

TREMULOUS IMAGES:
A Portfolio of Original Compositions Based on and
Informed by Static Visual Art

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SUMMARY OF THESIS

Leading up to this thesis, my music became increasingly concerned with the representation of specific works of static visual art (painting, photography, sculpture), with my focus having moved from using the chosen artwork as inspiration to using features of the artwork to inform my compositional decisions. My use of Western classical compositional techniques by which to produce a musical work that closely represents the chosen visual artwork became dissatisfying, leading me to seek new methods.

The purpose of this thesis is to present these methods, often non-musical in nature, by which to write music that represents a specific static visual artwork. This is done with the intention of said musical works being ideally located in an art space environment (specifically an art gallery or museum), acting as the equivalent to a visual artwork or artefact. This thesis presents details of two installation projects in which I was involved as a contributor, producer, and curator, thus demonstrating the suitability of locating these works in an art space environment while also giving me practical experience of a field that I see my creativity moving towards.

By wishing to locate my music in the art space environment, as opposed to a concert environment, I bring the intentions and effects of time into greater consideration, assessing its nature from both a musical and spatial/environmental standpoint. Stemming from Jonathan D. Kramer's exploration of twentieth-century musical temporalities, in particular their identification of music in 'vertical time', I explore possibilities in determining a temporality most suited not only to music responding to static visual art but also to music that acts as an artwork in an art space environment.

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INTRODUCTION

This portfolio was written with three main research questions in mind:

1) in what ways can music be written by not only responding to static visual art¹ but also by using it to dictate the music's material and structure?

2) how can this music be written so that it exists in time in ways that are analogous to how static visual art exists in time?

3) how can this music be written so that it is at home in an art space environment (specifically an art gallery or museum)?

In the time leading up to this PhD project, my music was chiefly concerned with recreating the character of various pieces of static visual artwork. I achieved this by using traditional classical composition techniques, including transformation of harmony and variation of motivic cells. These techniques, and others, contributed to works that, to use Jonathan Kramer's term, had no goal-orientation,² though they undeniably possessed a sense of progression or evolution—the harmonic transformations served as the means by which to structure my work, while almost all other parameters in the work remained constant. It is notable that these classical techniques were originally developed to create goal-oriented music. Removing them from that context demonstrated my interest in the intersecting qualities of music and static visual art.

My motivation to begin this PhD project was in part due to a growing dissatisfaction with my methods for composing works based on static visual art, outlined above. I wished for my music to possess a stronger connection to its subject. My intention was to explore methods by which the artwork directly informs the material and structure of the music, as opposed to my earlier approach that was driven by a personal emotional response. Factors such as colour, shade, and spatial structure are used to inform equivalent facets of the works in this portfolio. By writing music in such a way, I engage with what Bulat

¹ Throughout this commentary, this phrase refers to painting, photography, and sculpture.

² Jonathan D. Kramer, 'New Temporalities in Music', in *Critical Inquiry* vol. 7 no. 3 (The University of Chicago Press, 1981) pp.539-556 (p.539)

Galeyev terms a “synaesthesia of the arts”,³ with this portfolio presenting music behaving in similar ways to static visual art— though the term ‘synaesthesia’ is commonly used to refer to colour-hearing, it also has a broader definition of one sense conflating with or being triggered by another,⁴ whether that be external senses (seeing, hearing, etc.) or internally generated senses (for example, well-being). In several of the works presented in this portfolio, I do engage with the idea of colour informing harmony, but this is the result of either logic or intuition as opposed to the synaesthetic response of colour-hearing.

Though capable of displaying more than one narrative, static visual art displays only, to use another of Kramer’s expressions, “a single present”.⁵ Music placed in “vertical time”⁶ replaces traditional classical goal-oriented notions of musical and temporal linearity (phrase structure, macro- and micro-level development of material, contrasting rates of motion) with a music of self-containment achieved through stasis (a deliberate non-development of material) and process (in the case of this portfolio, the use of the subject artwork to inform compositional decision making). Due to the strong connection between my music and static visual art, I find that Wim Mertens’s term of “frozen time” is more appropriate, as it better implies the stasis of the artworks in question.⁷

Vertical time is a subspecies of another of Kramer’s temporal identifications, “nondirected linearity”.⁸ Music of nondirected linearity does not necessarily seek to replace goal-orientation but instead subvert it by means of destabilising harmony, phrase structure, development of material, etc. – the music presented in this portfolio gravitates towards the more specific term of vertical time over nondirected linearity due to the works in question abandoning goal-orientation (with some exceptions). By extension, I suggest that frozen time is a subspecies of vertical time, as it more readily aligns with vertical time’s characteristic self-

³ Bulat M. Galeyev, ‘The New Laokoön: A Periodic System of the Arts’, in *Leonardo* vol.24 no. 4 (The MIT Press, 1991) pp.453-456 (p.455)

⁴ In fact, colour-hearing is one of 61 known variants of the condition, bringing up a number of conflicting assumptions about the condition. (Julia Simner, ‘Defining synaesthesia’ in *British Journal of Psychology* vol. 103 (Leicester: The British Psychological Society, 2012) pp.1-15 (p.1))

⁵ Kramer, p.549

⁶ Ibid.

⁷ Wim Mertens, *American Minimal Music: La Monte Young, Terry Riley, Steve Reich, Philip Glass*, translated by J. Hautekiet (London: Kalhn and Averill, 1983) p.91

⁸ Kramer, p.542

containment ahead of process. Though I see frozen time as a subspecies of vertical time, Chapter Three will discuss these temporalities as contextually equivalent and not from the standpoint of one resulting from the existence of the other.

The music I had written in the years before this PhD project already tended towards self-containment, but the music in this portfolio is a more conscious engagement with and exploration of this idea. Any narrative⁹ produced in the works presented in this portfolio is done so through non-musical means (process), with the exception of *The Storm Took Them All* and *Memories Breathe Through Desolate Ruins*, which are included for their engagement with other research questions.

By writing music that alludes to “a single present”, I intend to offer the listener a similar experience to that of my own when engaging with static visual art. By this, I mean that I wish to write music that allows the listener the space to think and engage on their own terms— time for rumination and reflection upon oneself, doing so through an exploration of the work’s soundworld— and I wish to do so by placing my work in the usual spatial environment of the static visual art upon which the musical work is based, with this portfolio concentrating on the museum and the art gallery (more on which later in this Introduction). This reaction is described by Sarah Davachi as automatism: “a feeling, an idea, a perception, etc., ... something that was not built into the aesthetic object, yet emerges unconsciously when one is engaged with the explicit elements of the work.”¹⁰ Davachi goes on to mention that this feeling, idea, or perception is often regarded by composers and artists as an unintended meaning. Jean-Jacques Nattiez discusses the idea of meaning in the context of art in “Music and Discourse”. Nattiez understands meaning as arising from the

⁹ Throughout this commentary, this term refers to the perception or implication of a succession of events depicted in a musical work, with such events not being chosen or apparent for their significance or noteworthiness. Regarding the works in this portfolio, narrative is derived from features and characteristics of the individual work’s visual source— this is approached in a variety of way, as will be discussed in Chapter Two.

¹⁰ Sarah C. Davachi, *Looking inward: La Monte Young, Arvo Pärt, and the spatiotemporal dwelling environment of minimalist music* <<http://divergencepress.net/articles/2016/10/18/looking-inward-la-monte-young-arvo-prt-and-the-spatiotemporal-dwelling-environment-of-minimalist-music>> [accessed 18 March 2019]

interaction of intent, interpretation and realisation, and response.¹¹ This thesis seeks to engage with the meaning imparted to the recipient more actively than the meaning generated by the creator (composer) or interpreter (performer).

In pursuit of music that acts outside of traditional classical temporalities, several works in this portfolio look towards duration ahead of pulse, or, to use the terminology of Gilles Deleuze, “smooth time” ahead of “striated time” (to be discussed further in Chapter Three).¹² My use of proportional notation provides a grid upon which to map the music— the idea of a grid connects with the spatial element of static visual art— with the grid becoming the consistent measurable element in place of rhythm and pulse. The use of proportional notation on a consistently spaced grid allows the music to flow as one entity without implication of a rhythmic relationship between tones— this rhythmic relationship being something I feel is more readily connected to geometric visual art seen in the paintings of Agnes Martin and Piet Mondrian, whose work I greatly admire but do not feel is appropriate as the subject for the music I wish to write both in terms of this portfolio and in general.

Though an almost identical sense of subverting pulse can be achieved through extremely intricate rhythmic subdivisions, in my view this is only necessary for music of greater surface energy than is regularly featured in the works presented in this portfolio— Brian Ferneyhough’s *Bone Alphabet* (1991-92) and Bryn Harrison’s *Surface Forms (repeating)* (2009) use complex rhythmic subdivisions that, in my opinion, shroud rhythmic relationships and, consequently, a sense of pulse. To me, extremely precise rhythmic notation is uncharacteristic of the sense of gentle flow present in many of the works in this portfolio. It is this gentle flow that I wish to be present rather than making precise measurements of spatial elements present in the subject artwork— I believe those ideas to be contradictory.

I generally find the traditional concert hall experience to be confining. There is limited autonomy in terms of both seating location (sound quality varies across the room) and the ability to enter or leave the space (not everyone attending will be doing so in anticipation of every work on the programme). I tend to find more

¹¹ Jean-Jacques Nattiez, *Music and Discourse: Toward a Semiology of Music*, translated by Carolyn Abbate (Princeton: Princeton University Press, 1990) pp.8-10

¹² Gilles Deleuze, ‘Boulez, Proust and Time: “Occupying without Counting”’ in *Angelaki: Journal of the Theoretical Humanities* vol. 3 no. 2 (Carfax, Centreville, 1998), pp.69-74 (p.71)

joy in visiting an art gallery or museum, where visitors are able to both spend as much time as they see fit in the presence of certain artworks (opening times notwithstanding) and to have as clear a vantage point as the other visitors.

Curators of galleries, museums, and other art spaces regularly include works of differing media in the same space at the same time. Due to the heavy influence of static visual art on my music and my preference for the art space over the concert hall, I wish for my music to be present alongside or in the same spaces that visual media traditionally occupies, acting as an artefact or as part of an exhibition (my investigation of musical temporalities seeking the temporality of static visual art is concerned with this idea)— I believe that sound can be present in the art space without the need for said space to adapt to the requirements of said sound. As part of this project, with a view to gaining first-hand experience of such scenarios, I became involved in two installations that go some way in investigating sound's relationship with the art space: "Ancient Mariner: Not An Opera" (a collaborative happening) and "Music as Artefact" (placing myself in a curatorial role for an installation containing live musicians and loudspeaker playback).

Regarding my desire for my music to act as an artefact, I often find that sound art and installation art that incorporates sound possesses a physical presence, positioning sounds in space in such a way as to create a dynamic atmosphere. Many sound artists refer to their work sculpturally, embracing the idea that the experience a listener has with their work will be affected by the path the listener takes through the space— one particularly influential work is Janet Cardiff's *Forty Part Motet* (2001), which seeks to take the listener away from their usual listening position in front of the stage to within the work as it continues, allowing them a more intimate experience amongst the accumulative power of the forty voices. This sculptural approach to sound means that different elements of the sound work/installation appear simultaneously in different areas of the space in which the work resides— it is the space that has been carved, as opposed to, say, marble. To me, it is this approach that connects music to physical artwork and artefacts. Though only one work in this portfolio, *The Substance of Air*, has truly been approached sculpturally in terms of its composition through the use of spatialisation, those art forms' preoccupation with space and stasis is influential throughout the works presented here, as well as

being the foundation for understanding how a musical work can be appropriately situated in the art space as an artefact on display.

Of course, art spaces exist outside the realms of galleries and museums, and I am happy for my music to be present in those locations too, but for this project I focus on galleries and museums specifically as it is those spaces that have inspired me most in terms of experiencing art.

CHAPTER ONE, Music as a Response to Static Visual Art

Before presenting my research on temporality and the methods I have devised and incorporated into my compositional practice, I feel it is necessary to provide insight into the connection between the works in this portfolio and the artworks to which they respond, as well as explaining the link each work has with the research questions. This is done with the intention of providing context and reference points for the research and analysis appearing in the following chapters.

Through seeing in close proximity the images of the chosen artworks that are the basis for the musical works in this portfolio, my preferences when viewing paintings and photographs become quite clear. Predominantly, I am attracted to visual art that possesses a haziness, a blurring of detail that, for me, transforms the image from displaying the subject and narrative of the image to displaying the atmosphere of the environment the subject and narrative are depicted within. I am also fond of visual art that presents its ideas with simplicity and delicacy—these are qualities in art that I find to be extremely effective and affecting, and are qualities that I wish my music to possess— however these qualities are not present in every artwork included as the subject for the works in this portfolio.

Using visual art that possesses the aforementioned qualities is ideal for the basis of musical works acting in vertical time. Visual artworks are naturally introspective, able only to relate to the parameters set up within themselves thus leaving them unable to perform a sudden shocking change— music acting in vertical time is equipped to mimic this sense of stasis, a subject that will be covered in greater detail in chapters Two and Three.

A significant number of composers since the Baroque and Renaissance periods, and particularly since the mid-Romantic period, have written musical works as a response to visual sources (nature) and visual artworks, with many using the medium as inspiration for the majority of their life's work. The 'Rosary' sonatas (c.1676) for violin and continuo by Heinrich Biber are cited as one of the first

musical works inspired by visual artworks,¹³ and two pieces from Franz Liszt's piano cycle *Années de Pèlerinages* [Years of Pilgrimage] (1837-49) translate features of painting and sculpture into musical equivalents.¹⁴ Of particular relevance to this portfolio are Morton Feldman's connection with Mark Rothko and Philip Guston,¹⁵ and Hugues Dufourt's array of orchestral works based on paintings and etchings from a range of eras of visual art.¹⁶ Other composers and sound artists taking direct influence from the visual arts include Peter V. Swendsen, whose research seeks to investigate methods by which visual art can inform electroacoustic composition,¹⁷ and Jez Riley French, whose work includes a series of 'scores for listening'— using photographs as a cue for listening experiences for the purpose of investigating the link between “photographic images ... and the compositional process”.¹⁸ In producing this thesis, I seek to add to this field with the inclination of situating my works in the same environment as the subject visual artworks.

This chapter does not present the works in this portfolio in chronological order. Instead, the works are presented in an order that best demonstrates a flow of their interaction with the research questions, as well as placing works side-by-side that possess a strong connection to one another (for instance, *A Slideshow of Sideways Horizons* and *Layer Drawing: the Sky Above the Sea* both use the same source material).

¹³ Each sonata is prefixed by an image of the mysteries of the rosary. (Peter Vergo, *The Music of Painting* (London: Phaidon Press Limited, 2010) p.89-90)

¹⁴ “Lo Spozalizio” [The Betrothal] is based on Raphael's painting *Betrothal of the Virgin* (1504) and “Il Pensieroso” [The Thinker] is based on Michelangelo's sculpture of the same name (c.1520-34). (Vergo, p.90)

¹⁵ Feldman's interest in these painters' works culminated in *Rothko Chapel* (1971) and *For Philip Guston* (1984). Feldman regularly chose painterly metaphors for his music in writings, lectures, and interviews, with Guston's style and work featuring prominently.

¹⁶ These large-scale works include *Saturne* (1979), based on an Albrecht Dürer etching, and *Lucifer* (2000), based on a painting of the same name by Jackson Pollock.

¹⁷ Peter V. Swendsen, *Research* <<http://swendsen.net/research.html>> [accessed 1 January 2020]

¹⁸ Jez Riley French, *scores for listening* <<http://jezrileyfrench.co.uk/scores-for-listening.php>> [accessed 19 January 2017]

The Substance of Air, for orchestra

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Shade and Darkness - the Evening of the Deluge by J.M.W. Turner

Light and Colour (Goethe's Theory) - the Morning After the Deluge - Moses

Writing the Book of Genesis by J.M.W. Turner

"Turner colour experiments" by Olafur Eliasson

One of the main driving forces behind my desire to embark on this PhD project was my appreciation of J.M.W. Turner's landscape paintings, notably the late-career oils and watercolours, and my ambition to write a large-scale work based on Turner's paintings. In January 2015 I visited an exhibition at Tate Britain, "Late Turner - Painting Set Free". At this exhibition, two paintings were of particular interest: *Shade and Darkness - the Evening of the Deluge* and *Light and Colour (Goethe's Theory) - the Morning After the Deluge - Moses Writing the Book of Genesis* (both 1843— fig. 1 and fig. 2 respectively). These paintings had been positioned side-by-side and presented in octagonal frames— their composition and presentation showcase effectively what it is that draws me in to Turner's work in general, and also display so much of what interested Turner.

The paintings in question, as is the case in so many of Turner's late works, possess the haziness and blurring of detail that I previously stated are attractive to me and are also key to Turner's preoccupation with the idea of rebirth¹⁹— Turner's late works regularly show an indistinct fusion of the classical elements (earth, wind, fire, and water), which often emanate from a single focal point in a spiral or vortex structure as if the scene has just been created and is yet to settle.²⁰ (The octagonal frames of the paintings in question serve to enhance the inherent movement of the vortex structure.) It is the vortex structure and the blurring of the boundaries between the elements that fascinates me, as opposed to an interpretation of the elements. However, what drew me to these paintings specifically is that they are conscious experiments in colour and tone, as stated in

¹⁹ Ortrud Westheider, 'Turner and the Four Classical Elements' in *Turner and the Elements*, ed. by Ortrud Westheider and Michael Philipp (Hamburg: Bucerius Kunst Forum Publications, 2011/12), pp.10-18 (p.16)

²⁰ Sam Smiles, 'Turner In and Out of Time' in *Late Turner: Painting Set Free*, ed. by David Blayney Brown, Amy Concannon, and Sam Smiles (Millbank: Tate Publishing, 2014), pp.13-23 (p.22)

their titles: “Shade and Darkness” and “Light and Colour”. These paintings are the result of Turner reading Johann Wolfgang von Goethe’s *Farbenlehre* [Theory of Colours] (1810) after it had been translated from German into English by Charles Eastlake, a good friend of Turner’s.²¹ Goethe presented colour on a wheel, not composed in the manner of a spectrum based on wavelength but composed of a spectrum of positive and negative values— red is associated with happiness, while blue-green is associated with anxiety. Inspired by Goethe’s theory, Turner exploits the negative properties of the spectrum for *The Evening of the Deluge*, with “rosy hope” being the concern of *The Morning After the Deluge*.²²



Fig. 1: J.M.W. Turner, *Shade and Darkness – the Evening of the Deluge*, 1843²³

²¹ Franny Moyle, *Turner: The Extraordinary Life & Momentous Times of J.M.W. Turner* (New York: Penguin Press, 2016), pp.410-411

²² Ibid.

²³ copyright: Tate, London, 2018



Fig. 2: J.M.W. Turner, *Light and Colour (Goethe's Theory) – the Morning After the Deluge – Moses Writing the Book of Genesis*, 1843²⁴

This direct connection with my practical research into methods of representing colour and tone via musical means could not be ignored. I saw the potential for a two-movement orchestral work in which the material for both movements is generated using the same methods but the differences the paintings possess in colour, tone, and structure make for contrasting soundworlds.

Turner's paintings are the subject of several past musical works, including George Benjamin's *At First Light* (1982) and Deborah Pritchard's *The Angel Standing in the Sun* (2016), though my approach in *The Substance of Air* provides a different perspective to those mentioned through its approach to colour, structure, and spatialisation of sound.

²⁴ copyright: Tate, London, 2018

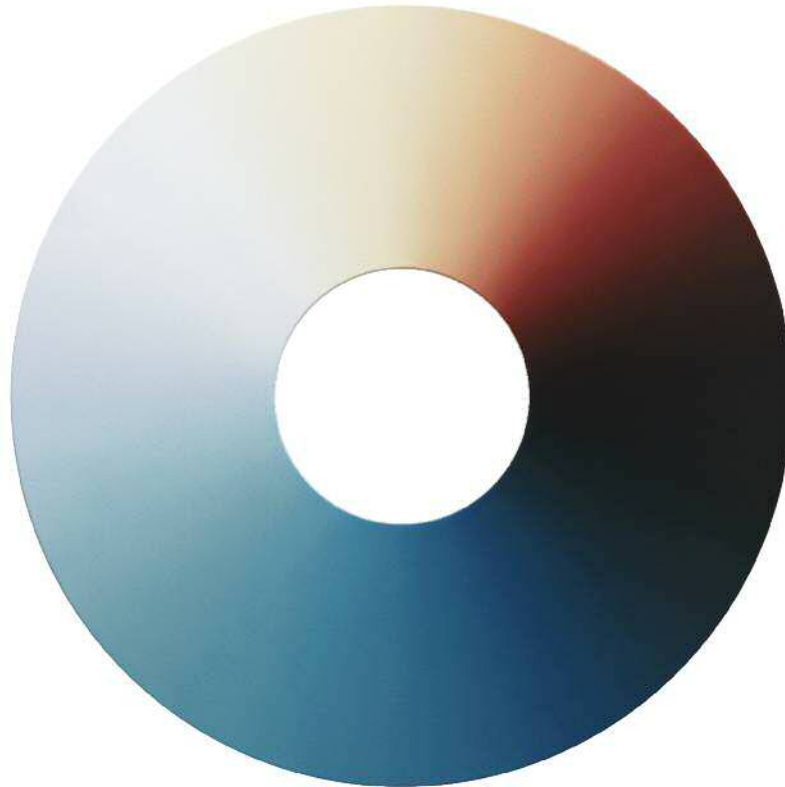


Fig. 3: Olafur Eliasson, *Colour experiment no. 61*, 2014²⁵

As part of the “Late Turner” exhibition, conceptual artist Olafur Eliasson presented a series of “Turner colour experiments” (fig. 3 shows an example). For these works, Eliasson analysed and isolated the pigments of individual Turner paintings (unfortunately neither of the paintings that are the basis of *The Substance of Air* were selected) and presented them as a spectrum on a circular canvas. To me, this perfectly encapsulates the appeal of Turner’s late works. Eliasson’s works appear to condense the haze permeating Turner’s paintings while maintaining their character in spite of disregarding their subject matter.

The structure of the colour experiments helped to confirm the basis and focus of *The Substance of Air*. In Eliasson’s words, “[t]he schematic arrays of colours on round canvases generate a feeling of endlessness and allow the viewer to take in the artwork in a decentralised, meandering way”.²⁶ The words “endless[ness]”

²⁵ photo: Jens Ziehe, copyright: Olafur Eliasson, 2014

²⁶ *Olafur Eliasson: Turner colour experiments* (London: Tate Britain, 2014)

<<http://www.tate.org.uk/whats-on/tate-britain/display/olafur-eliasson-turner-colour-experiments>> [accessed 13 November 2017]

and “decentralised” are particularly appropriate in terms of my aims for *The Substance of Air*, though I am keen to distance my work from “meandering” as I believe it implies a passive engagement from the audience. I suggest that the word in this context is connected more with ‘seeing’ than ‘looking’, much like a passive engagement with sound is ‘hearing’ as opposed to ‘listening’.

Eliasson’s decision to isolate colour from Turner’s paintings was influential. I also took the decision to isolate colour from subject, but I did not relocate said colour. Instead, I chose to use the structure of the individual paintings as a guide for the progression of each movement in my work and use the colour at the equivalent point in the paintings as the subject to be represented. However, I kept in mind the definite yet almost imperceptible changes in colour present in Eliasson’s works. A sense of almost imperceptible progression, dictated by non-musical means, positions *The Substance of Air* in vertical time, allowing it to act as similarly in time as a concert work can to a work of static visual art.

The vortex structure of the Turner paintings coupled with the circular canvases of Eliasson’s colour experiments lead me to position the orchestral members in a circular formation, with the conductor positioned centrally and audience members welcome to sit in the gaps amongst the orchestra, an adaptation of the orchestral set-up of Iannis Xenakis’s orchestral works *Terretektorh* (1966) and *Nomos Gamma* (1967-68) (further details to be found in Chapter Two). Through doing this, I sought to engage with the inherent movement and destabilisation of the vortex structures present in Turner’s paintings, as well as incorporating elements of sound art into the concert environment.

It is clear that this work is most appropriate for a concert scenario and so does not engage prominently with my research into music for the art space, with it instead focussing on methods by which aspects of static visual art can inform compositional decision-making. That is not to say that it could not be performed in an art space— I believe (should there be sufficient space) that it would be ideal for a concert in a gallery due to its subject matter and the obvious crossover interest. In fact, the orchestral formation required by *The Substance of Air* means that it could only be appropriately performed in a limited number of concert halls: those that possess a large enough flat floor to accommodate the 73 performers and an audience.

I also suggest that it could be altered into a work of sound art in a similar fashion to that of Janet Cardiff's *Forty Part Motet*. For Cardiff's work, the members of Salisbury Cathedral Choir were recorded as they sang their part of Thomas Tallis's *Spem in Alium* (1573) in isolation. Cardiff then placed forty loudspeakers, each playing one individual voice's part, in a circular or ovoid formation with each loudspeaker facing inwards towards a single focus point. Not only does this allow audience members to experience Tallis's otherwise powerful work as more intimate and fragile, with each vocal part being individually discernible, but also it allows them to engage with the artwork in the 'endless', 'decentralised' manner Eliasson intended for the reception of their colour experiments. *The Substance of Air* could take the idea of using one loudspeaker per instrument and position each loudspeaker where its equivalent performer would be seated during a live performance of the work. This would allow audience members the autonomy to experience the work from different positions within the loudspeaker formation, something I would be against when the work is performed in a concert setting with live performers due to interference with conductor and performer sight-lines.

A Slideshow of Sideways Horizons, for string quartet

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Amazon Express by Rolf Sachs

As part of initial research into abstract landscape photography I came across conceptual artist Rolf Sachs's album *Amazon Express* (2006-2007— an example is shown in fig. 4). The title for this album comes from the name of the converted trawler upon which Sachs travelled on a month-long voyage through the Mediterranean, the Atlantic, the Panama Canal, and along the Pacific coast. Sachs attached a camera to the bow of the boat and programmed the camera to capture an image every ten minutes for the entire duration of the voyage, resulting in around 18,000 photographs. The camera was positioned in such a way that each photograph was dissected by the horizon, leaving equal amounts of sea and sky (unless the boat was in particularly choppy waters, putting the horizon at a noticeable angle). At the time I came across this album, and for a

majority of the time I spent writing *A Slideshow*, I was only aware of the sixteen photographs that were available for viewing on Sachs's website,²⁷ choosing to include them all as the subject of this work.²⁸

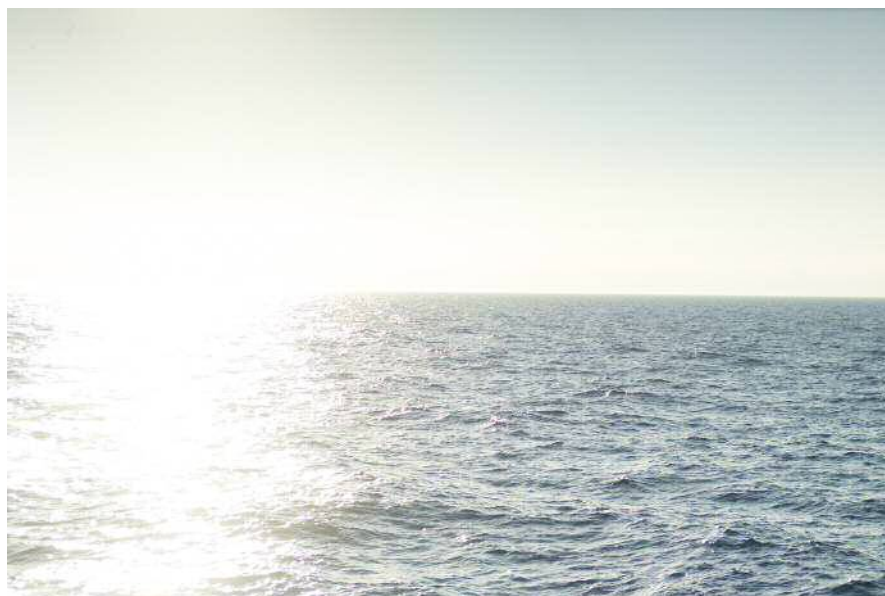


Fig. 4: an example of a photograph contained within Rolf Sachs's *Amazon Express*²⁹

Seeing that these images were composed in an identical manner allowed a more direct approach in my interpretation of the subject than any work I had previously written,³⁰ engaging with my research into methods by which an artwork can inform compositional decisions. I was keen to explore how the photographs could be interpreted if they were transformed into a score.³¹ This

²⁷ These sixteen photographs can be found in the supplementary appendix included with the portfolio of works and commentary.

²⁸ Since Sachs's website has been updated, more information on *Amazon Express* is available, as well as a greater variety of photographs. The images and information can be found at <https://rolfsachs.com/works/amazon-express>

²⁹ Copyright: Rolf Sachs, 2007

³⁰ *A Slideshow* was the second work I began writing for this portfolio, after the first version of *The Storm Took Them All*, which is not associated with a single image.

³¹ By this I mean that I was keen to explore my own interpretation of the photographs so that I could write the score. Many composers create images, using no traditional musical markings, that act as the score of the work. Jim Aitchison regularly creates graphic scores in response to sculpture, notably *Music of Verbs (After Richard Serra)* (2017). In these cases it is often the performers' interpretation of an image that is of interest.

brought into consideration instrumentation, duration, score layout, and methods of interpreting visual aspects into musical language. In seeking to so closely create an equivalent of the photographs with my score, the obvious decision to me was to separate the interpretation of each photograph into individual movements, each taking up a single page in landscape view containing a single system, thus ‘reading’ the chosen image from left to right as if the image is a graph with time on the x-axis— this approach to transposing an image to a score is found in the work of Xenakis and Chiyoko Szlavnic.³² The limited amount of space available on the page meant that the duration of each movement would be limited, allowing for a greater connection with the photographs— photographs typically capture a very short amount of time (though I do not know the shutter speed used by the camera for *Amazon Express*, the clarity of the photographs suggests that they capture a fraction of a second) and so it made sense to choose an equivalent duration on a musical level for the movements in this work. Each movement has a duration of around 45 seconds, a brief duration in relation to typical chamber works, but long enough to be able to express sufficient detail.

James Saunders takes the idea of brief musical works even further.

Separated we shall be forever my friends, like the wild geese lost in the clouds (1997) is a series of works with durations spanning from three or four seconds to barely twenty seconds. This is an approach to music that I would describe as photographic— a representation of the event occurring during the opening and closing of the camera shutter— though the purpose of these works has more to do with exploring the thresholds of an audience’s abilities of perception.³³

Regarding instrumentation, I was keen for the sound to be homogeneous but with scope for including a variety of techniques. It was also important that the instruments were able to easily perform chords in accordance with my method for representing colour (more on which in Chapter Two). For these reasons I believed a string quartet to be ideal. I also considered writing for a larger string ensemble so as to achieve a greater level of detail, but decided against this due to the likelihood of an overly dense soundworld. Using the traditional arrangement of a string quartet on a score, I decided that each instrument would represent the

³² Examples of such works by Xenakis include *Metastaseis* (1953-54) and *Pithoprakta* (1955-56), and *gradients of detail* (2005-06) by Szlavnic.

³³ Bryn Harrison, ‘Musical Brevity in James Saunders’ *Compatibility hides itself and 511 possible mosaics*’ in *Being Time: Case Studies in Musical Temporality*, ed. by Richard Glover, Jennie Gottschalk, and Bryn Harrison (New York: Bloomsbury, 2019) pp.37-61 (pp.37-38)

colours and objects present in the corresponding horizontal quarter of the chosen photograph, meaning that violins 1 and 2 represent the sky while viola and violoncello represent the sea.

The sixteen photographs used in *A Slideshow* are presented as temporally separate (there are some groups of two or three photographs that are almost certainly from the same days, though unlikely to be adjacent in the photo album). Due to this, I have intentionally not specified an order in which the movements should be performed. Instead of using titles of “[x]. [Movement name]”, I have titled the movements “[movement name] ([x]/16)”, where [x] is the order in which the photographs were placed on Sachs’s website. There are many logical or instinctive orders in which to place the movements (from lightest to darkest, in the true temporal order, etc.), but at the time of writing I do not have a preference and have been unable to establish any preference from an ensemble. I imagine that ensembles would likely perform the movements in the order in which they are presented, potentially then creating their own order once they are better acquainted with the work. This is something to be further investigated.

In 2015-16, I corresponded with Sachs and his assistant Mirja Sick, gaining permission to include the sixteen photographs as part of the performance of *A Slideshow*. I made this request as the performance of many brief movements of similar duration brought to my mind a carousel slide projector in an art gallery or museum left to continue slowly flicking through an album, and this is something I wished to replicate in the performance of *A Slideshow*. The option to include projections of the photographs into the performance, as well as the potential for the work to be performed repeatedly without breaking the intended flow of the work, means it is well suited to an art space environment. Further details on this aspect of the work can be found in Chapter Four.

Layer Drawing: the Sky Above the Sea, for contrabass

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Amazon Express by Rolf Sachs

Layer Drawings by Nobuhiro Nakanishi

After further correspondence with Sachs and Sick, I acquired the thumbnail images of *Amazon Express* in its entirety. This came in the form of a large PDF file containing preview images of each photograph arranged in temporal order. This brought me back to the idea of using a large string ensemble and I relayed this idea to Sachs and Sick during a meeting at Sachs's studio in west London. I wished to use several full days' worth of photographs, with one day of photographs equating to one movement of music (each movement being of equal duration), creating a multi-channel installation in which recordings of the movements and projections of the photographs loop concurrently, inspired by Julian Rosefeldt's film installation *Manifesto*.³⁴

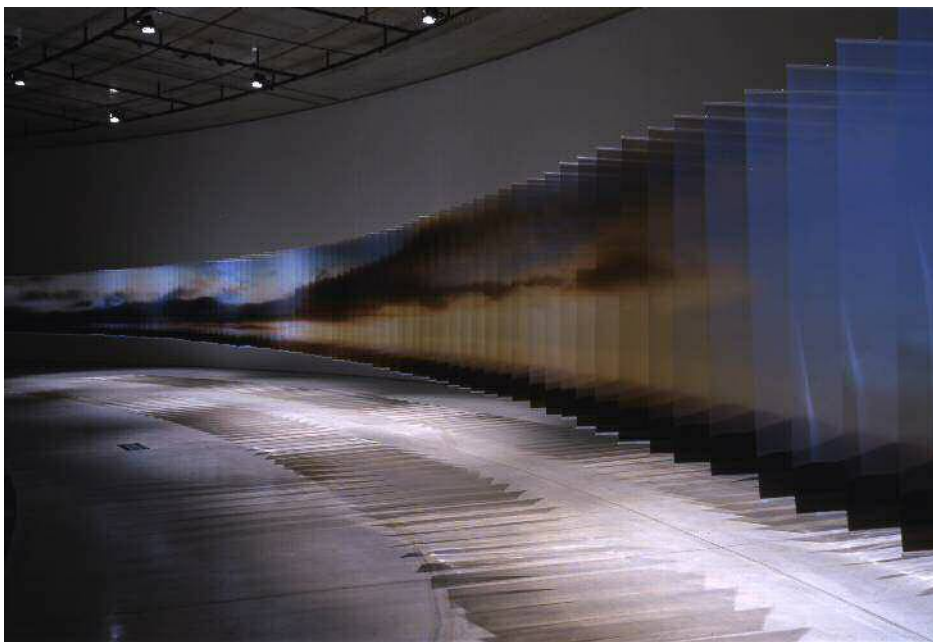


Fig. 5: Nobuhiro Nakanishi, an example of a "Layer Drawing"³⁵

³⁴ *Manifesto* is a film installation using projections of thirteen scenes of equal length, synchronised in such a way as to allow an almost unnoticeable build-up of activity for a majority of its thirteen-minute running time.

³⁵ Image included with permission from the artist.

<<http://nobuhironakanishi.com/gallery/layer-drawings/>> [accessed 8 September 2018]

I selected the photographs I wished to use and requested their use, but unfortunately I fell out of contact with Sachs and Sick due to their high workload.³⁶ I was still keen to use the images in the writing of a new work, even if they were in thumbnail format and with no permission to be projected during a performance or installation. My priority altered from pursuing the aforementioned ambitious project to writing a work that was at home in the art space environment on a purely musical level— a single-movement work that could loop seamlessly and that acted in vertical time as a work of static visual art or an artefact acts in time.

Around the time of my meeting with Sachs and Sick, I became aware of the Layer Drawings of Nobuhiro Nakanishi (an example is shown in fig.5). This series of artworks, produced 2004-2015, are made of a large number of translucent acrylic panels, positioned in close proximity to one another so as to overlap when viewed from almost any angle— the positioning of these panels reminds me of slides in a projector. The acrylic panels are laser printed with landscape photographs Nakanishi captured from a single viewpoint over a period of time,³⁷ and when placed side-by-side in chronological order they create a new three-dimensional landscape from the isolated flat images. It is a form of art Nakanishi refers to as sculpture as much as photography.³⁸

My intention for *Layer Drawing: the Sky Above the Sea* was to use the general formation of Nakanishi's Layer Drawings as the template for representing the photographs in a chosen day of *Amazon Express*. In contrast to *A Slideshow*, where the chosen photographs were represented by individual short movement of c.45 seconds, *Layer Drawing* places the photographs next to one another, representing each within a single bar of (initially) five seconds— this decision was taken in response to the linear narrative apparent in the temporally adjacent images of the thumbnail image file of *Amazon Express* (for instance, a

³⁶ I feel it is necessary to say that I never expected to acquire permission to use the chosen photographs, there being several hundred requested and the identification of them all being a project in itself. I do not feel that I was unreasonable in requesting so many photographs; Sachs and Sick were enthusiastic about my work and my ideas, and so I felt comfortable in requesting what I wished for. At our meeting, I quickly became aware of the number of projects in which Sachs was involved and, in reality, mine was not a priority.

³⁷ I was unable to find a precise measurement for the duration between the capturing of each image. Through studying a range of Nakanishi's "Layer Drawings", I suggest that there is a variety of timings (seconds to minutes, potentially hours) depending on the work.

³⁸ Nobuhiro Nakanishi, *About Layer Drawings* (2010)

<<http://nobuhironakanishi.com/essay/layer-drawings-en/>> [accessed 23 May 2018]

cloud formation moving from one side of the image to the other over the course of several photographs). By structuring *Layer Drawing* in this way, the work mimics the creation of a new landscape in Nakanishi's Layer Drawings through the accumulation of musical cells— adjacent bars are regularly similar and so the narrative of an evolving sky is easily discerned.

This approach is similar to another of Saunders's works, *511 possible mosaics* (1999). Saunders's work is modular in nature, with each module possessing the same material with variation coming from altering the combinations of instruments.³⁹ The performing of cells of a consistent duration aligns with the structure of *Layer Drawing*.

Using thumbnail images meant that a limited amount of detail could be differentiated and interpreted. This influenced my decision for each bar to last only five seconds, and also my decision for *Layer Drawing* to be a solo work. I continued with the idea of each photograph being 'read' from left to right, but chose to only represent the sky.

As well as being performed in concert in early 2017, I placed *Layer Drawing* into the art space environment as part of "Music as Artefact", an installation that I produced and curated in April 2018. "Music as Artefact" will be discussed in detail in Chapter Four.

In the lead-up to the early 2017 concert, I worked closely with *Layer Drawing's* performer, Yue "Jerry" Zhuo. Zhuo unconsciously took more time in performing each bar, almost doubling the work's duration. We agreed that this was a natural response in engaging with the work and as such the bars required an alteration in duration from five seconds to "one long, slow bow-stroke". As well as a more contemplative engagement from the performer, I believe this extra space allows for a more contemplative reception by the audience— specifying a duration for each bar brings a rigidity that I now believe is undesirable in this context. Though there is reduced likelihood that each bar will have the same duration, removing the link with the identically structured photographs, the intention of the work lies more in the accumulation of musical cells (in response to Nakanishi's Layer Drawings) than in the detail of the individual photographs. I believe an audience will be better equipped to engage with the macroform of the work when each bar is given the space to breathe.

³⁹ Harrison, p.43

Vortex, January 1932, for soprano, bass clarinet, trombone, viola, and percussion

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Vortex by Edward W. Quigley

In December 2014, I visited the Museum of Modern Art, New York City. In the photography section I became interested in the light experiments of Edward W. Quigley (a contemporary of Alfred Stieglitz and Man Ray). Their photograph *Vortex* (1932— fig. 6) was particularly intriguing due to the ambiguity of the subject matter— my perception of what had initially appeared as a close-up image of a rose changed to a long-exposure of salt or sand particles trapped in a maelstrom. The photograph is most likely the result of the manipulation of light through glass or a prism. As has been mentioned, the photographs of Quigley's that were on display were light experiments, but the methods of capturing such images are unknown due to Quigley's secrecy over their techniques.⁴⁰

This photograph was the ideal subject for a preparatory work with a view to writing *The Substance of Air*. *Vortex, January 1932* is an exploration of several methods by which to represent a vortex through sound, using aspects of Quigley's photograph to inform the material and trajectory of the material. This work is intended purely for the concert scenario, so does not engage with the research topic of music in the art space.

⁴⁰ Author unknown, *Edward Quigley* (Joel Soroka Gallery: Basalt, Aspen, CO, date unknown) <<http://www.joelsorokagallery.com/bios/quigley.html>> excerpted from the catalogue *Edward Quigley, American Modernist* [accessed 29 May 2018]



Fig. 6: Edward W. Quigley, *Vortex*, 1932⁴¹

⁴¹ Property of Museum of Modern Art, New York City

A Single Reed Captures the Wind, for flute, bass clarinet, and piano

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East Wind II by Frances Seward

I became aware of Frances Seward's work through continued research of abstract landscape photography. Seward creates "inner landscapes"⁴² by capturing long-exposure images of the manipulation of glass, water, and light. Seward's photographs possess the soft haze and apparent blurring of detail that regularly interests me, and the composition and structure of these photographs are effective in creating the illusion of a physical landscape. These imagined landscapes seek a personal response— Seward also refers to the photographs as "psychological and emotional landscapes".⁴³

A personal and emotional response was exactly what occurred when I first viewed Seward's photograph *East Wind II* (fig. 7). In this photograph I see a reed on a sand dune, which for me is a reminder of home: Wirral, Merseyside. Reeds grow plentifully on the Wirral Peninsula, particularly in my favourite coastal areas. My nostalgic response to *East Wind II* made it appropriate to choose the photograph as the subject of a musical work.

Beyond my nostalgic response, my impression of the photograph was that it was a composite of the same reed moving in the wind over a period of time, bearing similarity to Nakanishi's *Layer Drawings* except all images were placed on top of one another in a single image instead of individual images placed side-by-side. As *East Wind II* is an imagined landscape, I felt it was appropriate to explore a greater separation between the photograph and the methods by which to derive the material for *A Single Reed Captures the Wind* and instead chose for it to be concerned with how a concert work can act in time similarly to that of a work of static visual art. In this work, repeating static gestures allude to my interpretation of the photograph as a composite image of similar photographs. What differentiates this idea from that of *Layer Drawing* and, to a lesser extent, *A Slideshow* is that tones in *A Single Reed* will regularly continue into the

⁴² Frances Seward, *My Process* (2017) <<http://francesseward.com/my-process/>> [accessed 29 May 2018]

⁴³ Frances Seward, *Artist Statement* (date unknown) <<http://francesseward.com/artist-statement/>> [accessed 29 May 2018]

following gesture (as opposed to a definite separation), creating the blurred texture that is apparent in Seward's photograph.

The idea of 'imagined' landscapes or 'imagined' photography connects with Michael Finnissy's *The History of Photography in Sound* (1997-2000). Finnissy's work uses the term "photography" as a metaphor,⁴⁴ transcribing fragments of previous musical works and offering a different perspective of them through compositional means. *A Single Reed* (and *Memories Breathe Through Desolate Ruins*, to follow) offers this new perspective in an alternative medium, as opposed to Finnissy's new lens or new angle.

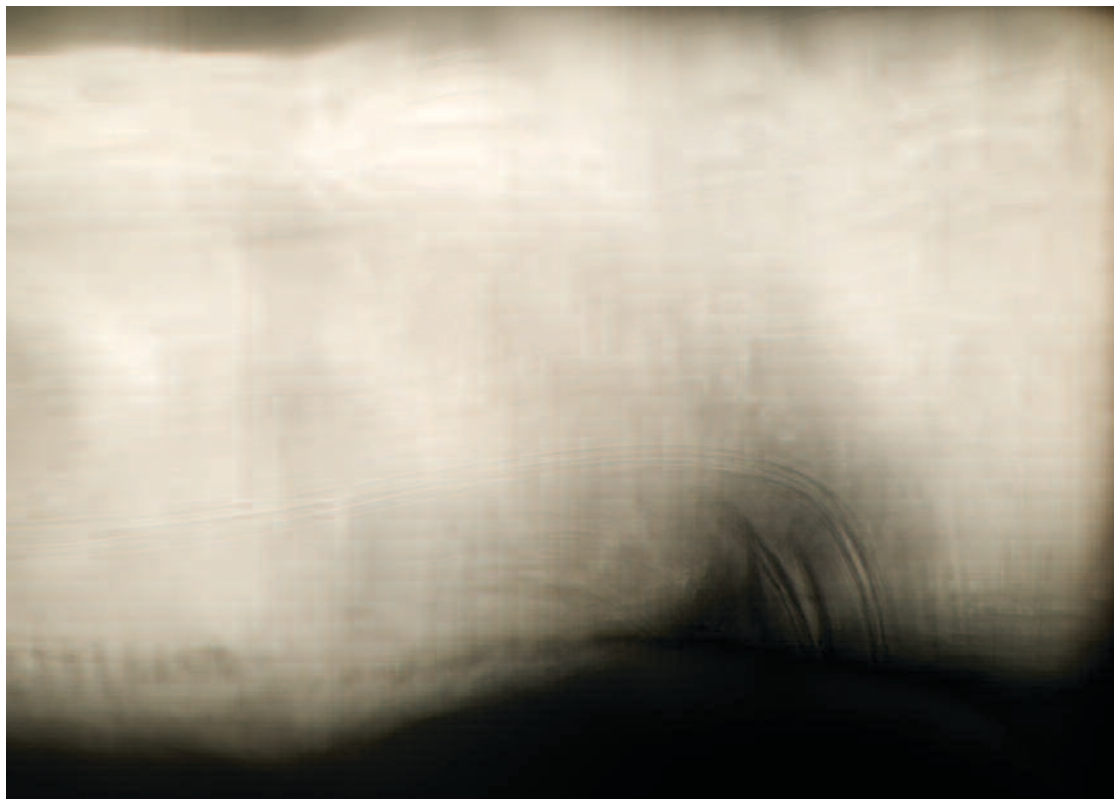


Fig. 7: Frances Seward, *East Wind II*⁴⁵

⁴⁴ An extract from Finnissy's extensive programme note: "My title uses the word 'photography', and its plethora of associations, to convey a certain kind of musical material: documentary—snipped out from different periods in the past, and different locations across the world—a collection of exterior facts."

⁴⁵ copyright: Frances Seward, 2018 (francesseward.com)

Memories Breathe Through Desolate Ruins, for harp

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Levantine City by Ivor Davies

In early 2016, I visited National Museum Wales, Cardiff, to attend a lecture led by artist Ivor Davies as they guided the audience through “Silent Explosion”, a retrospective exhibition of Davies’s work. This exhibition focussed on the idea of destruction— something that is a recurring feature of Davies’s work throughout their career, and something that stems from a childhood spent amongst the bombsites in Penarth.⁴⁶ For me, the most intriguing element of Davies’s work was the refusal to remove the dust that had accumulated on many of the works present within the exhibition. This dust represents the history of the work: a physical representation of the time that has passed since its creation and a metaphorical representation of the events that have occurred between then and the time at which it is experienced.

A sculpture from early in Davies’s career caught my attention. *Levantine City* (1956— fig. 8) possesses spindly, barren structures in muted colours, reminding me of a visit to twelfth-century ruined monastery Tintern Abbey. At such places, I often feel that the history of the building is present, locked in the material of the remaining structure and the ground and environment it occupies, like a memory or a haunting.

Memories Breathe was written for a Cardiff University Contemporary Music Group postgraduate showcase concert in which every work performed was a response to some aspect of “Silent Explosion”. My approach to *Memories Breathe* was to create a work that would be able to be performed live in an art space (I had the National Museum Wales in mind) without intruding on the presence of other artworks in the space. The work is built of quiet, low register oscillating dyads that act as the ruined structures and surrounding ground (neither the “Levantine City” nor Tintern Abbey— an imagined ‘desolate ruin’), with interjecting dust-laden memories revealed through mid-to-high register widely-spaced quaver patterns. These interjections increase in frequency and intensity (never at a higher volume than an accent at “piano”) in a similar fashion to the

⁴⁶ *Silent Explosion: Ivor Davies and Destruction in Art* (Cardiff: National Museum Cardiff, 2015) <<https://www.artfund.org/what-to-see/exhibitions/2015/11/14/silent-explosion-ivor-davies-and-destruction-in-art-exhibition>> [accessed 23 May 2018]

scenes in Rosefeldt's film installation *Manifesto*, mentioned earlier in this chapter. Though there is a sense of finality to *Memories Breathe*, the opening passage and ending are similar enough to be able to loop (the opening bar immediately following the final bar) with little disruption to the flow of the work— again, this is an influence from *Manifesto*.



Fig. 8: Ivor Davies, *Levantine City*, 1956⁴⁷

⁴⁷ copyright: Ivor Davies, 2018

Though some works in this portfolio are connected to one another either musically or through their chosen subject artwork (or both), I have constructed the portfolio with the intention of demonstrating a variety of methods and approaches aiming to address the research questions.

The Substance of Air is perhaps the purest demonstration of using features of its chosen artwork as the basis for its material and progression, with the methods employed in *Vortex, January 1932* influencing its approach to deriving structure from a visual source, and the methods employed in *A Slideshow* and *Layer Drawing* influencing its approach to material, particularly the interaction of tones.

A Slideshow and *Layer Drawing* take the same artwork and place it in different musical and environmental scenarios, with the latter being a particularly important part of “Music as Artefact”, the installation in which I took on the role of curator (see Chapter Four for more details).

What is also notable is the approach to notation: *A Slideshow, Layer Drawing, Vortex, January 1932*, and *A Single Reed* all use proportional notation, with *The Substance of Air* taking influence from this method. The reasons for this are established in the Introduction (pp.3-4) and will be covered in greater detail in Chapter Three in the context of musical temporality.

A majority of the works presented can be placed comfortably in both a concert environment and an art space environment, with the exceptions of *Vortex, January 1932* and *A Single Reed*. The former is intended purely as a preparatory work for *The Substance of Air*. I believe *A Single Reed* could be easily adapted for the art space and be placed in a similar scenario to that intended for *A Slideshow* and *Memories Breathe*— an extended running time with loudspeakers or live performers looping the work. *A Single Reed* possesses a duration of under seven minutes due to it being written for a workshop— a longer running time, which I believe would be beneficial to the listener, would have left little time for the performers to make comments on the work and potentially limit the time given to the other works featured in the workshop.

CHAPTER TWO, Music Dictated by Static Visual Art

In this chapter I will present and analyse the methods used in constructing and producing material contributing to the works presented in this portfolio. These methods predominantly focus upon musical structure and note choice, engaging with each in a variety of ways, but they also engage with timbre and, in the case of *The Substance of Air*, spatialisation of sound. What is notable about these methods is that they represent a more abstract and often non-musical progression of my compositional practice; they represent greater synergy with the chosen artworks than my previous works in which I sought to replicate the character of the artwork in question without incorporating any of the features of said artwork in the compositional process.

Structure: Scanning the Image

My initial approach to deriving musical structure from static visual artworks was to ‘read’ the image from left to right as if it were a musical score. I devised this method upon discovering Rolf Sachs’s photo album *Amazon Express* and seeing the structure of those images (seascape photographs split into two equal parts by the horizon), with this discovery leading to the creation of *A Slideshow of Sideways Horizons*.

Chapter One detailed that each movement of *A Slideshow* is oriented as a single landscape page, aligning with the layout of its chosen photograph. Setting up these movements began with annotating the main features of the photograph on a landscape piece of paper upon which borderlines were present, splitting the page into four equally sized horizontal strips. The features within each horizontal strip translate to the music performed by the corresponding instrument of a string quartet in its traditional score layout (an example is shown in fig. 9)— I will cover how these features translate to musical material later in this chapter.

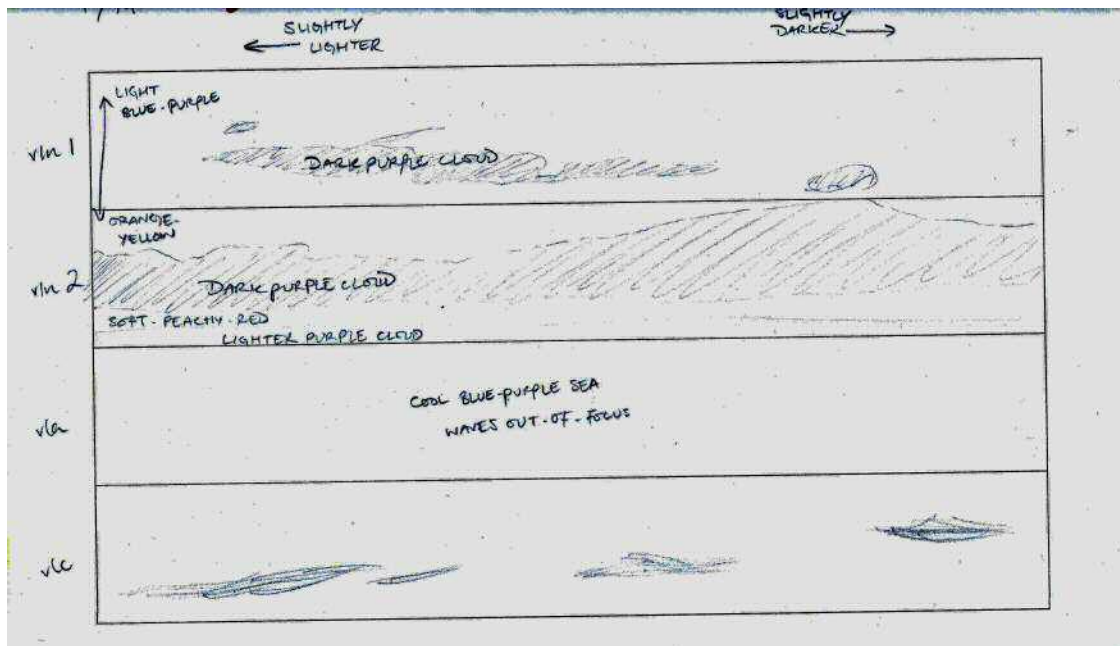


Fig. 9: annotation for “Late Evening Glow with a Band of Dark Cloud (1/16)”

This approach to structuring a musical work is similar to Richard Rijnvos’s cycle *Block Beuys* (1995-2000). Rijnvos’s work is based on a Joseph Beuys installation of the same name, spread across seven rooms in the Hessisches Landesmuseum in Darmstadt, Germany. Each work in Rijnvos’s cycle represents a single room (except *Block Beuys - Raum 4 bis 7*, which amalgamates the final four rooms), with “the duration of each piece correspond[ing] proportionally to the surface area of the room involved”.⁴⁸ The intensity of the soundworld corresponds with the density and size of objects present in the room in comparison with the room’s size, and each work possesses two types of music: “one is a sounding continuum portraying the space, and the other represents the objects”.⁴⁹ In each individual movement of “A Slideshow”, the space being portrayed is a photograph and the continuum is instead the dimensions of the score, but the idea of musical features representing objects is consistent between my work and “Block Beuys”.

⁴⁸ Richard Rijnvos, *Block Beuys* <https://www.richardrijnvos.com/compositions/cycle-block_beuys.html> [accessed 3 December 2019]

⁴⁹ Ibid.

In each movement of “A Slideshow” any distinct alterations of material are purely based on alterations of features within the photograph as it is scanned, meaning there is no goal-orientation or implication of development (features of music in vertical time and frozen time, to be discussed in Chapter Three) and therefore no implication of musical structure— the individual movements are essentially static entities despite their altering of musical material as the movement continues, aligning with the static nature of the photographs upon which they are based.

Layer Drawing: the Sky Above the Sea uses an almost identical method to derive its musical material. However, as it is a work for solo contrabass, it is unable (or at least it is much more difficult) to convey the same amount of detail as is presented in *A Slideshow*. Instead, *Layer Drawing* derives material through scanning only the sky in its chosen photographs. Further to this, the representation of each image (a single bar of material in this work) possesses a comparatively brief duration of “one long, slow bow-stroke”, around eight-to-ten seconds.

Structure: Following the Structure of the Image

The photographs presented in *Amazon Express* are intentionally structured so that the horizon splits the image into equal segments of sky and sea, with no other structural features besides what is incidental (for example, intense sunlight reflecting off the water’s surface thus appearing as the main feature of the image). In the context of writing a musical work based on static visual art, the path of the structure of these photographs (the path the eye follows when looking at the image in detail) lends them to being scanned as if reading a music score. However, difficulties arise when using the same method in approaching artworks that do not possess such a structure based on straight lines. Such artworks will produce a sectionalised, multi-timeline experience in musical works that generate their structure by scanning the image in a single direction (something worth exploring in the future). My intuition draws me to follow the structural path of the artwork in question (see fig. 10, 11, and 12) and respond to the features of said artwork as the path progresses, thus maintaining a smooth progression that I believe would better reflect the intentions of the artist.

Vortex, January 1932 takes Quigley's photograph *Vortex* as its basis and follows the path of the main spiral in the image to form its structure (fig. 10). The perceived intensity of the line and its severity of direction change are the critical factors in dictating the progression of the musical work. A narrower line dictates fewer instruments performing, a widely spread line dictates more instruments performing in a wide range, and an intense, bright line dictates more instruments performing in a narrow range (all melodic instruments in this work besides crotales have overlapping ranges).

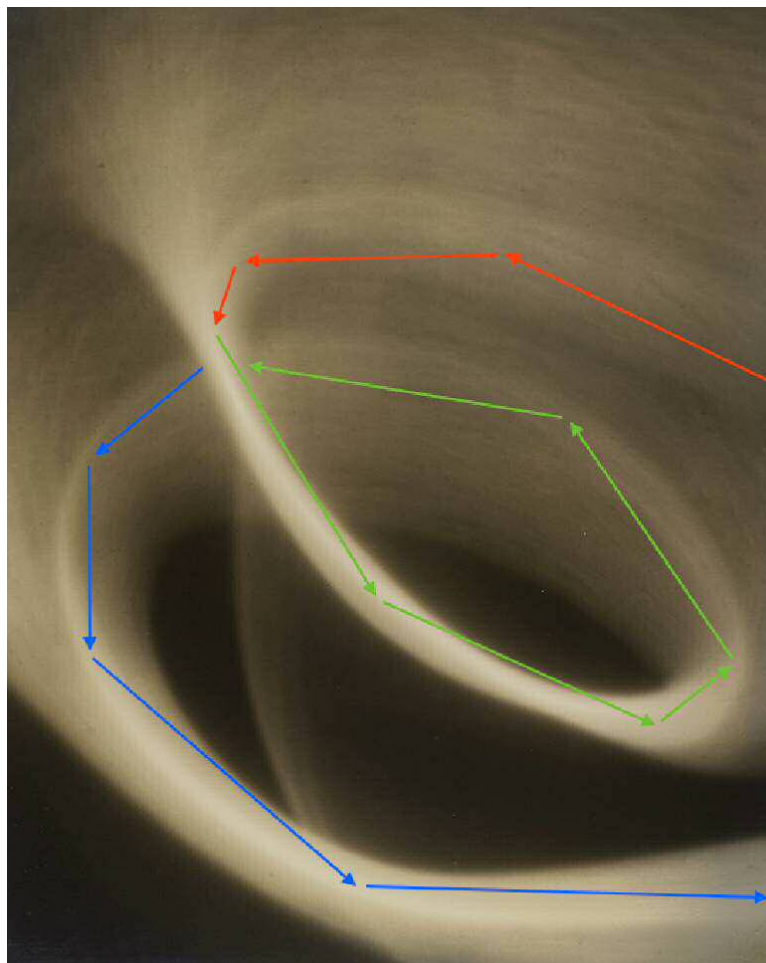


Fig. 10: path of Edward W. Quigley's *Vortex* dictating structure of *Vortex, January 1932*

The spiral in Quigley's photograph crosses over itself once, leading me to establish three distinct sections in *Vortex, January 1932*. The first main section, from the opening of the piece to partway through bar 34, is a representation of the main vortex line, entering the image on its upper right-hand edge, up until it first turns back on itself (red arrows). Though clearly visible as the starting point for the vortex, the line appears pale and thin with very little change in its direction as it travels from right to left. To me, this dictated few instruments performing at once, beginning with 'subtone' bass clarinet playing a slow, widely-spaced line (a tone row based on the shape of the vortex as a whole, to be discussed later in the chapter), joined by a muted trombone in the third bar, with the bass clarinet passing its line to the soprano in bar 6. As this section continues, the vortex line on the photograph gains more prominence, with the beginning of the first turn of the vortex seeing a convergence with more subtle lines. This led me to build a busier texture, with notes changing much more frequently at a louder dynamic up until the point of the new section.

As the spiral begins to turn back on itself, the convergence of the lines creates a single intense but narrow line. The opening of this second section (green arrows) is an extension of the vibraphone material towards the end of the previous section in which the tone row is verticalised, with this material present in the viola and crotales. Though the line is intense, likely implying many instruments playing in a narrow register, to me the change of direction in the spiral necessitated a contrasting texture. The intensity is brought by the use of crotales, which have a sharp attack and long decay, allowing the previous notes to continue past the striking of the new dyad.

As we see the spiral open out slightly, other instruments begin to appear, mimicking the descent of the spiral at this point in the photograph. A series of overlapping descending scales is my initial idea when it comes to thinking of how to represent a vortex through music, and using this idea in this scenario seems logical. This work was always intended to explore various ways of representing a vortex in preparation for writing *The Substance of Air*, and so I chose not to include this idea for the entire duration of *Vortex, January 1932*.

From bar 40, where trombone enters and is quickly followed by soprano, the material is made of descending scalic patterns using only the notes found in the original tone row. As this section continues, the frequency of the descending scales increases while the starting note of said scales generally falls lower in

accordance with the trajectory of the spiral at this point. As in the previous section, the duration of each note generally decreases in each instrument, creating a busier texture as the spiral approaches its second change in direction. Dynamic swells are also a key feature of this section— the section of the spiral represented by this middle section of the work widens in the middle, and as such is mimicked by each instrument with small dynamic swells that also act as a disorienting shift of focus amongst the instruments due to the fact that they occur at different times.

Bar 63, the beginning of the final section (blue arrows), sees the bass clarinet, trombone, and viola seamlessly switch material back to the original tone row, continuing the dynamic swells that appeared partway through the previous section. As the section continues, the soprano is reintroduced and each instrument takes on an adaption of the tone row (skipping notes at different rates, alluding to the different speeds at which an object travels at different points of a vortex). This creates an harmonic forward momentum, as if circling towards a single point in a vortex. This sense of forward momentum is reinforced by the dropping of certain notes (as opposed to skipping notes, which maintains all notes in the tone row— in this case notes are removed from the tone row) until all melodic instruments are moving between the same four chromatically adjacent notes in the same octave.

According to the parameters set up to write the work, this ending in which all instruments are oscillating around the same four notes should allude to an intense, narrow section of the spiral, not the wide, fading line that appears the equivalent point in the photograph. This was a conscious decision on my part in creating what I believe to be a satisfactory ending to the work, but I believe that this deviation from the original parameters must be acknowledged.

Similarly to *Vortex, January 1932*, the vortices informing the structure of the Turner paintings that are the basis for *The Substance of Air* also inform the structure of each movement in the work. Beginning at the sun/celestial light that is the focal point of each painting, the movements follow the spiral heading towards the edges of the painting, taking the prevalent colours as a basis for the harmony (fig. 11 and fig. 12). It could be argued that the vortices move towards the celestial light from the outside, but my sense of the paintings is that they move towards you as opposed to them pulling you in. In accordance with the

structure and intensity of the paintings, the first movement, “Shade and Darkness”, possesses a tighter, more dynamic vortex, while the second movement, “Light and Colour”, contains a broader, softer focal point. As such, the former movement is more tumultuous, exploring a greater variety of parabolic shapes as the sounds travel across the ensemble, while the latter is calmer, using a greater number of instruments for each sound but moving around the ensemble at a slower pace.

From a rather unflattering review of these paintings upon their first showing in 1843, stating them to be “octagon-shaped daubs”⁵⁰, we know their originally intended framing. Learning of this, I chose to ignore the details in the very corners of both paintings, allowing a more flowing shape to become the structure of the vortex. This decision also contributed to the circular layout of the orchestra, to be discussed later in this chapter.

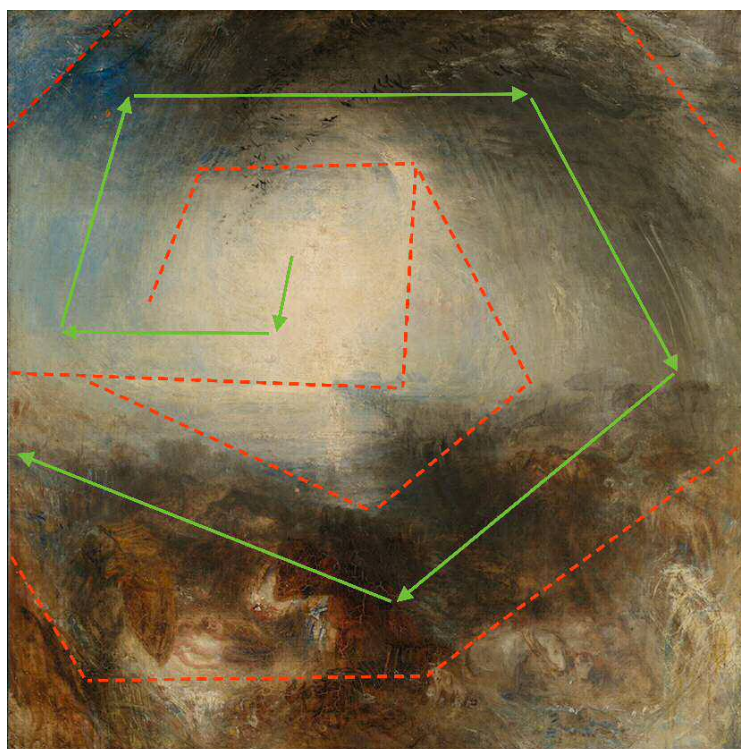


Fig. 11: vortex structure of J.M.W. Turner's *Shade and Darkness – the Evening of the Deluge* dictating structure of "1. Shade and Darkness" in *The Substance of Air*

⁵⁰ David Blayney Brown, 'Squaring the Circle: New Formats from 1840', in *Late Turner: Painting Set Free*, ed. by David Blayney Brown, Amy Concannon, and Sam Smiles (Millbank: Tate Publishing, 2014), pp.176-179 (p.177)

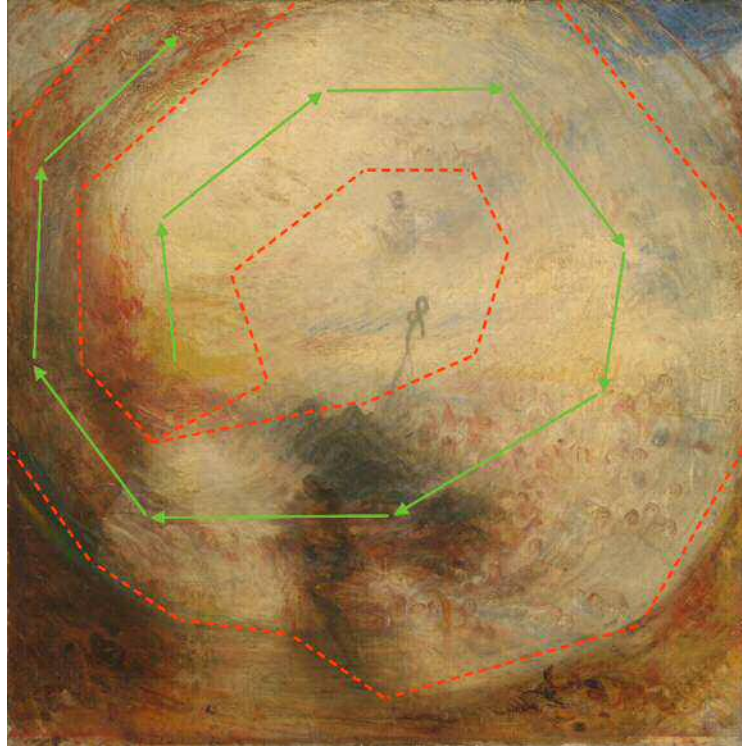


Fig. 12: vortex structure of J.M.W. Turner's *Light and Colour (Goethe's Theory) – the Morning After the Deluge – Moses Writing the Book of Genesis* dictating the structure of "2. Light and Colour" in *The Substance of Air*

I have chosen not to include an explanation of this work as it progresses, as I did for *Vortex, January 1932*, because the decisions taken in the composition of this work are more dependent on features that are yet to be discussed. A more in depth understanding of the progression of *The Substance of Air* involves discussion of note choice, timbre, and spatialisation.

Structure: Macrostructure

A Slideshow places its sixteen movements (the aforementioned 'static entities') side by side in time in the same way as a slide projector set to display each slide for a specific duration places its photographs side by side in time. This has something more to do with the work's presentation and reception than the influence the details of the photographs have on the musical material, but it is

something worth mentioning in comparison to the macrostructure of *Layer Drawing*, which is influenced by visual aspects of *Amazon Express*.

The static entities in “Layer Drawing” possess a shorter duration than those of *A Slideshow*, and when placed side by side in time inherently generate a narrative (something discussed in greater detail in Chapter Three). I treated the static entities in *Layer Drawing* differently to *A Slideshow* because the photo album was presented to me as a series of chronological thumbnail images, meaning that I was able to discern the events of a period of time in an instant. This is in opposition to the sixteen photographs from *Amazon Express* presented on Sachs’s website that formed the basis of *A Slideshow*, which had to be scrolled through to view each photograph individually and are not obviously temporally adjacent.

As each new static entity is presented in *Layer Drawing*, the listener is able to discern the alterations in the appearance of the seascape as the day progresses in the same way as someone presented with the thumbnail images of the photo album can concentrate on each individually and move on to the next and still have a sense of the day progressing as a whole.

Note Choice: Dyads

In researching associations between music and visual art, it seemed appropriate to connect colour and harmony— it is no coincidence that the twelve traditional Western musical tones are collectively known as the chromatic scale, with “chroma” being Greek for “colour”. Many theories connecting these fields do so in relation to synaesthesia, and in doing so regularly present factual statements on a subjective phenomenon: Wassily Kandinsky states “... light blue is like a flute, dark blue like a cello ...”⁵¹; Charles Baudelaire, though admittedly ignorant of the technical aspects of music, wrote that it “would be truly surprising ... to find that sound could not suggest colour, that colour could not evoke the idea of melody ...”⁵². Many composers attribute specific tones, scales, or harmonies to specific colours, with prominent examples coming from Alexander Scriabin’s

⁵¹ Wassily Kandinsky, *On the Spiritual in Art* (New York: Solomon R. Guggenheim Foundation, 1946) p.65

⁵² Charles Baudelaire, *The Painter of Modern Life and Other Essays* (Phaidon, 1995) p.117

Prometheus - the Poem of Fire (1911), which was originally intended to include a colour organ able to project coloured light during performances, and Olivier Messiaen's *Couleurs de la Cité céleste* (1963), which includes instructions to the conductor of which colour is being represented at specific points in the music.

For me, neither a single tone nor the timbre of a particular instrument equates to a colour, nor does a single colour elicit a melody. Instead, I arrive at a colour through considering the interaction between two tones.⁵³ I take dyads and attribute the characteristics of the interval between the notes (level of consonance or dissonance,⁵⁴ width of interval) to a base colour. Wider intervals tend to align with cooler colours (blue being the coolest colour), and more consonant intervals align with simple, rich colours (for instance, I settled upon a major third to represent yellow, as I associate both as being bright). As I am not a synaesthete, it was necessary for me to carry out this process. *A Slideshow* shows me experimenting intuitively with the process, with *Layer Drawing* and *The Substance of Air* demonstrating an increasingly focussed approach.

As I have never used microtones beyond the occasional use of quartertones and have little interest in doing so (at least for the duration of this project), there is a limit to the number of intervals available. My process was to attribute intervals to the base colour I wished to represent, with the nuance being sought in other aspects that will be discussed later in this chapter.

The fact that *A Slideshow* was written over a significant period of time contributes to the fact that there are irregularities within the work as to which interval represents which colour. There is consistency within individual

⁵³ This method is not unique to me, but was something I arrived at independently. Deborah Pritchard also seeks to represent colour through the interaction of two tones (particularly apparent in *Inside Colour*, 2016), but their approach is predominantly synaesthetic: "In my case, [synaesthesia is] a link between colour and music: more specifically, harmony and intervals." (Terence Handley MacMath, *Interview: Deborah Pritchard, composer* <<https://www.churchtimes.co.uk/articles/2018/2-march/features/interviews/interview-deborah-pritchard-composer>> [accessed 1 January 2020])

⁵⁴ The perception of consonance and dissonance regarding the interaction of two tones was made through my own intuition, though of course this intuitive process was heavily influenced by my long-time study of classical music. My perception is close to that of Paul Hindemith's theory on the subject, with a key difference being that Hindemith perceives, for example, a major 2nd and its inversion of a minor 7th as being equally dissonant, whereas I find a major 2nd to be more dissonant than a minor 7th.

movements, but as time went on I altered my reasoning for attributing specific intervals to specific colours.

I mentioned in the previous section that I tend not to use microtones as part of my method for representing colour. However, quartertones are included as part of dyads in movement 16/16 as a means to represent the obscured detail of the photograph due to low light. This is a more abstract representation of the photograph, not intended as a means to represent any specific colour— though I was keen to find and explore many different methods for representation, I feel that the inclusion of microtones as part of dyads did not give the outcomes I required, hence their omission in later works in this portfolio.

As *Layer Drawing* is a one-movement work, consistency is necessary when considering which interval represents which colour. *Layer Drawing* demonstrates a more focussed, logical approach to attributing intervals to colours, whereas my approach to *A Slideshow* was predominantly intuitive.

Examples of this process include: a major 7th to represent black— to me, black is an obscuring of detail and not an absence of detail and so the ‘potential energy’ of a major 7th as the dyad closest to a perfect octave makes it the ideal choice; a perfect 5th to represent grey— grey appears to me as a neutral colour, which aligns it well with a perfect 5th, an interval of strong tonal implications that, without the inclusion of other tones, is situated in limbo between major and minor; a major 3rd to represent orange— my inclination is for warmer colours to be represented by narrower intervals and orange is a rich, vibrant colour, which is something I associate with a major 3rd.

The Substance of Air sees some alterations to the decisions made in *Layer Drawing* regarding the specific interval chosen to represent a specific colour, though the general idea of warmer colours being associated with narrower intervals is maintained (fig. 13).

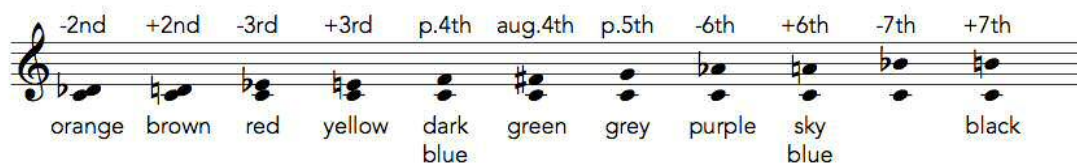


Fig 13: colour-dyad relationships in *The Substance of Air*

White is prevalent in the Turner paintings upon which *The Substance of Air* is based. In contrast to my interpretation of black, I do not feel that white can be sufficiently represented by a dyad. White light is a combination of all colours of the spectrum,⁵⁵ thus I chose for it to be represented by an all-interval tetrachord—a four-note chord that includes every interval in the octave. The previous works of mine that seek to represent colour through musical means (*A Slideshow* and *Layer Drawing*) were unable to use this method due to the individual instruments for which the works were written being unable to perform four-note chords— instead, white was represented by a single high register tremolo tone.

There are sections on both paintings at which white light is tinged by another colour. When it came to representing tinged white light, I chose for the two central notes of the four-note tetrachord to be separated by the interval that represents the colour tingeing the white light. There are some points at which there are two colours tingeing the white light, and in these cases the notes of the tetrachord are voiced so that the intervals of those colours are apparent amongst the highest three notes or that all four notes are voiced appropriately. One example of this is the representation of the celestial white light that is the focal point of *The Evening of the Deluge* informing the opening of “Shade and Darkness”. This light is tinged by yellow (major 3rd) and grey (perfect 5th). Due to this, the notes of the tetrachord are voiced in a specific way (fig. 14). As is apparent from the image, the intervals representing grey and yellow are compound, which is my method by which to represent light shades (alongside placing the dyad into the high register).



Fig. 14: voicing of all-interval tetrachord from b.1 of “1. Shade and Darkness”

⁵⁵ This is not the case for white paint, but, seeing as the representation of light is such a focus for Turner in their late works, I felt that approaching this subject in such terms was still appropriate.

Note Choice: Register

I employed two similar methods for deriving the register of dyads in the previously mentioned works. In *A Slideshow*, I freely selected notes using intuition, basing my selection on the perceived light or heavy shade of the colour being represented: a lighter shade equates to a higher register dyad, while a heavier shade equates to a lower register dyad. This basis for selecting the register of the dyad in question is consistent throughout the works in this portfolio in which note choice is derived from visual aspects of the subject artwork. The idea of high register and low register is based on the range of the instrument in question, and not a (relatively) all-encompassing register, such as that of a grand piano.

Almost all dyads required in *A Slideshow* are available to all instruments of its string quartet. This is not the case for the solo contrabass in *Layer Drawing*; the larger spaces between notes on the contrabass's fingerboard mean that a significant number of double-stops will not be possible to perform. In the case of *Layer Drawing* dyads are selected based on the same method as previously stated, with the caveat that the dyad must include (at least) one open string, thus guaranteeing that performance of the dyad is achievable. This limits the number of dyads available, and so limits the presentation of subtly different shades of colour, but in return the repeated sounding of the resonant open strings brings a cohesive nature to the work— in fact, this work requires that the lowest string, E, is lowered to a D so as to achieve a greater sense of harmonic cohesion, with the strings now being tuned to D-A-D-G.

The Substance of Air selects dyads based both on intuition and on the open strings of orchestral string instruments. Regularly in this work dyads are performed by a combination of instruments, almost always positioned in close proximity. Due to this, there are recurrent instances of instruments sounding together whose ranges do not (comfortably) overlap and therefore find difficulty in performing the chosen dyad in its chosen register. In such circumstances, I employ octave displacement— predominantly, it is the same two tones being passed from duo to duo as the sound moves around the ensemble, meaning that the ear will be able to determine the same notes despite their differing octaves.

In a majority of the instances that the chosen dyads are performed by more than one instrument, string instruments perform only one note, therefore

allowing free selection of dyads. This is important in the context of *The Substance of Air*, as the work presents a sonic equivalent of the subtly changing colours present in the Turner paintings, which is achieved through chromatically ascending or descending dyads.

There are also sections in the work in which string instruments perform the dyads individually, predominantly appearing in drone passages. In such instances I chose to use only dyads that include an open string— this puts less stress on the left hand of the performer, who may be holding the chord for a period of minutes. Again, the result of this is a sense of harmonic cohesion through the dominance of repeatedly sounding resonant open strings.

Note Choice: Following the Structure of the Image

The note selection within *Vortex, January 1932* stems from a tone row informed by the shape of the main spiral in Edward W. Quigley’s photograph *Vortex*. I produced the row by imagining a treble clef placed to the left of the photograph and equating regular points on the spiral with the imaginary stave, resulting in a nineteen-note row with a general downward trajectory (fig. 15). I did not arrive at this row through mathematical means— seeing such a method through to its natural conclusion would result in extremely specific microtones, which is not a part of my current compositional vocabulary.

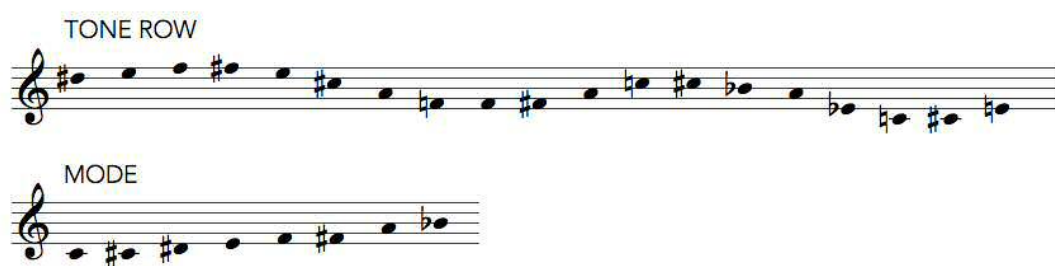


Fig. 15: tone row derived from shape of vortex present in Edward W. Quigley’s *Vortex* and mode created from notes present in tone row

Movements 15/16 and 16/16 in *A Slideshow* represent the only photographs in the curated version of *Amazon Express* to include islands. My first task was to establish which instrument would play the music to represent the islands: violin 2 or viola. The islands protrude out of the water, but their mass on the photographs is present in the sky. As my method for writing each movement was to split the relevant photograph into four horizontal sections and have each instrument play music based on what is present in their section, I concluded that violin 2 should represent the islands.

As the presence of the islands offers a significant contrast in comparison to the other photographs, in which there is only sky and water, I felt that their representation required a suitably contrasting musical feature. I found such contrast in the use of pizzicato (which does not feature elsewhere in the work), played at a steady tempo (notated in quavers at c.80b.p.m.), in which the melodic line oscillates between an open G (the lowest note on the violin, representing the point at which the island meets the horizon) and higher notes that follow the contour of the island's shape. This is the method used specifically for movement 15— movement 16 uses identical material to represent the islands, but the notes are bowed and played “molto sul ponticello”, a technique I find to be far more appropriate given this photograph's low light after sunset.

Similarly to the method used to derive the tone row in *Vortex, January 1932*, the contour of the islands's shape could have been established mathematically or traced in detail. Given the brevity of the movements in this work, a more accurate representation of the islands would necessitate adding many more notes in the same amount of time and so, in my view, would add an uncharacteristically busy element to the soundworld. I shall establish a potential solution in the concluding paragraphs of this chapter.

Spatialisation: Movement of Sound Following Structure of Image

In the context of a live work, and especially an orchestral work, I believe that to experience the disorienting nature of a vortex it is necessary for the audience to be situated among the performers. Physical movement of sound is a key concern in this work; movement of sound across the ensemble can certainly be achieved with the orchestra in its standard formation and the audience sat in front (a concern of György Ligeti's micropolyphonic works, for example *Atmosphères* (1961) and *Lontano* (1967)), and the inclusion of off-stage instruments cannot be ignored when discussing spatialisation (I find the off-stage choir in "Neptune" from Gustav Holst's *The Planets* (1914-16) to be especially effective), but in this case I felt it was necessary to provide what I believe to be a more immersive experience for the listener. The conductor is placed at the centre of the performance area with the performers and audience facing them (fig. 16), arranged in a full circle influenced by Eliasson's circular canvases (more on which later in this section). Several works use this arrangement of the orchestra, notably Xenakis's *Terretektorh* (1966— fig. 17) and *Nomos Gamma* (1967-68), and Luís Tinoco's *Cercle Intérieur* (2012).⁵⁶ While these works are written for large orchestras containing 88 performers (98 in the case of *Nomos Gamma*), I have chosen a slightly more modest approach with only 73 musicians (no percussionists and two fewer string players in each section compared to *Terretektorh* and *Cercle Intérieur*). By reducing the number of performers, I can more easily handle the trajectory of the sounds as they move around the performance space.

Another work to include a reorganised layout of the orchestra, this time in response to a painting, is Henri Dutilleux's *Timbres, espace, mouvement* (1978), based on Vincent van Gogh's *The Starry Night*. Dutilleux removes violins and violas entirely from the ensemble and positions the cellos, twelve in total, at the

⁵⁶ Many other works incorporate spatialisation through non-traditional positioning of performers, however I know of no other works than those already stated that use the same layout as *The Substance of Air*. Examples of other similarly spatialised works include Karlheinz Stockhausen's *Carré* (1959-60), written for four orchestras and four choirs that are arranged in a square with the conductor placed at the centre, and Gérard Grisey's *Tempus Ex Machina* (1979), which positions its six percussionists in a circle or hexagon with the audience placed within said shape. This is not an exhaustive list.

front of the ensemble in a semicircular formation, potentially in response to the large centrally-positioned swirl of night sky present in Van Gogh's painting.

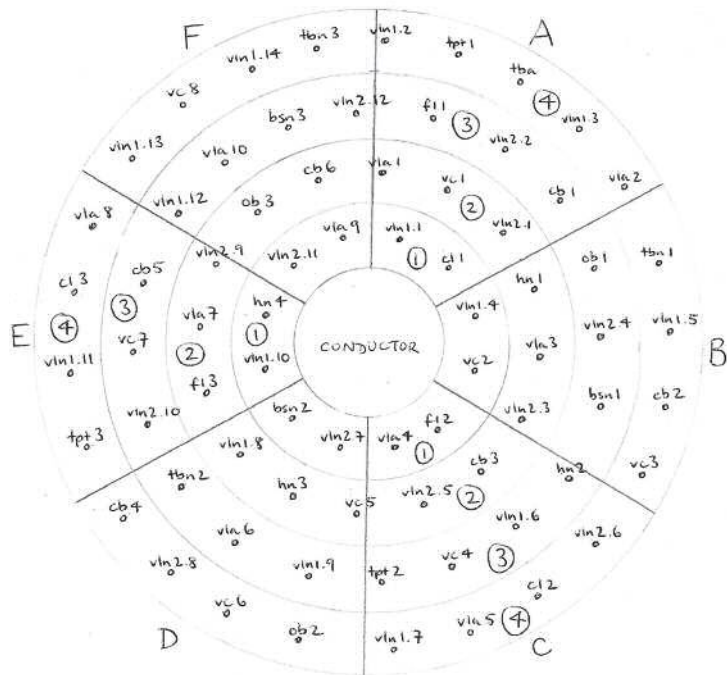


Fig. 16: ensemble layout of *The Substance of Air*

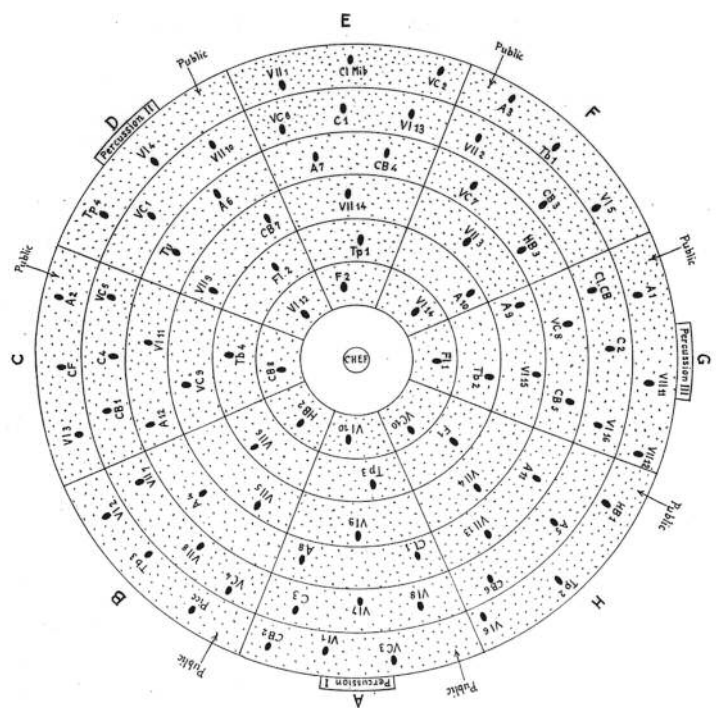


Fig. 17: ensemble layout of Iannis Xenakis's *Terretektorh*⁵⁷

⁵⁷ © With kind authorisation of Editions Salabert

Issues of practicality are raised through the use of this unfamiliar orchestral layout, the first of which being that many performers will be positioned behind or at an awkward angle to the conductor, potentially leading to difficulties in synchronisation with the rest of the ensemble. I came to the conclusion that it would only be practical for the conductor to give two beats per bar (*The Substance of Air* is written in 2/2), reducing the likelihood of confusion. In correspondence with Luís Tinoco, they confirmed that they also chose two beats per bar (2/4 in his case) for the same reason. Tinoco went on to say that several performances of *Terretektorh* had found a solution in using video projection of the conductor from the front, allowing every member of the ensemble to view the conductor easily.⁵⁸

There is also a question over the audience's autonomy. In *Formalized Music*, Xenakis states that his intention for both *Terretektorh* and *Nomos Gamma* is for the audience to be given folding camp chairs thus allowing them to sit in whatever position amongst the orchestra they wish for whatever period of time they wish, otherwise they are free to roam the space.⁵⁹ Although this idea aligns neatly with my tendency towards the greater autonomy allowed by art spaces, I feel that allowing the audience to roam the space would raise safety risks in the context of a concert work. Solutions may be found in taking the work outside of a concert environment and either providing loudspeakers in the same formation to replace the live performers or choosing a larger space than a concert hall, allowing the performers to be positioned further from one another thus reducing the safety risks of roaming audience members.⁶⁰

Sound moves around the ensemble predominantly through staggered entries of the same note from adjacently positioned instruments. These notes appear from nothing, or sometimes an extremely low volume, and crescendo to a peak dynamic before either fading back to nothing or immediately disappearing. The staggered entries of adjacent instruments creates parabolic movement of sound within the ensemble (see fig. 18), and thus replicates the hazy nature of the paintings due to there being several instruments performing at once at varying levels of focus. The shape of the structure in the paintings informs many of these

⁵⁸ Luís Tinoco, personal correspondence, "Re: Cercle Interieur", 17 August 2017

⁵⁹ Iannis Xenakis, *Formalized Music* (Ontario: Indiana University Press, 1971) p.236

⁶⁰ The works of James Tenney (*In a large, open space*, 1994) and John Luther Adams (*Sila: The Breath of the World*, 2013) provide a template for the latter idea.

parabolas, but some are simply part of an exploration of spatialised sound (an example is shown in fig. 18).

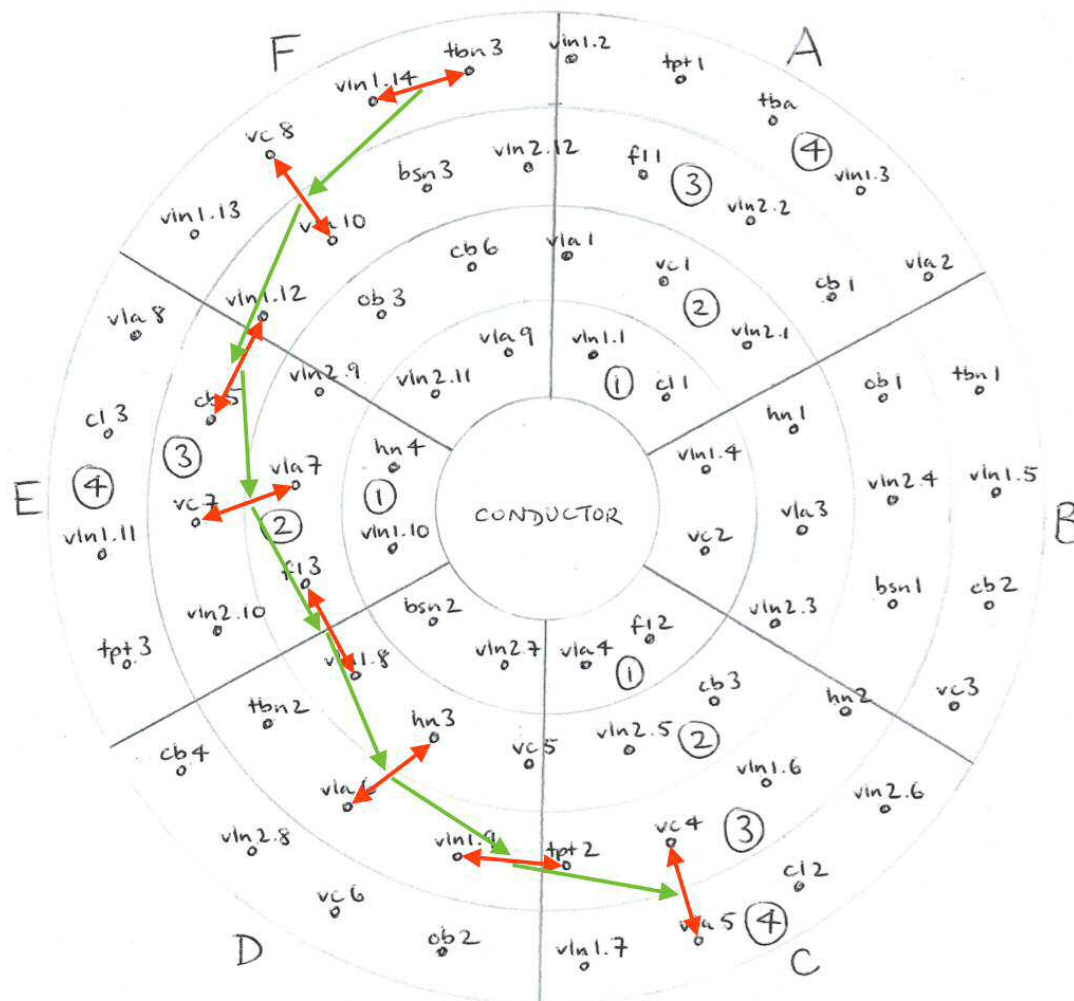


Fig. 18: parabolic movement of sound, beginning with violin 1.14 and trombone 3, from b. 74 of "1. Shade and Darkness". Red arrows show instruments performing simultaneously, green arrows show trajectory of sound

Parabolic movement of sound is a key component of the aforementioned Xenakis and Tinoco works, while in *Timbres, espace, mouvement*, Dutilleux represents the swirling mass of Van Gogh's sky through an amalgamation of individual solo lines.

Movement 1, "Shade and Darkness", mimics the relatively narrow path of the vortex structure in Turner's painting *The Evening of the Deluge* by including an equally narrow path of pairs of instruments passing dyads to adjacent pairs. The focal point of *The Evening of the Deluge* is apparent just upwards and to the left of centre, which, when consulting the instrumental layout, equates to the position of horn 4 and violin 2.11. The tones are then passed around the ensemble in a clockwise motion that is displayed in fig. 19.

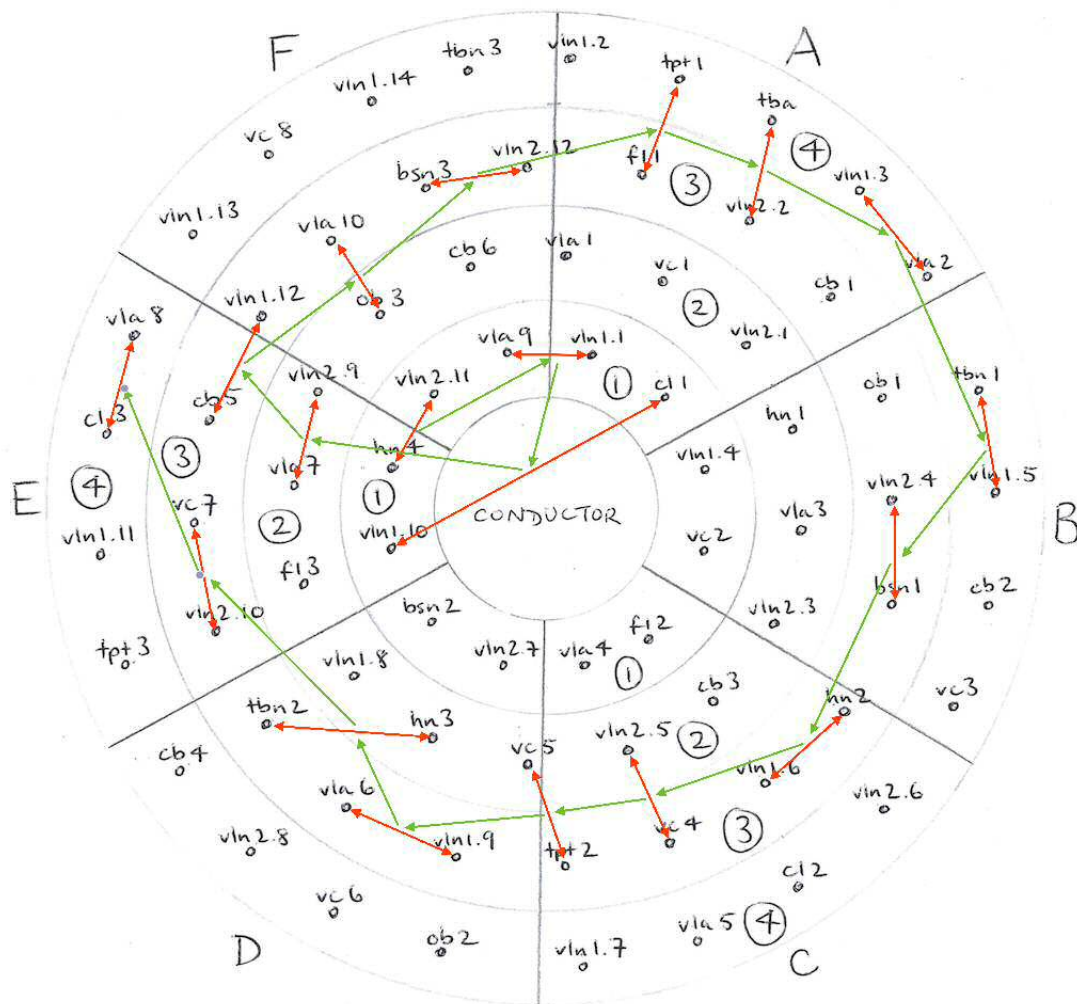


Fig. 19: movement of sound mimicking shape of vortex structure in *The Evening of the Deluge*, beginning with horn 4 and violin 2.11, from b.247 of "1. Shade and Darkness". Red arrows show instruments performing simultaneously, green arrows show trajectory of sound

The starting point of the vortex structure in *The Morning After the Deluge*, the basis of movement 2 (“Light and Colour”), is similarly positioned to that of *The Evening of the Deluge*, though just a little lower. This indicates that a parabola mimicking the shape of this structure should commence with violin 1.10 and flute 3 (fig. 20). The structure of this painting is broader and less dramatic than that of *The Evening of the Deluge*, and as such I chose to include larger groups of instruments than the duos that appear in movement 1, and for the parabola to move at a slower pace.

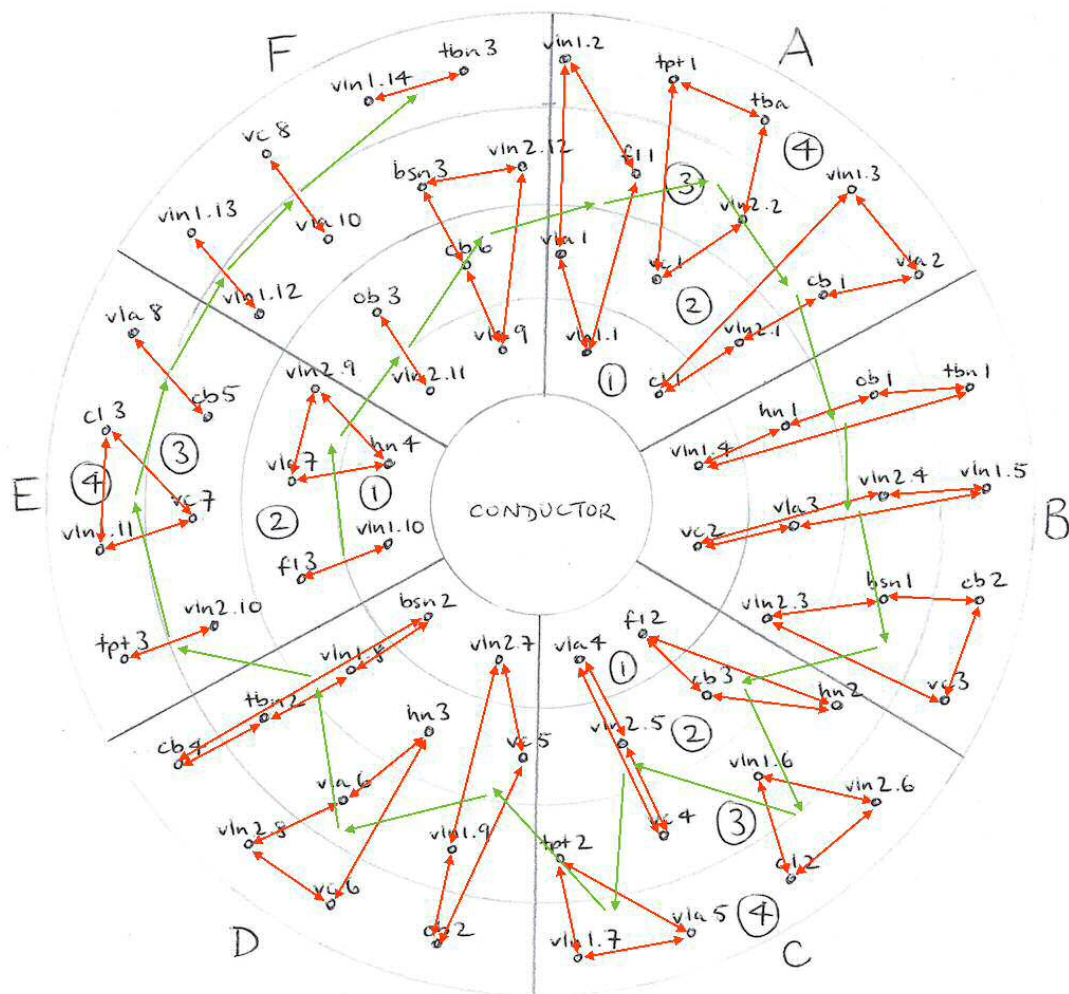


Fig. 20: movement of sound mimicking shape of vortex structure in *The Morning After the Deluge*, beginning with violin 1.10 and flute 3, from b. 1 of “2. Light and Colour”. Red arrows show instruments performing simultaneously, green arrows show trajectory of sound

Timbre: Perceived Warmth of Colour

The works in this portfolio do not go into great depth in exploring timbre as a musical element to be influenced by specific features of static visual art. My reluctance in doing so stems from my desire for my music to be presented as one cohesive and consistent entity—to include a variety of timbral effects, especially those achieved through extended techniques, feels antithetical in this regard.

The only engagement of timbre as dictated by static visual art comes in the string writing of *A Slideshow*, *Layer Drawing*, and *The Substance of Air*. In these works, string instruments represent a cool colour (blue being coolest, in my opinion) by performing “sul ponticello” and represent a warm colour (red being warmest) by performing “sul tasto”. Due to there being a sliding scale for the perceived warmth of colour, occasionally I include more specific directions, preceding the stated bowing technique with “molto” or “poco”.

In writing the works presented in this portfolio, I have intentionally sought to explore a broad selection of methods by which to derive musical equivalents from visual aspects. The result of this is that I have not necessarily pushed these methods as far as they can go. What I have presented in this chapter is a variety of approaches with which I am now familiar and can select and develop as I see fit in future works.

Regarding the scanning of an image, *A Slideshow* is the most detailed work in the portfolio to use this method in deriving its structure/progression, but clearly is not as detailed as it could be. (This is something that connects with the representation of the islands in movements 15/16 and 16/16.) I could choose to remove the limitation of a single page containing a single system, therefore removing any connection with the orientation and dimensions of the photographs upon which the work is based, and write a work of much greater duration and much finer attention to detail—this is something that could benefit from a larger ensemble. Alternatively, I could have hand-drawn the score, allowing for the inclusion of a greater level of detail than is achievable through using Sibelius

software. In my view, both methods are worth exploring. Though *A Slideshow* and *Layer Drawing* are satisfactory works in their own right and are successful products of the methods used to create them, I must acknowledge that my approach can be considered a ‘low resolution’ interpretation. This is something for which *Layer Drawing* can be defended, as the photographs used in its creation were reduced size images, themselves lacking in perceivable detail.

The use of dyads as a means to represent colour was successful on the whole, particularly in the case of *The Substance of Air*— the intervals attributed to colours in this work feel settled in terms of my compositional practice and I shall continue to use this method with these associations of dyad and colour for the foreseeable future. In isolation, I feel that using the interaction of two tones to represent a full spectrum of colours in all their nuance is an oversimplification. However, the use of register and, to a lesser extent, timbre is sufficient in providing said nuance. A natural progression would be to establish and utilise the full range of sounds available to the instrument(s) in question, something that I have only really covered in my writing for string instruments in this portfolio.

CHAPTER THREE, Music Seeking the Temporality of Static Visual Art

This chapter will demonstrate the research and theory informing my compositional practice regarding temporality within this portfolio, and the success of these works when acting in a musical temporality seeking to closely resemble the temporality of the static visual artworks upon which they are based.

Music and static visual art traditionally relate to time and space in contrasting ways: music is generally considered a temporal art; painting, photography, and sculpture are generally considered spatial arts. Yet space, consciously or unconsciously, affects music, and static visual art is affected by time. What is being sought in this portfolio is a music upon which time occurs or a music that acts alongside time— as opposed to a music acting upon time, as traditional classical works of a goal-oriented, linear nature tend to do— and a music that takes consideration of the space in which it is situated or the space it has created beyond being presented on a concert hall stage.

New temporalities in classical music arose from developments in musical thought and practice (as well as developments in art in general) in the nineteenth- and twentieth-century,⁶¹ with some of these temporalities discarding traditional forms and functions of classical music. Musical works in moment time,⁶² mobile form,⁶³ or vertical time (all terms used by Kramer) avoid traditional forms and functions of classical music, preferring to explore ideas of delineation and discontinuity.

⁶¹ Of particular relevance are Wassily Kandinsky's preoccupation with colour as subject ahead of recognisably tangible objects in painting, the Futurists establishing sound/noise as a legitimate area of musical practice, and the advent of project-based interdisciplinary works including the creation of 'happenings' and 'environments' (attributed specifically to Allan Kaprow and generally to those studying under or in the circle of John Cage in the late 1950s).

⁶² Claude Debussy's ballet *Jeux* (1913) is a particularly influential example, using fragmentary passages and nondevelopmental form (Kramer, p.546), as is Igor Stravinsky's *Symphonies of Wind Instruments* (1920) (Kramer, p.548).

⁶³ Several works of Earle Brown, including *FOLIO* (1954) and *Available Forms I* (1961), leave the form open to the performers' intuition.

As has been made apparent since the beginning of this commentary, many of the works in this portfolio are concerned with vertical time. To recap, musical works written in vertical time offer a sense of self-containment via an implementation of process, an intentional nondevelopment of ideas, and a distinct lack of hierarchical relationships on harmonic, formal, and structural levels— these are things that distinguish vertical time as regularly non-linear. This is a music for which the word “static” is an adequate descriptor (that it isn’t entirely compatible will be discussed in the following section of this chapter)— as the ever-present details of a work of static visual art combine to create the work’s whole, unable to metamorphose, so every component of a musical work acting in vertical time combines to create a single entity unconcerned with stepping outside of or expanding the parameters set up for itself. There is nothing to be revealed, nothing to move towards; the qualities of the sounds themselves make up the canvas, their interaction is the paint, and the methods of interaction are the placement of the paint.⁶⁴

When a musical work is being performed, it creates and affects a psychological space. Music of linearity and goal-orientation will consistently alter this psychological space over its duration, but music in vertical time will invite its audience to step into and remain present in the space it creates and occupies, as one is invited to step into and remain present in the environment occupied and affected by the presence of a work of static visual art— Laszlo Moholy-Nagy states that photography brings about “a psychological transformation of our eyesight”,⁶⁵ implying that we see differently when observing a photograph, and I suggest an aural equivalent occurs when listening to music in vertical time. The inactivity of the conceived psychological space of a musical work in vertical time equates with the ‘single entity’ mentioned in the previous paragraph.

To align music in vertical time with the temporality of static visual art it is necessary to think of said music on an architectural level, metaphorically removing the performers and instruments upon which the sounds are produced and allowing those sounds simply to exist in space and one’s mind in much the same way as a painting, photograph, sculpture, or artefact occupies space and

⁶⁴ This analogy can be altered in reference to photography and sculpture.

⁶⁵ Susan Sontag, *On Photography* (London: Penguin Books, 1979) p.122

affects the perception of its environment.⁶⁶ Jennie Gottschalk cites Jürg Frey as a composer of architectural music: “the listener [psychologically] moves around within the space created by his sounds and silences in a way that has more to do with thought than with acoustics, physical placement, or the passage of time.”⁶⁷ Similarly, Joel Chabade writes of Éliane Radigue’s work: “in a concert, her music floated in the air, coming from everywhere as music without a source, just a natural part of our world, just there, and without effort.”⁶⁸ These are qualities I seek in my music and are qualities that align with the idea of musical works acting as works of static visual art.

Sound art and installation art take literally the idea of a spatial and sculptural music, carving the environment of the space in which it resides. When these unfaltering, or (at least) fixed, sounds are apparent, “linear time becomes navigable space”.⁶⁹ In these situations, the sound can literally be static— a single sound, unaltered, emanating from a single source in a single direction— with the temporal experience dictated by the conscious or unconscious will of the listener in navigating the space. This is the physical manifestation of the psychological spaces created by musical works in vertical time.

Many of the works presented in this portfolio are concerned with the psychological space that they create, with a physically navigable space being the concern of the projects intended for an art space scenario— the latter will be discussed in depth in Chapter Four.

⁶⁶ John Cage and Morton Feldman frequently used the phrase “the sounds themselves”. Feldman was especially attached to the idea of sonic beauty; being able to hear a chord as if no music had come before it. This certainly ties in with vertical time’s disinterest in traditional musical linearity, and so is worth mentioning here, but there is not necessarily any connotation of an architectural music from either Cage or Feldman.

⁶⁷ Jennie Gottschalk, *Experimental Music Since 1970* (New York: Bloomsbury, 2016) p.108

⁶⁸ Éliane Radigue, “The Mysterious Power of the Infinitesimal” in *Leonardo Music Journal* vol.19 (Cambridge, MA: The MIT Press, 2009) pp.47-49 (p.47)

⁶⁹ Gottschalk, p.113

Vertical Time and Beyond

If a musical temporality were to be used to describe how static visual art acts in time, then vertical time would be a satisfactory, though not entirely accurate, answer. Music in vertical time still changes throughout time, even if it can be at a glacial pace.⁷⁰ A work of static visual art cannot alter its appearance (otherwise it would not be static) and it cannot cease to exist without unintended intervention.⁷¹ For this reason, I suggest that Wim Mertens's term of frozen time is a more appropriate musical temporality to describe that of static visual art,⁷² frozen time amounting to a single continuous form. Works in frozen time intentionally lack directionality or development of any description, whereas works in vertical time develop only through the use of process. This portfolio engages with both temporalities— this will be discussed later in this chapter.

One work in frozen time that acts similarly to a photograph is Peter Ablinger's *IEAOV*⁷³ (1995-2001). In this work, the performer is recorded playing a microtonally inflected ascending scale (input), computer software Max/MSP condenses or verticalises the tones present in the recording and plays the recording back as one static entity (output)— the resulting sound is something Ablinger describes as both a timbre and a palette; terms from both sonic and visual art. This process and the resultant outputs are the culmination of Ablinger's interest and experimentation with long-exposure photography. Photographs capture a slice of time, preserving it for the lifetime of the media upon which the image is stored. The process and result of verticalisation in

⁷⁰ John Cage's organ work *As Slow as Possible* (1987) is an eight-page score with a duration of 639 years. A performance began at St. Burchardi church in Halberstadt, Germany, on 5 September 2001 and is due to end on the same date in 2640. The 639-year duration is significant as it is the number of years the organ performing the work had existed prior to the work's commencement.

⁷¹ The work of Andy Goldsworthy offers a potential contradiction to my assertion. Goldsworthy creates sculptures using only foraged objects and resources, situating them in their natural environment in such a way that they inevitably shall be destroyed through natural means. For instance, Goldsworthy may build a stone archway on a beach with the intention that it will collapse due to it being engulfed by the incoming tide. That Goldsworthy's sculptural work is intended for destruction suggests that it does not fall easily into the category of static visual art, and my assertion of such art being unable to cease existence is still truthful.

⁷² Mertens, p.91

⁷³ *Instrumente und ElektroAkustisch Ortsbezogene Verdichtung* [Instruments and Electro-Acoustic Site-specific Verticalisation]

IEAOV mimics photography's ability to preserve and store time— every tone is present for the duration of the playback in much the same way as every detail of a photograph is displayed at all times. This photographic approach to sound links with Saunders's *Separated we shall be forever my friends, like the wild geese lost in the clouds* (mentioned in Chapter One, p.15)— if *IEAOV* represents the photograph in its physical state, preserving the events captured by the camera, then the brief works contained in *Separated we shall be* represent the events themselves.

In order for music to align more closely with static visual art's temporality, further differentiation within the fields of vertical time and frozen time, as well as beyond them, must be sought. Western music, as well as many other traditional musics, has almost entirely acted upon time using rhythm, metre, and tempo to divide time into the music's own units, creating pulsed time— a term used by Gilles Deleuze.⁷⁴ Static visual art is unable to affect time in such a way, though its equivalent is found in its affecting of the space it physically occupies in regular units of distance.⁷⁵ Music in non-pulsed time (Deleuze's term in opposition to pulsed time),⁷⁶ replacing rhythm, metre, and tempo with duration, is music that does not act upon time but rather within it, as a work of static visual art can only be present during time and not act upon it. Deleuze uses the terms striated time (appertaining to chronometric speed) and smooth time (appertaining to a physical or metaphorical spatial occupation) to contextualise pulsed time and non-pulsed time, respectively.⁷⁷

Striated time and smooth time always act in tandem, with one dominant over the other depending on context. In music, when striated time is dominant, smooth time is understood as the perception of the work's macroform; when smooth time is dominant, striated time is understood as the common measurable units of time (seconds, minutes, hours, etc.). An interesting example can be made with regard to extended Minimalist works,⁷⁸ which almost always maintain a constant rhythmic pulse, aligning with striated time, to the point of forcing the

⁷⁴ Deleuze, p.71

⁷⁵ As mentioned in the Introduction (p.3), think of the geometric paintings of Agnes Martin and Piet Mondrian as examples of painting in 'pulsed space'.

⁷⁶ Deleuze, p.71

⁷⁷ Ibid.

⁷⁸ Examples include Philip Glass's *Music in Twelve Parts* (1971-74) and Steve Reich's *Music for 18 Musicians* (1976).

listener to lock in to its ‘heartbeat’. My observation is that once the listener has ‘locked in’, smooth time has overcome striated time— the listener perceives the work as one entity and not the intricate interactions of the individual parts making up the whole sound.

Minimalist music is an inherently linear music occurring in vertical time, moving forward through the use of process. Music in vertical time can be linear, though more regularly it is nonlinear: linear vertical time is music of process, whereas nonlinear vertical time is music of stasis or discontinuity. The works in this portfolio engage with both linearities.

For music to behave in time as similarly as possible to static visual art, it must look towards its audience’s reception and perception— an understanding of the sense imparted by the artwork in question. Sarah Davachi uses the terms “real” and “unreal” to separate the material of the artwork (real) from the audience’s emotional response to the material (unreal), as well as describing the process of this emotional response as “automatism”.⁷⁹ This automatic emotional response refers to both that which is intended by the artist and that which is an unintended personal response by the individual listeners. In terms of reception, what is ‘real’ is the acoustic phenomena reaching the ear of an individual listener, whereas what is ‘unreal’ is an understanding and contextualising of the soundworld that is the amalgamation of those acoustic phenomena.

When listening to music in vertical or frozen time, an automatic response that I frequently experience is of self-reflection, and I believe that it is the self-contained nature of such works that drives this response. It is this automatic response that I seek when experiencing any art— I wish to enter and remain in the psychological space created by the artwork in question, thus enabling self-reflection through an active engagement with the artwork— and it is the same response I wish to invoke in the audience of my music.

What must also be considered is the listening process of audience members in a typical music setting, which is very often a linear experience, an expectation of progress towards a real musical goal and an unreal emotional response. Works in vertical time and frozen time act against this through their self-containment and

⁷⁹ Sarah C. Davachi, *Looking inward: La Monte Young, Arvo Pärt, and the spatiotemporal dwelling environment of minimalist music*
<<http://divergencepress.net/articles/2016/10/18/looking-inward-la-monte-young-arvo-prt-and-the-spatiotemporal-dwelling-environment-of-minimalist-music>> [accessed 18 March 2019]

lack of implication, and must exercise patience in allowing audience members to reach their automatic response, similar to the idea of locking in to a Minimalist work. I believe that someone visiting an exhibition in an art space is more likely to embrace this non-goal-oriented experience and as such musical works in vertical time and frozen time are well suited, perhaps better suited, to being presented in an art space environment.

Engagement with Temporalities

The works presented in this portfolio engage with the above ideas in a variety of ways, necessitated by my differing methods of response to their chosen static visual artworks, covered in Chapter Two. Having said this, there is a definite lopsidedness in some categories— it is already apparent that I favour writing non-pulsed music in equivalence with a hazy, indistinct image, naturally placing a majority of these works in smooth time.

The only work contributing to this thesis that embraces striated time is *Memories Breathe Through Desolate Ruins*. This work was written as a response to Ivor Davies's sculpture *Levantine City*, from which I imagined a desolate city whose history was ingrained in and emanated from its ruins. The idea of the city's memories becoming more pervasive led me to choose rhythmic notation ahead of the proportional notation that was becoming my preferred method by which to write music in smooth time. The memories take the form of widely-spaced quaver patterns that build in intensity for most of the work. However, due to the sparse nature of the other features in the score, there is still a prominent implication of freedom for the performer— in particular, the full bar rests that are prevalent in the opening section are not intended as precise but as an instruction for a significant gap between the phrases surrounding it.

Two other works are also written using rhythmic notation, *The Substance of Air* and the first version of *The Storm Took Them All*. These works engage smooth time using similar methods. *The Storm*, written for three voices, subverts a sense of pulse through the use of complex polyrhythms amongst the three oscillating vocal lines.⁸⁰ This technique gives the impression of an increasing or

⁸⁰ I give examples of other composers to use this idea in the Introduction (p.4).

decreasing rate of movement, and in doing so hides any metric relationship between the rhythms of the individual voices.

Extended tones make up the material of my orchestral work *The Substance of Air*, though proportional notation was not used due to the large number of musicians required for the work and the likelihood that a significant number would not be familiar with the notation method. However, instead of including ties between noteheads, I chose to use an extended thick line from the entry notehead to signify the duration of the tone. This allows for an easier understanding of the general movement of sound when reading the score—something particularly important when considering its size.

All other works in this portfolio are written in smooth time and use proportional notation. Several of the proportionally notated works use the exact same method, with the others using variations better fitting the instrumentation or context of the work. *A Single Reed Captures the Wind*, *Layer Drawing: the Sky Above the Sea*, *Vortex*, *January 1932*, and the second version of *The Storm* all use equidistant barlines that reference a certain amount of time passing, usually five seconds, with note durations being signified by a thick line following the notehead. As was specified in Chapter One, *Layer Drawing* initially included bars with a duration of five seconds, but this was altered to “one long, slow bow-stroke” after rehearsals in the lead up to a performance.

A Slideshow is the only proportionally notated work that does not include equidistant barlines to signify elapsed time. This is due to the comparative brevity of the movements— a single system on a single page, with a duration of c.45 seconds. Many of these movements include a large amount of detail, and to include barlines in reference to elapsed time would unnecessarily clutter the page.

A more even split is found in the engagement of vertical time and frozen time. Both *A Slideshow* and *Layer Drawing* are written in frozen time, with the individual statements of each (entire movements in *A Slideshow* and individual bars in *Layer Drawing*) remaining just that: individual statements. Though non-musical process was used as a means to derive the material of both works, a trait of vertical time, the works’ forms dictate that said material does not imply a sense of forward movement or momentum.

Vortex, January 1932 and *The Substance of Air* are both written in vertical time. Neither presents its material as forward-looking or evolving, but said material is treated using a variety of methods in clearly divided sections during the work.

A Single Reed appears to straddle the division between vertical time and frozen time. Its material is made of extended tones from a fully chromatic selection of notes, with musical statements being largely identical in nature, thus alluding to frozen time. However, there is the implication of form through the introduction of ‘new’ material or a sudden alteration to the soundworld— for example, b.38 in which very low register tones are introduced in the piano, or b.51 in which the texture is reduced to only high register tones.

The second version of *The Storm*, written as part of “Ancient Mariner: Not An Opera”, is also difficult to attribute to one or the other of vertical time or frozen time. The first version of this work unquestionably acts in vertical time, with clear divisions and differences in soundworld between some sections that move it away from acting in frozen time. The second version uses the same material as the first and in the same order, but stretches the duration of each note so that the work is close to three times longer than the first. This second version is ideally located in a resonant acoustic, meaning that the notes are intended to continue after the singer has moved on to the next note thus creating a hazy texture. Such a blurred soundworld serves to cover up the divisions between sections that are so apparent in the first version of *The Storm*, thus contributing, along with the more subtle ebbing and flowing of momentum from the rate of change of notes, to a temporality perhaps better described as frozen time.

It could be reasonably assumed that musical linearity and narrative⁸¹ are very closely associated; the idea of narrative appearing to necessitate linearity. *A Slideshow, Layer Drawing, and A Single Reed* are all narratively derived works, yet none of these works possess goal-orientation or an implication of development, and therefore none are linear in nature. *Layer Drawing* presents sonic equivalents of a series of photographs taken at regular intervals over the course of a day, placing each in chronological order, but avoids linearity due to the fact that the representation of each photograph never leads to or implies the next.

⁸¹ Refer to footnote 7 (p.2) for the context of this term.

Vortex, January 1932 and *The Substance of Air* derive their structure through following an unbroken path around their chosen image(s), representing the features of the image along the way. Again, this could reasonably be assumed to imply linearity, but the same issue is encountered as with the narratively derived works— the musical material possesses no sense of implication.

The only work in this portfolio that can be described both as linear and as acting in vertical time is the first version of *The Storm*. From figure A to figure C obviously ‘musical’ phrases (as opposed to material generated by process) are included in this work, as well as hierarchy in the importance of the three vocal parts.

As a means to condense the information provided in this section of the chapter, fig. 21 presents a table of the various temporalities as they relate to each work in the portfolio. The text concluding this chapter further contextualises and analyses these findings.

WORK	INSTRUMENTATION	VERTICAL TIME	FROZEN TIME	STRIATED TIME	SMOOTH TIME	LINEAR	NON-LINEAR	NARRATIVE	FORM THROUGH PROCESS
A Single Reed Captures the Wind	flute, bass clarinet, piano		MORE LIKELY		YES		YES	YES	
A Sideshow of Sideways Horizons	string quartet		YES		YES		YES	YES	
Layer Drawing: the Sky Above the Sea	contrabass		YES		YES		YES	YES	
Memories Breathe Through Desolate Ruins	harp	-----	-----	YES		YES		-----	-----
The Storm Took Them All (first version)	vocal trio SSA	YES			YES	YES		-----	-----
The Storm Took Them All (second version)	vocal trio SSA		MORE LIKELY		YES	YES		-----	-----
The Substance of Air	orchestra	YES			YES		YES		YES
Vortex, January 1932	soprano, bass clarinet, trombone, viola, percussion	YES			YES		YES		YES

Fig. 21: table showing individual works from the portfolio and their engagement with various temporalities and linearities

What is immediately apparent from the information present within this chapter is there are several successful approaches that can be used in writing music that acts similarly in time to static visual art.

I suggest that frozen time is the closest musical temporality to that of static visual art. It is the temporality that produces music of a single entity, non-linear in nature. All works in this portfolio that act in frozen time are non-linear except the second version of *The Storm*, which is transformed into a work in frozen time by its ideal resonant acoustic environment.

Each of the non-linear frozen time works possesses narrative elements: *A Slideshow* creates a narrative through ordering its individual movements (each based on a single photograph); *Layer Drawing* presents a chronological account of a series of photographs; *A Single Reed* presents a series of similar ‘gestures’ in accordance with the perceived composite nature of Seward’s *East Wind II* to build its single entity. I do not believe it is necessary for a musical work in frozen time to achieve static visual art’s temporality through the use of a non-musical narrative; it just so happens that these intentionally frozen time works include narrative as part of their structure. However, I suggest that the inclusion of a narrative structure is appropriate for a musical work seeking to replicate the nature of a static visual artwork. Static visual artworks, whether consciously or unconsciously, possess a sense of inherent movement despite all of their features being fixed— all subjects in painting, photography, and sculpture, either recognisably ‘real world’ or abstract shapes, are seen to interact spatially both through the work’s structure and our innate understanding of their functions, and therefore create a sense of movement in spite of their actual stasis. The narrative of these artworks is revealed through this spatial interaction, as the narrative of these frozen time musical works is revealed through the temporal interaction of their constituent parts.

The Substance of Air and *Vortex, January 1932* both act in vertical time and derive their form through process, specifically by following an unbroken path around the artworks upon which they are based. This method naturally produces a ‘timeline of events’ that negates any association with frozen time. A musical work deriving its material from a specific work of static visual art is only able to

embrace frozen time if it embraces all of the features of the image for its duration (in the spirit of Ablinger's *IEAOV*). Neither *A Slideshow* nor *Layer Drawing* follow a path within the photographs from which they derive their material, but they do 'read' said photographs from left to right, making a case that they do not act in frozen time. However, when considering these works in their entirety, they unquestionably act in frozen time due to their non-linear, non-developmental progression.

It could be argued that by not considering the full image, *The Substance of Air* and *Vortex, January 1932* cannot truly act in time similarly to said images. The paths these musical works follow around their chosen images represent the structure of those images— the common path that the eye follows when viewing the work closely. In following the structural path of the chosen image, these musical works reveal themselves over time in much the same way as the images reveal themselves over time.

CHAPTER FOUR, Music in the Environment of Static Visual Art

In consideration of the purpose of this thesis, I am specifically looking at the practicality of placing my own music in the art space, and not sound art or installation art. However, the influence of these fields both on my own work and on the development of the art space in a historical context cannot be ignored. At this point I feel it is important to define what I believe an art space to be and follow that up with how I see my work fitting into such environments.

Though I have mentioned writing music intended for a museum or art gallery environment, static visual art is by no means constrained to just those two scenarios. Sound art and installation art are fields that have taken artworks into environments far beyond the walls of the aforementioned traditional homes of art. The most profound development in taking both music/sound and visual art out of the gallery or museum is the advent of site-specific installations.

Site-specific installation is a product of the compulsion of a selection of artists to take music (and sound) and visual art outside of their usual habitats and into a more public domain (meaning greater public access— a dissolution of cultural boundaries), as well as “making the experimental strand of musical practice susceptible to a different set of conditions and questions.”⁸² The purpose of a site-specific installation is to create a synergy or even a dependency with the site in question whereby the environment is enhanced by the artwork and the artwork is enhanced by the environment.

Any publicly accessible area can become the location for an art space. Many of the sound works of Max Neuhaus are concerned with creating an organic and almost imperceptible soundworld compatible with the environment in which it is situated, the idea being that they are objects for our ears to find. Neuhaus’s *Times Square* (1977) installation features a single large loudspeaker emanating a deep resonant hum from a subway grill located on the traffic island of Times Square, New York City. The frequencies blend into the busy traffic-heavy environment, but, once perceived, work against the naturally occurring environmental sounds, thus posing questions of how we listen and why we listen.

⁸² Brandon LaBelle, *Background Noise: Perspectives on Sound Art* (New York: Bloomsbury, 2015) p.155

The “spectra” (2000-present) installations of Ryoji Ikeda offer a similar synergy with, disconnect from, and enhancement of the public environment through the simple yet intense use of light and sound. Ikeda creates light sculptures composed of pure white light, often searchlights pointed directly upwards, within which sinewaves are present, only perceptible through the beats and oscillations that occur with the movement of whomever is present in the space. The “spectra” installations have been situated in many major cities across the world and are presented in such a way that the light sculpture is visible from all points of the city, meaning all are aware of its presence— this is in contrast to Neuhaus’s approach of allowing the public to discover the presence of the installation for themselves.

It is the idea of imperceptibility that interests me most about these works. As the previously mentioned site-specific installations combine with and enhance their environments, thus creating the illusion of being a natural feature of the space in which they occupy, I wish for my music to possess that same sense of a natural continuing presence. Though slowly evolving vertical or frozen time and non-linear time musical works (such as the works of Éliane Radigue and Morton Feldman) are a great influence in this regard, so too is the architectural and environmental inspiration of the works mentioned above.

Traditionally, sound in the art space is unwelcome. When works incorporating sound are presented, as has become more acceptable since Fluxus works situated themselves in galleries in the late 1950s,⁸³ they are often given their own temporarily walled-off area (this is particularly the case for film works, for which gallery lighting is often problematic), given a full room with no other works present (sound installations), or a limited number of sets of headphones are provided in a certain location, meaning only a few visitors at a time may experience the work (there are also issues of hygiene). These main methods for including sound works in the art space appear as apologetic— as if the measures that have been taken were done so as to protect the purely visual works that have always been welcome.

The reasons for this are valid. Though visual artworks undeniably affect the space immediately surrounding them in terms of their physical presence, sound

⁸³ Paul Hegarty, “Noise/Music” in *Sound: Documents of Contemporary Art* (London: Whitechapel Gallery, 2011) pp.104-107 (p.105)

is far more pervasive and distracting due to the disconnect between what is seen and what is heard. By placing sound works in the aforementioned situations (“quarantine”⁸⁴ as Paul Hegarty puts it), one is better prepared to engage fully with the individual works situated in the gallery space, whether visual or sonic in nature. In fact, for this very reason many artists, when commissioned to create a new work for an upcoming exhibition, will insist upon a separate space for their work. Adrian George makes the point that some art spaces use parabolic speakers (sometimes called ‘sound showers’) as a means to prevent works that incorporate sound from spilling into the environment of other artworks so as to visually appear as a more unified part of the gallery space without sonically distracting visitors from other works.⁸⁵ These speakers direct sound to a specific area, but a similar issue arises as with the use of headphones, in that only a small number of visitors will be able to experience the full effect of the work at any given time.

I believe that musical works and sound works are essential to galleries and museums, whose role it is to acknowledge art in all its forms and the history with which it is associated. Though understandable, I find the separating of sonic art from silent media in these spaces to be unnecessarily limiting. In seeking to place my music in a gallery space, I expect that the individual works be presented as if they were static visual artworks or artefacts and not cordoned off. Though the previous statement appears hardline in its sentiment, taking into account the information above, it should be seen more as a preference— I believe there is enormous potential in the interaction of the sonic and visual arts in this environment.

Following on from this, a further difficulty arises thanks to my intention of live musicians to be the medium by which the musical work is heard, as opposed to recordings played through loudspeakers or headphones. For a musical work to be presented in a gallery space by live musicians as though the music itself is an artefact in an exhibition limits the number of musicians presenting any one work to a very small number, likely solo works and small chamber ensembles only. Then there is the issue of fatigue; it is simply not practical to request a musician to present a work for the opening time of a gallery or museum. Potential solutions can be found in several musicians taking shifts in presenting the given

⁸⁴ Ibid.

⁸⁵ Adrian George, *The Curator's Handbook* (London: Thames & Hudson, 2017) p.170

work or allowing the musician extended breaks between presentations of the work (akin to the breaks between the endings and beginnings of film projections). The ideal solution is the one that results in the work being present in the space for as long as possible.

Despite a number of drawbacks, listed above, in presenting musical works in an exhibition environment, I was still keen to pursue this idea in the hope that I might better understand what music's role can be in this scenario. "Music as Artefact", covered in detail later in the chapter, is my experiment with music in the gallery environment.

The remainder of this chapter will detail two events in which I was involved during the period of writing this thesis: "Music as Artefact" (mentioned above) and "Ancient Mariner: Not An Opera". Both events included music presented in this portfolio, and I will include details of this music's role in the events, but the main focus is to establish how the sonic aspects of these events fit into their environments, with comments on improvements and next steps.

There is also a small section of this chapter dedicated to *A Slideshow of Sideways Horizons*, which was not part of any event for the duration of this thesis but is ready for placement in an art space setting.

"Ancient Mariner: Not An Opera"

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The Storm Took Them All, for three voices (SSA)

Chapter One detailed the origins of my solo harp work *Memories Breathe Through Desolate Ruins*, written in response to an Ivor Davies sculpture at his retrospective exhibition "Silent Explosion" at National Museum Wales. Davies was made aware of the Cardiff University Contemporary Music Group concert in which this work was performed within a programme containing works influenced by various aspects of the exhibition, and subsequently they were excited to meet and talk to the composers involved. Several weeks after the concert, fellow postgraduate composers Julia Howell and Richard McReynolds, sound artist Leona Jones, and I met Davies to discuss a project in which Davies was already

involved as part of the Coleridge in Wales Festival of May 2016. This project was to take the form of a two-hour ‘happening’ based on Samuel Taylor Coleridge’s epic poem *The Rime of the Ancient Mariner*, to be presented in the foyer of National Museum Wales. Having been impressed with our engagement with the exhibition, Davies was keen to involve us in the happening.

In the following meetings, we established that we would prefer to write our own sections of music contributing to the happening, with the collaborative effort instead coming from its production. This was an interesting process: we agreed that placing such a story into the scenario of a happening necessitated a delineation of the narrative allowing us varying degrees of engagement with the material— Jones’s work focuses on exploring the voice and so the words of the poem themselves were the material, whereas McReynolds engaged with the poem’s general scenario of seafaring from which they included elements of semaphore and Morse code as part of his material. In creating the sequence of events we found ourselves concerned with ‘scenes’ and ‘acts’, prompting Davies to suggest that this approach was operatic yet the happening itself was certainly “not an opera” (hence the title, “Ancient Mariner: Not An Opera”).

That the happening was to be based on *The Rime* was a stroke of luck: the first work written for this portfolio was a vocal trio that included adapted lyrics from guitar band Slint’s song “Good Morning, Captain”, which is heavily influenced by Coleridge’s poem.⁸⁶ I wrote *The Storm Took Them All* as a means to establish how successfully I could write non-pulsed music using rhythmic notation.⁸⁷

Having converted the original score of *The Storm* into proportional notation, I made the decision to stretch the work from its initial duration of 5’30” to the point that any semblance of rhythm disappeared (the work now lasting 13’). This was done in response to the resonant acoustic of the museum’s foyer, anticipating that new notes would softly become a part of the texture created by the long decay after each note ended. With this information, it can be reasonably argued that I approached my contribution to “Ancient Mariner” as a piece of site-specific

⁸⁶ Tom Maginnis, *Good Morning, Captain - Slint* <<https://www.allmusic.com/song/good-morning-captain-mt0001620569>> [accessed 7 August 2015]

⁸⁷ *The Storm* was not written to further discourse in this area (this commentary has already established that complex rhythmic notation is a method that has been used by several composers since the late twentieth-century) but to provide myself with initial data before making improvements to my score writing methods in pursuit of non-pulsed music.

sound art— in fact, I would suggest that each of us who wrote for acoustic instruments as a contribution to the happening approached their work in consideration of the characteristics of the museum foyer.

The same is true of my other contribution to the happening, a two-performer percussion work called *Nothing But Flat Water*. This work represents the creaking and settling of the ship upon which the Mariner and their crew become stranded in the doldrums. Again, the resonant acoustic of the foyer was critical to my approach to this work, but I also took into account the dimensions of the space itself. By situating one percussionist on the ground floor of the foyer (Howell) in view of the other percussionist on the foyer balcony on the opposite side (myself), I created a spatialised texture of sporadic strikes of untuned percussion (wood blocks, triangles, cowbells), in which it is difficult to discern from where the sound began from many areas of the space.⁸⁸

A majority of “Ancient Mariner” included unrelated overlapping sections, usually one acoustic work and one electronic work, present at different parts of the museum foyer (contributing to the delineation of the narrative). Electronic works were present on the ground floor, playing from four loudspeakers positioned facing the centre from equal distances around the main section of the foyer, and acoustic works were mostly performed at various points of the balcony overlooking the same section of the foyer.⁸⁹ An outward facing ring of chairs was placed in the centre of the ground floor allowing visitors to remain in one place and be immersed in the surround-sound experience of the overlapping musical sections, with autonomy to explore the spatialised soundworld.

The Storm commenced partway through the first act (there were two acts in total, connected by an extended electronic passage by Jones), with its musicians Emily Wenman, Kate Willetts (both soprano), and Alessandra Palidda (alto) standing on the upper floor balcony directly above the entrance. This version of *The Storm* does not include any dynamic markings, with the intention being that the musicians sing at a comfortable level according to the register of the vocal

⁸⁸ I have several issues with the score for *Nothing But Flat Water* and so it has not been included in this portfolio.

⁸⁹ We had hoped to use the balcony on the floor above, as it is situated just below the building’s domed ceiling, which would have effective acoustic properties, but unfortunately (and understandably) we were unable to gain permission to use it as it was not a public space.

line. As such, the opening, situated in the low register of the voices, crept into the texture of the already present electronic work emanating from the ground floor and only truly came into focus during its long ascension to and faster descent from the high register that commences most of the way through the work. Thanks to the resonant acoustics of the museum foyer, the long decay of each note meant that layers of vocal lines built up and gave the work a presence, a soft intensity that filled the space without being overbearing. The balance was such that a listener could give their attention to it or choose to listen to the other aspect of the happening occurring at that moment without being distracted by the other work.

I was extremely pleased with my involvement in the production of “Ancient Mariner”. Though few of us had previous experience of such events, we quickly established methods by which to create the works contributing to the happening and effectively delegated tasks amongst ourselves. We met often to discuss the sequence of events and to rehearse the individual works, but there was little time available to rehearse the performance as a whole— Heidi Evans, at the time an Events Manager at the museum, was instrumental in facilitating the happening, gaining permission for us to use the public space prior to the performance, but our time in the space was limited to a single dress rehearsal a full week before the event, which was not enough time to ensure the smooth running of the event itself. Despite some setbacks, the happening occurred with very few difficulties and brought many positive reactions from visitors to the museum.

This was the first time that my music was presented outside of a concert hall scenario. The site-specific approach to the works I contributed to “Ancient Mariner” was wholly appropriate and brought elements to the work’s reception, explained above, that would not be possible in a concert scenario. In the planning and rehearsal stages of the event, I hoped that the musicians in *The Storm* would be able to be situated far from one another but still within eyeshot, similar to that of *Nothing But Flat Water*. Unfortunately, the limited rehearsal time meant that the singers were not comfortable enough with the work to stand so far apart. I believe that the work would have integrated into the texture with even greater smoothness had this been possible— this is something to pursue should it be part of a similar event in the future.

“Music as Artefact”

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Layer Drawing: the Sky Above the Sea, for contrabass

In April 2018 I produced a sound installation called “Music as Artefact”, occurring at contemporary art gallery Cardiff MADE. This was done with a view to better understand the role music can play in the art space, specifically investigating its role compared to a static visual artwork or an artefact. “Music as Artefact” had the secondary intention of allowing me to gain first-hand experience of curation and event management.

The installation comprised of six separate solo musical works being presented simultaneously by live musicians, lasting for two hours and occurring on two separate days. The musicians were situated in such a way as to appear ‘on display’ (fig. 22), with the intention that visitors to the gallery have the autonomy to step into the presence of the individual works and make their way around the space in any way they see fit— essentially presenting a traditional gallery scenario.

In the two days between the events with live musicians, the works remained situated in the gallery (the scores displayed alongside wall mounts containing information on the work in question) with loudspeakers replaying the works as they occurred at the first event (fig. 23). This was done in order to pose a question of what truly is on display in this scenario: the score?; the loudspeaker?; the musician?; the sound itself? My conclusion is that the musical ‘artefact’ is the sound itself emanating from its composer’s intended medium— in the case of the works presented in “Music as Artefact”, that medium is the live musicians rather than the loudspeakers. This is not to suggest that the loudspeaker playback was unsatisfactory, and I shall address this later in this section.



Fig. 22: performance of "Music as Artefact", (l-r) Nia Squirrell (violin), Connie Francis (contrabass), and Jason Hill (bass clarinet)⁹⁰

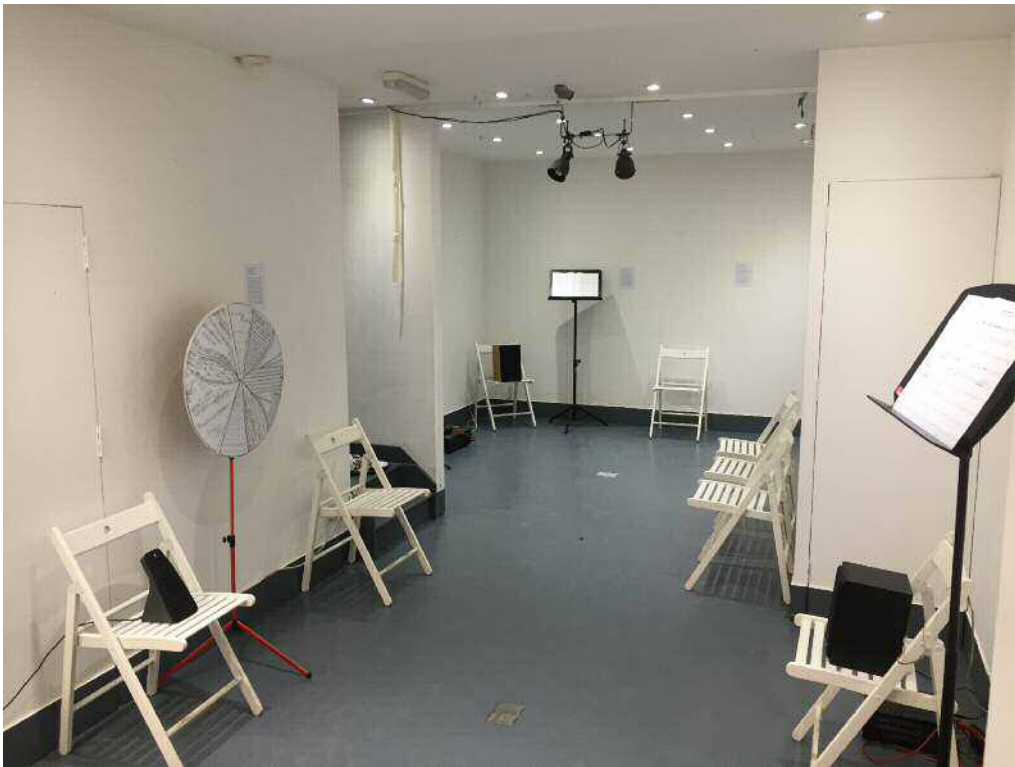


Fig. 23: set up of gallery between performances of "Music as Artefact"⁹¹

⁹⁰ photo: author's collection

In November 2017 I spoke with Cardiff MADE's co-owner, Zoë Gingell, about my plans for the installation and their implementation. Once we established the main details (theme, location within the gallery, dates and times, etc.), I asked six fellow composers (Poumpak Charuprakorn, Julia Howell, Richard McReynolds, Laura Shipsey, and a collaboration between Yue (Jerry) Zhuo and Zé Kouyaté) to include their work in the installation, requesting a solo work that could loop continuously and did not exceed a low volume. This was the scenario I had in mind for my double bass piece *Layer Drawing: the Sky Above the Sea*.

I had not given any further instruction to the composers beyond what is mentioned already, allowing them to explore whatever appealed to them most. Though the installation may have been more attractive to the public with a more focussed theme, "Music as Artefact" was the first event of this type in which many (if not all) of the composers had been involved, and as such I did not want them to be limited to a theme that may have only been an interest of mine. Due to this, there was a range of approaches: McReynolds chose to explore aleatoric music in *Journey for Solo Clarinettist* (performed by Katherine Nunn), allowing the musician to choose their own path within the score, while Shipsey was interested in the different role the audience would play in comparison to a concert. Shipsey added an element of audience participation to their violin work, *Solitude/Trailblazer* (performed by Nia Squirrel), by creating a circular score divided into several segments of contrasting music attached to a stand in such a way that it could be spun by visitors to the gallery (the score included an instruction to the audience of "spin me"), therefore altering the path of the music being presented.

I chose to include the work of other composers for several reasons, stemming from the location of the event. Cardiff MADE's gallery space is limited, and in terms of this installation makes solo works the only reasonable option; I have not written six solo works that I feel would be suitable for a gallery setting. I could have included fewer works with larger ensembles, but the number of works took precedence as the layout of the installation would better align with that of an exhibition. By including work by other composers, my primary role alters from composer/artist to that of a curator. Though there was no thematic connection between the works in the space, I still gained experience and a better understanding of that role in the lead-up to and duration of the event, both from

⁹¹ photo: author's collection

a practical perspective (performer positioning, volume of sound) and theoretical perspective (who, what, when, why, how).

It was immediately apparent during the events with the live musicians that a larger space was necessary to allow better separation of the individual sonic environments. The size and shape of the floorspace meant that performers were situated within several feet of one another. Though I had anticipated that an amalgamation of the works would be prominent in some areas of the gallery, I had not anticipated its intensity. This was not to the point of oppressiveness, meaning that a significant number of audience members chose mainly to sit in the chairs provided and take in the amalgamated soundworld as it slowly transformed. It should be said that I found individual works still to be easily discernible, though I had expected this to be the case within a less active atmosphere.

Should I seek to produce a similar event in the future, a larger space for the event to be situated is a high priority. I had researched several potential locations around Cardiff and chose Cardiff MADE primarily due to my good relationship with the owner and their enthusiasm towards the project. The Cardiff University School of Music concert hall was another strong option, as it can easily become a large empty space suitable for this installation. However, it seemed clear to me that it was necessary to use an actual gallery space.

Though I was naturally in a constant state of wariness over the smooth running of the installation, I found it very easy to sit still and listen. I believe this was true for many other visitors to the gallery, with so many choosing to sit in a single place as opposed to walking the gallery to appreciate each individual work, and as such the sonic environment aligned with Pauline Oliveros's practise of "Deep Listening". Despite the fact that I set up the space to encourage physical exploration (moving from one work to another and appreciating the accumulation of sound in between), I had expected a certain number of visitors to be more interested in engaging with the general sonic atmosphere, equivalent to the meditative aspects of "Deep Listening" in which "one is dwelling on something carefully and continually... Attention is directed to the interplay of sounds..."⁹².

⁹² Pauline Oliveros, *Deep Listening: A Composer's Sound Practice* (Lincoln: iUniverse, 2005), p.xxiv

I am pleased by this outcome, as this aligns with my experiences when visiting art galleries.

The idea of an amalgamated soundworld resulting from individual solo lines connects with the asynchronous and polytemporal works of Marc Yeats.⁹³ The individual parts in these multi-instrumental works bear little resemblance to one another in terms of tempo, pulse, and structure, requiring time codes to be included in the parts to allow the work to progress as intended. Cohesion is brought through the inclusion of ‘thematic landmarks’ apparent in each instrumental part. Though “Music as Artefact” brought together solo works by six different composers with no intention of musical interaction, the resulting asynchronous soundworld is similar to that of Yeats’s works.

Regrettably, due to unavoidable work commitments, I was unable to spend a significant amount of time in the gallery while the works were played back via the loudspeakers. However, my impression of the use of loudspeakers, and the impressions I received from the gallery staff and a selection of visitors, was that there was a greater sense of abstraction. In my view, removing the musicians brought the sense of an echo or a reverberation of a past event. This may be the result of the staff and myself having been present at the event with live musicians, which altered our perception of the installation in its loudspeaker playback guise, but the fact remains that loudspeakers do not create but recreate the sound— they are one level removed from the sound’s production. Loudspeaker playback is something I have already mentioned in this commentary as an interest of mine when presenting my work in a gallery, and so this issue is something to be investigated further.

Due to the differing nature of the performances compared to my expectation, it is difficult to ascertain whether I think the individual works acted like artefacts as I intended. Because this amalgamated soundworld was far more present than expected, the focus on individual works was reduced and the focus on the interaction of the works was much more prominent. For me to draw a definitive conclusion, I feel it is necessary to carry out this installation, or one with a similar layout, in a larger space that better allows for audience members to step

⁹³ Examples include *shapeshifter* (2015) and a series of string quartets under the title of *observation* (2015-17).

into the individual soundworlds. Should this generate a positive response, I can see such installations becoming a focussed area of my musical practice.

A Slideshow of Sideways Horizons, for string quartet

This work was conceived as a string quartet for a concert scenario, imitating a carousel projector in an art gallery by means of a series of very short movements each inspired by an individual photograph from the album *Amazon Express*. After discussing this work with my supervisor, Dr. Robert Fokkens, and my peers, I saw potential for the projection of the corresponding images on stage during a performance. This idea was attractive to me for reasons other than the obvious strong connection with the title of the work. Having visited Berlin in April 2015 and attended many museums and art galleries, I became fond of the photo albums displayed by carousel projectors. I found the inclusion of a projector in the middle of the room, dictating the speed at which the album progressed and redefining the function of the white wall, to be extremely interesting, as well as finding the soft mechanical clicks to be pleasing and an enhancement to what I saw as a performance. It seemed to me that the projector took on the role of conductor, and this inspired my hope to use one in performances of *A Slideshow*.

I am sometimes skeptical of concert works in which visual elements are included, as the connection between the sight and sound is not always apparent—regularly I find one distracts from the other.⁹⁴ “Soundscapes” (2015), an exhibition presented at the National Gallery (London, UK) combining composers’ and sound artists’ (including Nico Muhly and Susan Philipsz) sonic responses to six paintings (including Hans Holbein and Paul Cézanne), was met with a tepid response resulting from doubt that the paintings in question required any such sonic response to enhance their meaning.⁹⁵ ⁹⁶ In spite of my

⁹⁴ The disconnect between simultaneous sonic and visual media is an intended aspect in the work of many composers and artists, particularly the works of Phill Niblock. That audience members will either search for correlation or give in to one medium or the other is a statement on one of Niblock’s artistic concerns: that each person will have their own unique experience of the same work. (Gottschalk, p.113-114)

⁹⁵ Jonathan Jones, *Soundscapes at National Gallery review - Jamie xx and friends make pointless soundtracks for paintings*
<<https://www.theguardian.com/artanddesign/2015/jul/06/soundscapes-national-gallery-review-pointless-soundtracks-jamie-xx>> [accessed 2 December 2019]

initial feelings on multimedia works, particularly in the concert scenario, the direct link between music and image in *A Slideshow* meant that it was ideal to include projections of the corresponding images during a performance.

Having found influence for including projections of the photographs during a performance of *A Slideshow* from the carousel projectors displaying the images of individual photo albums on a plain white wall in Berlin art galleries, such as the Hamburger Bahnhof, it is logical that this work should be comfortably placed in a similar scenario. The projector being flanked by members of a string quartet, not to mention the fact that the sound will extend further in the space, means that the work would require a larger amount of space in order to be ‘on display’. However, art galleries are often well equipped for works that incorporate sound, as was discussed earlier in this chapter.

The natural step following the conclusion of the two events mentioned above is to continue my exploration of placing musical works in an art space in such a way as to treat them as tangible artworks or artefacts. The reception of “Music as Artefact” leads me to believe that such a layout of musical works occurring simultaneously can be a gratifying experience for a gallery visitor, even if some of the intended outcomes for the installation were not achieved. What is apparent is the need to investigate what size of space is appropriate for what number of musical works with as little interference from methods of sound redirection as possible.

I believe that my work in the production of “Ancient Mariner”, in particular the site-specific approach to my musical contribution, can potentially bring an extra dimension to the idea of a musical exhibition. This format can be presented simply as an exhibition or, as was the case with “Music as Artefact”, as an installation— the installation scenario lends itself very well to the prospect of a site-specific approach. An installation is likely to necessitate a certain level of interaction between the musical works ‘on display’ and so to disregard the

⁹⁶ Victoria Sadler, *Review: ‘Soundscapes’, National Gallery - A Disappointment* <tiny.cc/nb2wiz> [accessed 2 December 2019]

acoustic environment beyond the consideration of the installation's layout would be foolish.

I am also keen to pursue the idea of an installation of live musicians presenting a single work in such a spatialised scenario. Sound installations of this nature have been presented in art spaces, traditional or otherwise, for as long as installation art has been an active discipline,⁹⁷ and the music presented for this thesis and the events to which I have contributed clearly indicate that my creative output can be at home in this field. *The Substance of Air*, or a work very similar in layout and material, could be ideally situated in this scenario.

Though I did not present *A Slideshow* in an art space scenario, I felt it was still necessary to include details of its suitability for such an environment in this chapter. Chapter One discussed other works in this portfolio (specifically *The Substance of Air* and *Memories Breathe Through Desolate Ruins*) that have the potential to be placed in art spaces. I have not deemed it necessary to discuss the potential of these works to appear in the art space in this chapter, as the plans for those works are more hypothetical than the plans for *A Slideshow*.

⁹⁷ A particularly relevant example is James Tenney's *in a large, open space* (1994), in which twelve or more musicians are evenly distributed within the given space. Tenney's work presents a slowly evolving soundworld of sustained tones that audience members can navigate as they please. It is a spatialised sound installation presenting music in frozen time.

CONCLUSION

Through the exploration of the three research questions that form the basis of this thesis, I have demonstrated the intersecting qualities of the temporal and spatial arts with a view to situating temporal art in the traditional environment of spatial art. Though installation art and sound art have been practiced as artforms since the 1950s, granting sound a legitimate function in the art space, the research and assertions present in this commentary provide insight into how music and sound can be regarded as artefacts in their own right and not necessarily intangible experiences of performance that require the art space to alter its own function. This research has taken both a theoretical role (using Kramer's musical temporal terminology as a basis) and a practical role (the exploration of methods by which static visual art can influence the material and trajectory of a musical work, and the exploration of the role of music and sound in the art space).

From a theoretical standpoint, I have determined that musical works most suited to an art space environment act in smooth, frozen time and are non-linear. In truth, I believe that any musical work operating in any musical temporality can be suitably placed in the art space environment, but musical works acting in the aforementioned temporalities are musical works that act most similarly in time to that of static visual artworks.

My involvement in the productions of "Ancient Mariner: Not An Opera" and "Music as Artefact" offered first-hand perspectives on the role of sonic arts in the traditional art space. Despite its intentional presentation as a sound installation, a dynamic atmosphere designed for visitors to explore, "Music as Artefact" allowed me to understand the interaction of individual sound works with its art space environment and the interaction of individual sound works with one another, as if part of an exhibition in a museum or gallery. I did not find all the answers I sought, but I gained enough of a positive response to inspire new installations with similar parameters to that of "Music as Artefact". I am also keen to create an exhibition scenario in which musical works, performed via live musicians or loudspeaker, are present alongside visual artworks and artefacts.

With regard to musical works acting as artefacts, many artefacts on display in galleries and museums were not created with the intention of being placed in

such an environment— at least, they very likely were not intended to be exhibited as an example contributing to a certain historical context— and the same can be said of almost all musical works, leading me to suggest that musical works can be just as easily understood as artefacts as tangible objects and artworks. Musical works written with the intention of being placed in the art space environment tend to be or contribute to installation art works or sound art works. The musical works contributing to “Music as Artefact” were predominantly new works written with the Cardiff MADE gallery in mind, yet the installation itself presented these musical works as if part of an exhibition (previously created works selected to be placed in a new environment). What makes “Music as Artefact” (the event and the concept) appropriate as a means to present an exhibition of musical works is that no work intentionally interacts with another— despite the creation of a new, amalgamated soundworld, the individual works are reliant solely upon themselves.

To summarise, this submission demonstrates the means by which musical works can act in time and space in a similar manner to static visual artworks on a theoretical, methodological, and practical basis, with scope for further research into both methodology and practicality.

BIBLIOGRAPHY

ARTICLES

- Adorno, Theodor W., 'On Some Relationships between Music and Painting', *The Musical Quarterly*, trans. Susan Gillespie (Oxford: Oxford University Press, 1995), vol. 79, no. 1, pp.66-79
- Beal, Amy C., 'An Interview with Earle Brown', *Contemporary Music Review* (Abingdon: Routledge, 2007), vol. 26, pp.341-56
- Davachi, Sarah C., 'Looking inward: LaMonte Young, Arvo Pärt, and the spatiotemporal dwelling environment of minimalist music', *Divergence Press* (2016) [online], available at: <<http://divergencepress.net/articles/2016/10/18/looking-inward-la-monte-young-arvo-prt-and-the-spatiotemporal-dwelling-environment-of-minimalist-music>> [accessed 18 March 2019]
- Deleuze, Gilles, 'Boulez, Proust and Time: "Occupying without Counting"', *Angelaki: Journal of the Theoretical Humanities* (Centreville: Carfax, 1998), vol. 3, no. 2, pp.69-74
- DeLio, Thomas, 'Xenakis', *Perspectives of New Music* (Seattle: Perspectives of New Music, 2001), vol. 39, no. 1, pp.231-43
- Dennis, Brian, 'Xenakis's "Terretektorh" and "Eonta"', *Tempo* (Cambridge: Cambridge University Press, 1967), no. 82, pp.27-29
- Dubinet, Elena, 'Between Mobility and Stability: Earle Brown's Compositional Process', *Contemporary Music Review* (Abingdon: Routledge, 2007), vol. 26, pp.409-26
- Duncan, Stuart Paul, 'To Infinity and Beyond: A Reflection on Notation, 1980s Darmstadt, and Interpretational Approaches to the Music of New Complexity', *Search, Journal for New Music and Culture* (2010), Issue 7
- Feldman, Morton, and Iannis Xenakis, 'A Conversation on Music', *Res: Anthropology and aesthetics* (Chicago: University of Chicago Press, 1988), vol. 15, pp.177-81
- Galeyev, Bulat M., 'The New Laokoön: A Periodic System of the Arts' *Leonardo* (Cambridge (MA): The MIT Press, 1991), vol. 24, no. 4, pp.453-56
- Harley, Maria Anna, 'An American in Space: Henry Brandt's "Spatial Music"', *American Music* (Champaign: University of Illinois Press, 1997), vol. 15, no. 1, pp.70-92
- Harley, Maria Anna, 'Spatial Sound Movement in the Instrumental Music of Iannis Xenakis', *Journal of New Music Research* (Abingdon: Routledge, 1994), vol. 23, pp.291-314
- Kramer, Jonathan D., 'New Temporalities in Music', *Critical Inquiry* (Chicago: The University of Chicago Press, 1981), vol. 7, no. 3, pp.539-556

- Lesser, David, 'Score, Identity and Experience in Earle Brown's Twentyfive Pages', *Contemporary Music Review* (Abingdon: Routledge, 2007), vol. 26, no. 3-4, pp.475-85
- Oliveros, Pauline, 'The Earth Worm Also Sings', *Leonardo Music Journal* (Oakland: The MIT Press, 1993), vol. 3, pp.35-38
- Radigue, Éliane, 'The Mysterious Power of the Infinitesimal', *Leonardo Music Journal* (Oakland: The MIT Press, 2009), vol. 19, pp.47-49
- Rimoldi, Gabriel, and Stéphan Schaub, 'Espaços convergentes: som e espacialização em *Terrektorh* de Iannis Xenakis', *Revista da ANPPOM*, vol. 18, no. 2, pp.9-32
- Simner, Julia, 'Defining synaesthesia', *British Journal of Psychology* (Leicester: The British Psychological Society, 2012), vol. 103, pp.1-15
- Sterken, Sven, 'Towards a Space-Time Art: Iannis Xenakis's Polytopes', *Perspectives of New Music* (Seattle: Perspectives of New Music, 2001), vol. 39, no. 2, pp.262-73
- Trochimczyk, Maja, 'From Circles to Nets: On the Signification of Spatial Sound Imagery in New Music', *Computer Music Journal* (Oakland: The MIT Press, 2001), vol. 25, no. 4, pp.39-56
- Tsubaki, Andrew A., 'Zeami and the Transition of the Concept of Yūgen: A Note on Japanese Aesthetics', *Journal of Aesthetics and Art Criticism* (U.S.A: Journal of Aesthetics and Art Criticism, 1971), vol. 30, no. 1, pp.55-67
- Xenakis, Iannis, Roberta Brown, and John Rahn, 'Xenakis on Xenakis', *Perspectives of New Music* (Seattle: Perspectives of New Music, 1987), vol. 25, no.1/2, pp.16-63

BOOKS

- Arnason, H. H., *Philip Guston* (New York: The Solomon R. Guggenheim Foundation, 1962)
- Baggech, Melody, *An English Translation of Olivier Messiaen's 'Traité de rythme, de couleur, et d'ornithologie' Volume I* (Norman: University of Oklahoma, 1998)
- Barthes, Roland, *Camera Lucida* (London: Vintage, 1993)
- Baudelaire, Charles, *The Painter of Modern Life and Other Essays* (Phaidon, 1995)
- Berger, John, *Understanding a Photograph* (New York: Aperture, 2013)
- Brown, David Blayney, Amy Concannon, and Sam Smiles, *Late Turner: Painting Set Free* (London: Tate Publishing, 2014)
- Dyer, Geoff, *The Ongoing Moment* (Edinburgh: Cannongate, 2012)
- Feldman, Morton, *Give My Regards to Eighth Street* (Cambridge: Exact Change, 2001)
- George, Adrian, *The Curator's Handbook* (London: Thames & Hudson, 2017)
- Glover, Richard, Jennie Gottschalk and Bryn Harrison, *Being Time: Case Studies in Musical Temporality* (New York: Bloomsbury, 2019)
- Glover, Richard, and Bryn Harrison, *overcoming form: reflections on immersive listening* (Huddersfield: University of Huddersfield Press, 2013)

- Goldsworthy, Andy, *Time* (London: Thames & Hudson, 2000)
- Gottschalk, Jennie, *Experimental Music Since 1970* (London: Bloomsbury, 2016)
- Gould, Elaine, *Behind Bars: The Definitive Guide to Music Notation* (London: Faber, 2011)
- Griffiths, Paul, *Modern Music and After: Directions Since 1945* (Oxford: Oxford University Press, 2002)
- Higgins, Jackie, *Why It Does Not Have To Be In Focus* (London: Thames & Hudson, 2013)
- Kandinsky, Wassily, *On the Spiritual in Art* (New York: Solomon R. Guggenheim Foundation, 1946)
- Kelly, Caleb, *Sound* (London: Whitechapel Gallery Ventures Limited, 2011)
- Koren, Leonard, *Wabi-Sabi* (Point Reyes: Imperfect Publishing, 2008)
- Kramer, Jonathan D., *The Time of Music* (New York: MacMillan USA, 1988)
- Kuhn, Laura, *The Selected Letters of John Cage* (Middletown: Wesleyan University Press, 2016)
- LaBelle, Brandon, *Background Noise: Perspectives on Sound Art* (New York: Bloomsbury, 2015)
- Larson, Kay, *Where the Heart Beats: John Cage, Zen Buddhism, and the Inner Life of Artists* (New York: The Penguin Press, 2012)
- Mertens, Wim, *American Minimal Music: La Monte Young, Terry Riley, Steve Reich, Philip Glass* (London: Kalhn and Averill, 1983)
- Moffett, Charles S., *Impressionist and Post-Impressionist Paintings in the Metropolitan Museum of Art* (New York: Harry N. Abrams, Inc., 1985)
- Moyle, Franny, *Turner: The Extraordinary Life & Momentous Times of J.M.W. Turner* (New York: The Penguin Press, 2016)
- Nattiez, Jean-Jacques, *Music and Discourse: Toward a Semiology of Music* (Princeton: Princeton University Press, 1990)
- Oliveros, Pauline, *Deep Listening: A Composer's Sound Practice* (Lincoln: iUniverse, 2005)
- Rodgers, Tara, *Pink Noises: Women on Electronic Music and Sound* (Durham: Duke University Press, 2010)
- Roms, Heike, *Silent Explosion: Ivor Davies and Destruction in Art* (London: Occasional Papers, 2015)
- Ross, Alex, *The Rest is Noise* (London: Fourth Estate, 2012)
- Sontag, Susan, *On Photography* (London: Penguin Books, 1979)
- Vergo, Peter, *The Music of Painting* (London: Phaidon Press Limited, 2010)
- Voegelin, Samolé, *Listening to Noise and Silence: Towards a Philosophy of Sound Art* (New York: Continuum, 2010)

- Von Maur, Karin, *The Sound of Painting: Music in Modern Art* (Munich: Prestel Verlag, 1999)
- Waldman, Diane, *Mark Rothko: A Retrospective* (New York: Harry N. Abrams, Inc., 1978)
- Westheider, Ortrud, and Michael Philipp, *Turner and the Elements* (Hamburg: Bucerius Kunst Fourm Publications, 2011)
- Xenakis, Iannis, *Formalized Music: Thought and Mathematics in Composition* (Bloomington: Indiana University Press, 1971)

EXHIBITIONS

- Hamburger Bahnhof, Berlin, *Julian Rosefeldt. Manifesto*, 2016
- National Museum Wales, Cardiff, *Silent Explosion: Ivor Davies and Destruction in Art*, 2016

RECORDINGS

- Adams, John Luther, *Sila: The Breath of the World* (YouTube, 2014)
 < <https://www.youtube.com/watch?v=rUDjOyacZoU> > [accessed 3 July 2018]
- Cardiff, Janet, *Forty Part Motet* (YouTube, 2017)
 < <https://www.youtube.com/watch?v=yiX8M8e2UDo> > [accessed 3 July 2018]
- Glass, Philip, "Music in Twelve Parts", The Philip Glass Ensemble, digital recording, Nonesuch Records, 79324-2 (1996)
- Godspeed You Black Emperor! [rock band], "F# A# ∞", CD, Kranky Records, B000007T2Z (1998)
- , "Lift Your Skinny Fists Like Antennas to Heaven", CD, Import Records, B00004ZD69 (2000)
- , "Yanqui U.X.O", CD, Constellation, B00006RJ1I (2002)
- Godspeed You! Black Emperor [rock band], "Allelujah! Don't Bend! Ascend!", digital recording, Constellation, CST081 (2012)
- , "Asunder, Sweet and Other Distress", digital recording, Constellation, CST111 (2015)
- Grouper [singer/songwriter], "A | A", digital recording, Yellow Electric (2011)
- , "Dragging a Dead Deer Up a Hill", digital recording, Kranky Records, KRANK176 (2017)
- , "The Man Who Died in His Boat", digital recording, Kranky Records, KRANK177 (2013)
- , "Ruins", digital recording, Kranky Records, KRANK189 (2014)
- Harrison, Bryn, *Repetitions in Extended Time* (YouTube, 2015)
 < <https://www.youtube.com/watch?v=M6sdJYhaSBQ> > [accessed 3 July 2018]

- Lamb, Catherine, *Parallaxis Forma* (YouTube, 2018)
 <<https://www.youtube.com/watch?v=jAN3yCtlf0&t=375s>> [accessed 3 July 2018]
- Pärt, Arvo, “Tabula Rasa”, Gidon Kramer, Keith Jarrett, Tatjana Grindenko, Alfred Schnittke, The 12 Cellists of the Berlin Philharmonic Orchestra, Staatsorchester Stuttgart, Lithuanian Chamber Orchestra, cond. Dennis Russell Davies, Saulus Sondeckis, digital recording, ECM, 1275 (1984)
- Pritchard, Deborah, *The Angel Standing in the Sun* (YouTube, 2016)
 < <https://www.youtube.com/watch?v=0ABpsRwJI68>> [accessed 1 January 2020]
- Radigue, Éliane, *L'île re-sonante*, digital recording, shiin, shiin1 (2000)
- , *Psi 847*, digital recording, Oral Records, ORAL_#57 (2013)
- , *Songs of Milarepa*, digital recording, Lovely Music Ltd., CD2001 (1998)
- , *Transmorem – Transmortem*, digital recording, Important Records, IMPREC337 (2011)
- , *Triologie de la Mort*, digital recording, Experimental Intermedia Records, XI119 (1998)
- Reich, Steve, “Music for 18 Musicians”, Steve Reich, Evan Ziporyn, Leslie Scott, Jeanne LeBlanc, Edmund Niemann, Garry Kvistad, James Preiss, Jay Clayton, Nurit Tilles, Phillip Bush, digital recording, Nonesuch Records, 79448 (1998)
- Rijnvos, Richard, “Block Beuys”, Ives Ensemble, cond. Richard Rijnvos, digital recording, Hat Hut Records, hat[now]ART 147 (2000)
- Saunders, James, *511 possible mosaics* (SoundCloud, 2013) < <https://soundcloud.com/175east/511-possible-mosaics-excerpt>> [accessed 1 January 2020]
- Slint [rock band], “Spiderland”, CD, Touch and Go Records, TG64 (1991)
- Tenney, James, *In a large, open space* (YouTube, 2018)
 < <https://www.youtube.com/watch?v=AecgR66yjUk>> [accessed 1 January 2020]

SCORES

- Aithison, Jim, *Music of Verbs (After Richard Serra)* (< <https://www.jimaitchison.org/graphic-scores>> [accessed 23 May 2018], written 2017)
- Benjamin, George, *At First Light* (London: Faber, 1985)
- Brown, Earle, *Cross Sections and Color Fields* (London: Universal Edition, 1980)
- , *Folio and Four Systems* (New York: Associated Music Publishers, 1961)
- , *Module 3* (Canada: Universal Edition, 1975)
- , *String Quartet* (London: Universal Edition, 1970)
- Dutilleux, Henri, *Timbres, espace, mouvement* (Paris: Heugel & Cie)
- Feldman, Morton, *Between Categories* (New York: Edition Peters, 1969)
- , *Durations I* (New York: Edition Peters, 1962)
- , *Durations II* (New York: Edition Peters, 1961)

- , *Rothko Chapel* (New York: Universal Edition, 1973)
- , *Two Pianos* (New York: Edition Peters, 1962)
- , *Vertical Thoughts II* (New York: Edition Peters, 1963)
- , *Violin and String Quartet* (Universal Edition)
- Ferneyhough, Brian, *Bone Alphabet* (New York: Edition Peters, 1991)
- Finnissy, Michael, *History of photography in sound* (Oxford: Oxford University Press, 2003)
- Grisey, Gérard, *Modulations* (Milan: Ricordi, 1978)
- , *Partiels* (Milan: Ricordi, 1976)
- , *Periodes* (Milan: Ricordi, 1974)
- , *Talea* (Paris: Ricordi, 1986)
- , *Tempus Ex Machina* (Milan: Ricordi, 1979)
- , *Vortex Temporum* (Paris: Ricordi, 1995)
- Harrison, Bryn, *Surface Forms (repeating)* (excerpt found at < https://britishmusiccollection.org.uk/composer/bryn-harrison?gclid=EAIaIQobChMIp6D1iNby6gIV2-7tCh0YcwYcEAAYASAAEgKrBPD_BwE > [accessed 3 July 2018], written 2009)
- Holst, Gustav, *The Planets* (New York: Dover Publications, 2000)
- Lamb, Catherine, *Parallaxis Forma* (Sacred Realism, 2016)
- Ligeti, György, *Atmosphères* (Vienna: Universal Edition, 1963)
- , *Lontano* (Mainz: Schott Music, 1969)
- , *Lux Aeterna* (Frankfurt: Henry Litolf's Verlag/C. F. Peters, 1996)
- Messiaen, Olivier, *Couleurs de la cité céleste* (Paris: Alphonse Leduc, 1966)
- Rijnvos, Richard, *Block Beuys* (excerpts found at < https://www.richardrijnvos.com/compositions/cycle-block_beuys.html > [accessed 3 July 2018], written 1995-2000)
- Saunders, James, *511 possible mosaics* (<<https://britishmusiccollection.org.uk/sites/default/files/migrated/scores//33439w.pdf>> [accessed 1 January 2020], written 1999)
- Scriabin, Alexander, *Prometheus – the Poem of Fire* (Mainz: Edition Eulenburg)
- Slavnics, Chiyoko, *gradients of detail* (excerpt found at < http://www.chiyokoszlavnic.org/scores/gradients_score.pdf > [accessed 1 January 2020], written 2005-06)
- Stockhausen, Karlheinz, *Carré* (Universal Edition)
- Tenney, James, *In a large, open space* (<<http://musicgrad.ucsd.edu/~bitwise/cooper/in%20a%20large%20open%20space/>> [accessed 1 January 2020], written 1994)
- Tinoco, Luís, *Cercle Intérieur* (York: University of York Music Press, 2012)
- Xenakis, Iannis, *Nomos Gamma* (Paris: Salabert)
- , *Terretektoth* (Paris: Salabert, 1969)

WEBSITES

- Ablinger, Peter, homepage <<https://ablinger.mur.at/index.html>> [accessed 3 July 2018]
- French, Jez Riley, homepage <<http://jezrileyfrench.co.uk>> [accessed 19 January 2017]
- Ikeda, Ryoji, homepage <<http://www.ryojiikeda.com/>> [accessed 2 December 2019]
- Jones, Jonathan, *Soundscapes at National Gallery review - Jamie xx and friends make pointless soundtracks for paintings* <<https://www.theguardian.com/artanddesign/2015/jul/06/soundscapes-national-gallery-review-pointless-soundtracks-jamie-xx>> [accessed 2 December 2019]
- MacMath, Terence Handley, *Interview: Deborah Pritchard, composer* <<https://www.churchtimes.co.uk/articles/2018/2-march/features/interviews/interview-deborah-pritchard-composer>> [accessed 1 January 2020]
- Maginnis, Tom, *Good Morning, Captain – Slint* <<https://www.allmusic.com/song/good-morning-captain-mt0001620569>> [accessed 7 August 2015]
- Nakanishi, Nobuhiro, homepage <<http://nobuhiroakanishi.com>> [accessed 8 September 2018]
- Rijnvos, Richard, homepage <<https://www.richardrijnvos.com>> [accessed 3 December 2019]
- Sachs, Rolf, homepage <<http://rolfsachs.com>> [accessed 1 October 2014]
- Sadler, Victoria, *Review: 'Soundscapes', National Gallery - A Disappointment* <tiny.cc/nb2wiz> [accessed 2 December 2019]
- Seward, Frances, homepage <<http://francesseward.com>> [accessed 29 May 2018]
- Swendsen, Peter V., homepage <<http://swendsen.net>> [accessed 1 January 2020]
- Yeats, Marc, homepage <<https://www.marc-yeats.com/>> [accessed 1 January 2020]
- Art Fund, *Silent Explosion: Ivor Davies and Destruction in Art* <<https://www.artfund.org/what-to-see/exhibitions/2015/11/14/silent-explosion-ivor-davies-and-destruction-in-art-exhibition>> [accessed 23 May 2018]
- British Music Collection, *Bryn Harrison* <https://britishmusiccollection.org.uk/composer/bryn-harrison?gclid=EAIaIQobChMIp6D1iNby6gIV2-7tCh0YcwYcEAAAYASAAEgKrBPD_BwE> [accessed 3 July 2018]
- British Music Collection, *Deborah Pritchard* <https://britishmusiccollection.org.uk/composer/deborah-pritchard?gclid=EAIaIQobChMIhJ_5rtDy6gIV1GDmCh2JzQgWEAAAYASAAEgIImfD_BwE> [accessed 1 January 2020]
- Tate Britain, *Olafur Eliasson: Turner colour experiments* <<http://www.tate.org.uk/whats-on/tate-britain/display/olafur-eliasson-turner-colour-experiments>> [accessed 13 November 2017]
- [author unknown], *Edward Quigley* <<http://www.joelsorokagallery.com/bios/quigley.html>> [accessed 29 May 2018]