of the work’s hitherto crafting, and the optimism of detail in forging something ideal (illustrating aspects of ‘love’), especially in the degree of indeterminacy in the cluster passages (as at m.131), and the generalised glissandos from mm.153+. Does the music transcend the specified pitch/notational realm to attain a level closer to the work’s primary conception, or does the work’s idealism become undone as it resorts to a more unrefined, primitive and even trivial language? While the twofold nature of the title Crush contains the possibility for both readings, the work’s final upward fling (m.167) seems to confirm the lattermost of these – the trivial – as an uncharacteristically ‘light’ glissando and crushed-note gesture extinguishes the work’s mass of (at that stage (mm.162+), however, dying) energy. As a throwaway gesture, it suggests the, by definition, fleeting nature of a romantic crush and the possible insubstantiality of feelings (it is after all not a relationship) as the work’s last word to follow all of crush’s fleshed out weightier definitions (force, pressure, violence, passion, love, desire).

In this context, it also presents a commentary on the ending of a piece of music, as a work’s ultimate statement. As ‘art music’, the composer presents something of aesthetic value, therefore as a meaningfully heightened sensory phenomenon, with more than likely some element of critical discourse involved that strives to communicate something new. At the same time, a (conventional) piece of music exists in a finite time, with beginning and end. So when observed zoomed-out to its perceptual limit, a piece of music is a fleeting moment of energy upwardly inclined (through construction, intention, meaning, aesthetics), as heard in Crush’s final upward fling. To what degree can the artist narrow in on the essence of a thing’s meaning, to sum something up, to possibly state a final word on weighty aesthetic
issues with centuries of tradition, or else timeless concepts and insurmountably immeasurable ideals? This broader commentary is relevant in the context of Crush as it is the piece where I’ve most notably taken on mannerisms from high-modernist art music, in dealing with abstractions close to the human heart.
8. Polychroma

The final work composed during my Masters candidature, *Polychroma*, was composed for the chronology arts ‘Quintessential’ concert. While exploring the concert’s ‘quintessential’ theme, I intended for it to sum up my technical resources and compositional concerns established during my Masters research. This had me consider, by way of *Construction*, the artist’s painting of a portrait, or else a self-portrait (mon portrait), and during the composition of *Polychroma*, ‘Portrait’ was the working title. Considering visual art as a metaphorical inspiration, I was interested to explore notions relating to portraiture and painting in general, starting with painting’s focus on colour. The instrumentation of *Polychroma* uses some of the widest range of colours available in the field of keyboard instruments that brings to mind a hybrid palette from across many centuries – harpsichord, accordion, piano, electric organ and synthesiser. Musically I wanted to combine a hybrid stylistic approach drawing on associations from many of my works as well as my vast musical influences.

To begin with colour, one must also consider shade through the presence and absence of light. From a painterly perspective, one way that this manifests is through the technique of chiaroscuro, the treatment of the opposites of light and shade, or furthermore of clarity and darkness. This idea, relating to my interest in resolving opposing strands, became a motivator of musical material and structural directions. Considering the paint itself, aside from colour and shade, we think of its material nature and its application onto a canvas, which gained an increasing structural focus as visual art moved away from conventionally representational goals. An impasto surface is one in which paint is thickly applied, delighting in the surface’s physical property and the perceptual effect on the viewer, in a heightening of painting’s artifice, or else a rendering of a real surface. Other painterly notions include smudging or blurring to distort a painting’s sense of clear outline, or brushstrokes, a visible sign of the painter’s hand. On a more rudimentary level, to arrive at a conception of outline, the artist must consider form, perhaps through rapidly sketching lines, in preparation of applying colour, or broad brushstrokes to test colours’ combinations.
To return to the form of painting I had in mind, a portrait, I drew an analogy to the portrait’s aim to represent a subject (traditionally a person) fleshed out to suggest more than merely the external features, and my own interest in presenting cells of material that when spun forth lead to a variety of musical characteristics. Regarding a (conventionally sized) painting one can see the entire artwork in an instant, and often perceive the painting’s subject (particularly in pre-Modernist art, for example a vase of flowers) in that same moment. The opening of Polychroma reflects this and the direct nature of this opening responds to the idea of portraiture as distinct from other types of painting, in that a particular person/object forms the subject matter. Despite this musically direct opening, my main focus in developing material was to present many colours, renditions and combinations of a continually changing cell, therefore leaving the subject in favour of a more active form of musical observation. The analogy to a portrait served then to ground my other more expansive ideas, and to offer a starting point.

To delve into the essence of the work, I will outline the structure before presenting a condensed reading through the musical material. Once again, as with Crush, I decided upon structuring the work in five sections (the quintessential mark of the human hand), though this time with each section presenting more clearly distinctive and contrasting material. The opening section (mm.1-78) begins by directly stating the work’s central chromatic \([0,1,2]\) cell followed immediately by a variation on its musical pattern. These two fragments alternate in a machine-like binary mode, presenting syncopations fixed within semiquaver motion. A further binary results at m.24 with the introduction of a contrasting melodic motif which itself is a spacious variation on the opening cell. The negotiations between the mechanically direct opening and the spacious melodic motif characterise the work’s beginning with a degree of hesitation. This hesitation informs the direct presentation of the original cell, as it becomes insistently stuck from around mm.65+, short-circuiting the musical flow in a staged mechanical failure.

By contrast, section two (mm.79-162) is characterised by impulsive action and continuously intense flow of ideas. Originally, we have the work’s most chaotic (/free) moment, a duet between harpsichord and piano in an analogy to sketching
(with dramatically different results to the sketching considered in *Cloud Sketch*) during which the harpsichord is isolated in a solo (mm.98-107). The culmination of energy from this solo results in cascading figuration (m.114), which is subsequently taken up by the whole ensemble in patterns of rising tension in turn dispelled by cascading moments, in a musical impasto. The climax of this section (mm.145+) offers a countervailing of spiraling arpeggios throughout the ensemble, which become drawn into the pitched black-hole of the expanding cluster formation at m.159.

Section three (mm.163-216) suddenly cuts off from this dense resolve and provides relief (texturally and otherwise) from the prior intensity, proceeding in a reflective mode, typified by an expressive accordion solo (mm.179-90) and a focus on the mellower sounds of the sustaining instruments (as at mm.191+). The tone however represents the ‘dark’ side of chiaroscuro. A brief synthesiser drone (on F#) section (mm.203-11), accompanied by a simple chromatically minded, high-register fragile piano line, suggests a false ending. Plummeting from its heights, the piano leads the transition back to a reprise of the opening.

The recapitulation of section four (mm.217-284) is notable, following flashbacks and developments of previous material, for continuing along the lines of the vertical accumulation hinted at towards the end of section one (in mm.52-53) to fill in the space of the open melodic motif. The progression towards harmonic growth/substantiation ultimately arrives at the section’s grand cadence (mm.277-84).

Following from this harmonic arrival, the fifth and final section (mm.285-368) resumes the synthesiser’s drone (now on C#) and states a series of harmonic progressions/cadences in a subdued ending recalling the reflective manner of the third section, though with a lighter quality of register and harmony – the ‘light’ side of chiaroscuro.

Considering now in more depth the work’s main musical material, the opening [0,1,2] cell was noted before. This open voicing, in major-7ths, of chromatically adjacent tones also outlines a minor-3rd when followed by its binary counterpart – the top line, as summarised in the accordion’s right-hand, of [E-G]. This G, the work’s fourth
pitch, continues chromatically from the opening cell, such that the [0,1,2,3] cell - [E,F,F#,G] - fills the minor-3rd outline. The ‘spacious motif’ in the piano at m.24 responds to the opening cell by revoicing the work’s first four pitches, and outlining at its top a falling C-major triad, stemming from the falling [G-E] minor-3rd. This spacious motif has therefore an open sense of consonance (C-major triadic outline, or an embedded stack of fifths: F-C-G) whose space is coloured by points of dissonance (F# and C#, confirming in combination with the above pitches the work’s opening minor-7ths). Filling the rhythmic space offered by this motif and its pause is a tension between three- and four-semiquaver groupings. This tension results from the aural ambiguity of the motif itself in the context of its subsequent pause: is it, as notated, a group of four semiquavers, or does its final C deserve a stress whereby the preceding three semiquavers form a group in themselves? The play between fours and threes relates directly back to the opening two-versus-three (quaver) rhythmic binary.

The growth of this moment witnesses a change in the bass’ F# down a minor-3rd to D# which, in the context of the work’s opening four pitches, adds another adjacent pitch to the bottom of the set. The piano’s right-hand transposes the motif, according to its inner perfect-5th logic, up a perfect-4th in m.43, and together with the D# bass-note result in an opening out of motif’s space. This tendency is confirmed by a new motif in the piano at m.44 which can be thought of as an open filling-in; that is, filling in the space between the piano’s hands, through an open voicing of four (three of which are minor) thirds: D#, F#, A, F, Ab (this contour is more clearly stated in m.167). Playing on the conflating of ‘open’ and ‘filled-in’, a variation of this rising thread in mm.46-47 narrows in from thirds to minor-2nds, openly revoicing the [0,1,2,3] cell based on D#. The C# in m.47 concludes the work’s most important bass progression, a falling F#-D#-C# pattern, with the final falling major-2nd symbolically overcoming the work’s predominant chromatic/minor-2nd disposition (with a minor-2nd at the end, the [0,1,4] set would be represented through D-D#-F#).

The impulsive section stems from the bass’ F#, with the harpsichord repeating the inverted opening [0,1,2] set, before drawing it apart with expanding shapes. (An influence behind this section’s focus on the harpsichord stems from Xenakis’ use of it, in the context of his intense musical language, in solo harpsichord works such as Khoai (1976) and Naama (1984)). Rhythmically this section is defined by contraction,
as if the music were in fast-forward mode, as with the piano’s double-speed entry of the work’s opening rhythmic groupings at m.110, and doubling the pitch content through dyads. The resonance (at mm.114-15, 121-22) that follows the tumbling cascades refers back to the registrally-locked openly-voiced thirds from m.44. When considered alongside the subsequent chromatic buildups, this section of expanding patterns can be analytically reduced down to a fleshing out of the logic of the opening cell – adjacent semitones (minor-2\textsuperscript{nd}s) that on a simpler level outline (and fill) an interval more open in nature (minor-3\textsuperscript{rd}). Ultimately then this section takes up (in mm.147-58) the narrower ‘open/filled-in’ motif from mm.46-47 (and its [0,1,2,3] voicing based on D#), whose inherent chromaticism inflates into the expanding filled-in cluster in the sustaining voices.

The accordion’s lugubrious melody from m.174, aurally relieving the hyperactivity of the prior section, is consistent with the work’s logic of chromatically filling in an interval space, therefore a variation on the work’s central colour-premise. Its top line, when considered as a two-part unfolding, is itself the [0,1,2] set and significantly fills in the gap between Eb-Db, the enharmonic equivalent to the work’s falling major-2\textsuperscript{nd} bass progression of D#-C#, where the minor-2\textsuperscript{nd} is overcome. The bass in this reflective section sums up the work’s bass progression – sketching its outline C#-D#-C#-F#-C# (mm.163-78), filling it in somewhat (mm.191-95), with the E in m.192 extending its funereal descent, and presenting it in cadence (in the accordion and organ, mm.196-98) to confirm a respite grounded on C#. Notably the lacking D (m.207) and F (m.209) in the context of the above filling in (mm.191-95) appear in the space presented by the slow-moving sustained synthesiser pitches. From this inward harmonic tension, the recapitulation bursts forth.

Characteristics of the stacked sonority in mm.200-03, at the end of the slow-section’s cadence, return in the recapitulation to forge the section’s harmonically-minded consolidation, and its logic of accumulation results in a staggering of all twelve chromatic pitches, as at mm.262-63. This chord features the favoured C#1 in the bass, F3-B4-E4 in the organ (which becomes so m.263 following two rising suspensions), and G4-Bb5-D5-F#5 in the accordion (again revealing itself in m.263 as part of a course of rising suspensions). Summing the accordion’s chord up by its outlining pitches, we have an aggregate of [C#, F, B, E, G, F#], which are the pitches from the
work’s opening binary patterns. The filling-in of the accordion’s interval with Bb and D, and the octaves on A, G#, C and Eb in the piano, harpsichord and synthesiser, completes the chromatic spectrum in composite harmonic colour.

This chord’s basis [C#-F-B-E-G-F#] is the recapitulation’s point of destination at the end of the grand cadence (mm.283-84), and features significantly in the work’s extended harmonic coda, which essentially reworks the chords from this cadence, underpinned by either the work’s persistent C#-drone (mm.285+), or else with the bass progression, as heard cadentially in mm.339-50, following the drone’s disappearance in m.330 (and in turn reinstating it at m.349 for the work’s conclusion). Considered now globally, Polychroma presents a path from the opening’s unison-octave texture of limited cell pitch-material, to a rich and colourful harmonic destination.

Our final point of discussion now considers the stylistic polysemy that defines the music of Polychroma and assimilates a number of my musical interests. Rather than along a course of pastiche, these elements are blended into the piece rather than used predominantly to refer to specific codes outside of it. For instance then, the work’s rhythmic opening is characteristic of the low-pitched and timbrally heavy grooves found in some aspects of heavy metal and in particular, through its syncopated nature, the Swedish band Meshuggah\textsuperscript{50}, whose songs are typified by complex rhythmic subdivisions of 32-, 64-, 128- or 256-semiquaver values\textsuperscript{51}. The ‘riff’ at m.15 substantiates the opening’s ‘metal’ allusion, and therefore relates to (though precedes in a preconscious mode through its more direct manner) Strung Metal Lines’ take on metal. The impulsive mode in the opening duet and solo material in section two

\textsuperscript{50} Meshuggah’s more recent albums Nothing (2002), Catch Thirty-Three (2005) and obZen (2008) include a stronger element of groove-metal, with a greater use of detuned guitar riffs, in comparison to the faster and sharper rhythmic quality of Chaosphere (1998) (which also results from less presence of low frequencies in the mastered recording) and the more percussive/punctuating use of guitar on Destroy, Erase, Improve (1995).

\textsuperscript{51} An example is the song Electric Red, the second track on obZen (2008), played at a speed of approximately crotchet=110. The song’s introduction presents a subdivision of 64-semiquavers in the following manner: 14+14+14+14+8. During the song’s first ‘verse’, the 14s are further broken down into 7+7, resulting in 7+7+7+7+7+7+7+7+8. From 1:10 to 1:27, in the first part of an instrumental interlude, a 128-semiquaver-long duration is broken up into 28+37+28+35 (with each subdivided into various arrays of 3-, 4-, 5-, or 6-semiquaver-lengthed punctuations, that interlock between drums and guitar). After this 128-semiquaver passage is repeated, the second verse from 1:45 to 2:20 subdivides 256-semiquavers into (31)x8 + 8, where the 31 is a pattern of 6+7+6+7+5, these values themselves subdivided by the drummer’s bass drum and snare accents. Such a rhythmic language is typical of each of Meshuggah’s tracks.
relates to the intensity available to a solo voice explored in *Strung Metal Lines* and *Crush* which in style stem back to my interest in free improvised music. Looping patterns of material draw parallels with those seen in, in their more rigid machinic manner, *Construction* and, in their freer more malleable nature, *Cloud Sketch*, *Waveforms* and *Crush*. The reflective material, in particular in section five with its C# drone, draws on the sustained sound worlds of my works for electronics - *Dream Space No. 2* and *Waveforms* – and in particular the dream-like point of respite in the former.

While looking back at these musical aspects, *Polychroma* also looks forward to longer musical forms, more diverse instrumental colours, and a broader assimilation of disparate elements. With it I close the book on one chapter of my musical journey, while opening another, and many others still, in a hopeful passage through creative thought.
9.

Conclusion

My Masters candidature has provided a period of time to consolidate my compositional voice and to look into and consider other viewpoints, musically and aesthetically. Upon reflection of my style, there has been an increasing trend towards the abstract and energetically vivid, with my music becoming more involved technically and conceptually. I believe that this trend will continue in my desires to test musical parameters and find new ways of conditioning the flow of sound.

Moving forward from my Masters research, I endeavour to carry out more personal investigations into the methods and techniques of spectral music that I have touched on here in a more figurative sense. In particular this will involve testing microtonality as a pitch resource for developing my interest in harmony and new sonorities as well as a more refined alignment between material and perception as unfolding in time. This refinement is towards greater sophistication in translating sound into notation.

Regarding my own music I look forward in particular to increasing my electronic music output as working with electronics puts the composer in a direct relationship with sound. A number of projects and collaborations have arisen and remained on hold during my candidature which have the capacity to lead to recordings, CD releases and avenues for live electronic performance. My goal to improve my home studio setup and learn new forms of audio software will be a priority in the coming months. This is also motivated by a current commission from Ars Musica Australis to compose a work for the Song Company for voices with electronics as well as a general inclination to extend my electroacoustic output, as inaugurated by Waveforms. To then combine such music within a broader multimedia platform, including various forms of visual art (and specifically video art) would be a way of learning from other aesthetic spheres’ practical approaches to similar concerns that I explore musically and a way of reaching a broader audience.
I hope soon to have the opportunity to write for full orchestra as well as to write a concerto for piano and orchestra (for which a number of sketches including a first movement exist, though this movement dating from early 2007 will require updating). The orchestra with its wide timbral palette is for me a logical medium in which to apply my discoveries from electronic music in structuring the transformations in sound across a broad canvas.

Additionally, a series of shorter, focused piano works (quasi ‘Preludes’), a charged work for string quartet exploring the medium’s contrapuntal tradition, and a continuation of the series of virtuosic solo works for specific performers, begun by *Strung Metal Lines* and *Crush*, are at the top of my instrumental priorities. Particularly with the latter, such pieces are a beneficial from a point of view of learning about the capabilities and strengths of particular instruments and testing them, as well as through connecting with likeminded performers who champion new music and who I will continue to be musical colleagues with.

An important development during my candidature was the establishing of ‘chronology arts’ with composer Andrew Batt-Rawden, a Sydney-based musical initiative dedicated to the presentation, promotion and nurturing of new music through producing concerts and recordings of 21st-century Australian music. chronology arts has provided the ability to test new ideas in a public context and to gain invaluable practical experience into how music works beyond the academy and one’s personal study room. It has undoubtedly had an impact on the outcomes of my current research (*Strung Metal Lines*, *Cloud Sketch* and *Polychroma* were recorded at chronology arts concerts, with plans for a July 2009 piano recital at the completion of Zubin Kanga’s RAM studies to stage the Australian premiere of *Crush*), and will continue to provide an outlet for my own and my compositional colleagues’ music that was not available during our undergraduate years. I am highly excited by this venture as it is the most viable way of presenting my music in the public domain and therefore to the utmost advantage to my growth as an active composer.

Following my Masters I plan to spend some time, in between chronology arts concerts, traveling in Europe and America to look further into the respective music scenes and academies/universities to see where I might be able to gain new
perspectives and opportunities. I have in mind to continue my research with a PhD; though before doing so would like to decide on the right setting and supervisor for such research, as well as to have a period away from the academic world (which I have now been involved with, continuously since 2000, for nine years) in which to truly come to an understanding of what it is that I would like do with music and what it is about sound that continues to intrigue and fascinate me.

Suffice to say, my musical journey will continue to be an active and open one, seeking new horizons towards my compositional growth and my developing aesthetic visions.


Finnissy, Michael. Program notes to the United Music Publisher’s score for *English Country Tunes*, quoted from the UMP website:

<http://www.ump.co.uk/programme%20notes/mf-english.htm>


