Scoring Space in the Open Work and Portfolio of Original Compositions



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A Note

The following submission comprises both a critical writing element—titled *Scoring Space in the Open Work*—and a portfolio of original compositions with prefaces. Whilst issues of spatiality, and open or graphic scoring processes are present across both documents, they are predominantly intended to be read as two separate entities. For a more detailed justification of this decision, please see Chapter 1.5 in the thesis.

Scoring Space in the Open Work

Jonathan Packham

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Abstract

The central focus of this thesis is the elucidation and application of a new analytical framework, connecting existing discourses on sound, space, and place in late twentieth and early twenty-first century “open form” music, and sound installation art. It builds especially on Richard Sennett’s urban understanding of openness, which helps to generate a model for the analysis of musical open form beyond only the relationship between the performer and the score. At the same time, it explores the role of space and place in music performance, interrogating the manner in which the environment shapes different realisations of indeterminate musics. Whereas many existing accounts of the spaces in and of music performance focus predominantly on the technical or locative elements of spatial sound, this dissertation is informed by contemporary spatial and urban theory as well as architectural studies in its more generative and expansive understanding of space. This thesis constructs space beyond tectonics, incorporating and acknowledging social, political, corporeal, architectural, and acoustic factors that inform and transform our experience of sound. Methodologically speaking, this thesis references interviews with the composers, performers and audience members of sonic artworks in combination with more conventional musicological analysis of audiovisual media, seeking to emphasise incidents and sentiments that don’t fit grander conceptual or composer-centric narratives but help to draw out a more everyday, lived experience of sound. Substantial analyses of Lin Chi-Wei’s ongoing participatory composition *Tape Music* and Claudia Molitor’s locative audio work *Sonorama* help to illustrate the value of this framework across two large case studies.

1. Introduction

1.1 *Copper House Music*

It is a chilly Halloween evening and the café at Modern Art Oxford is full of people with maps in their hands. On each of their A4 sheets is a top-down architectural plan of the Piper Gallery, an exhibition space upstairs. In the middle of the room, a table is overflowing with amorphous paper cut-outs, the largest no bigger than eight centimetres in diameter. Each of these small fragments is a notated instruction for activity in the Piper Gallery: how to orient oneself, directions for movement, planned moments of repose. Interested parties are carefully gluing paper fragments to their own sheets, crafting a listening score—a personal map—to direct them through the space. When these are completed, participants head upstairs. Installed already are a group of musicians and a four-channel loudspeaker array. The instrumentalists—a trumpeter, two violinists, and an electric bass player—as well as three singers,

also have their own personal maps populated with fragments that notate pitches to perform, as well as directions for movement around the space.



Figure 1.1: Making listening scores at Modern Art Oxford. Photograph: Helen Messenger.

The Piper Gallery becomes busy quickly, full of *synchronous*—but far from synchronised—activity. A4 sheets in hand, executant and auditor alike are rendered amateur orienteers. Moving through the gallery space, a participant's ongoing journey may be *punctuated* by brief notated moments of reflection. The score indicates where to go next, but also gives you a sense of where you are now. Musicians sustain long tones that seem to resonate endlessly, encircling the audience in an hypnotic sonic-spatial ballet. Though these pitched sounds are a deliberate focal point, the Piper Gallery is also *porous* to "non-musical" noise; an orchestra of footsteps, idle chatter and air-conditioner-hum are sounding inside and outside the space of performance. One such outside space

is the café downstairs, now only home to those who didn't make the trip upstairs. Still, sipping drinks, they glance over their personal maps, perhaps imagining travelling in the space, envisaging what sounds and movements might be happening. The listening scores they hold act as a kind of provocation, suggesting a potential experience.

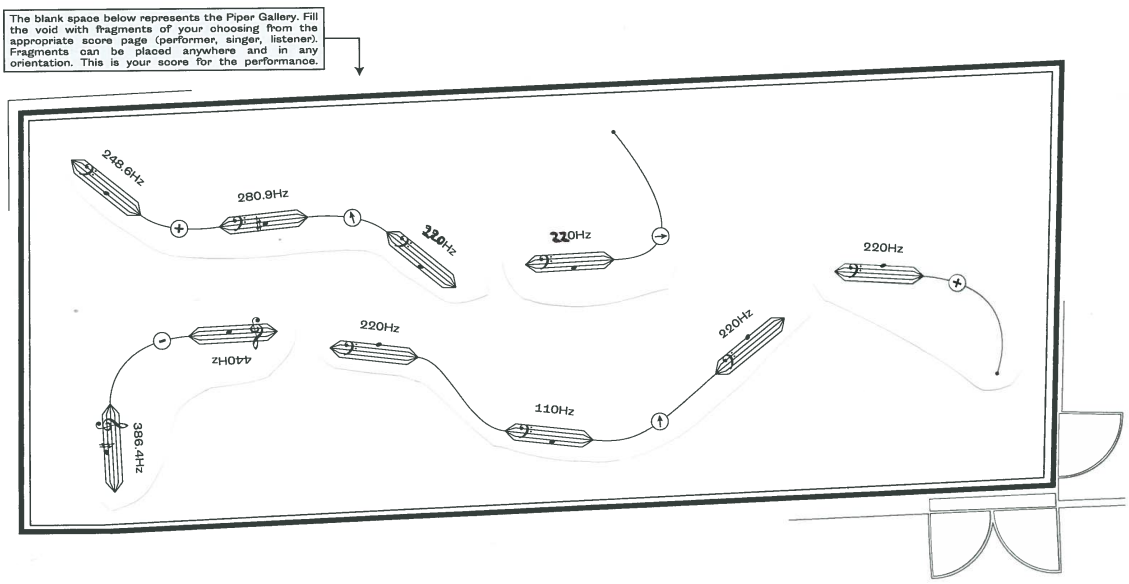


Figure 1.2: A singer's score for *Copper House Music*, indicating pitches.

However, without experiencing it in the specific architecture of the Piper Gallery, these individuals may leave feeling like their experience—and the score—is somehow *incomplete.* This said, there is no one way to experience the event, just as there is no one way to move around the gallery. Having listened for their desired duration, the audience slowly filter out of the gallery. Each participant is invited to keep their personal score as a record of their evening. They take this document home in the knowledge that another interpretation, another experience was possible—a *multiplicity* of possible performances in Modern Art Oxford.



Figure 1.3: Performing in the Piper Gallery. Photograph: Helen Messenger.

The performance in question—the premiere of my 2019 composition *Copper House Music*—starts to draw out some of the central themes of this thesis. The piece is, broadly speaking, “open”—in that it comprises elements that are not fixed prior to its performance or installation. Furthermore, the piece’s connection to spatiality—and in particular the architecture of the Piper Gallery—is central to its sonic and conceptual identity. The spatial design of the scores (as seen in Figure 1.2) is drawn directly from the architectural plans of the Piper space, whilst pitch relationships in the piece are reflective of proportional relationships in the gallery’s dimensions.

Finally, the relationship between composer, score, executant, auditor, space and site is complex and non-hierarchical. In this instance, the score functions not only as a set of instructions for performance and listening, but also as an

example of what might be done (a *speculative* score) or what has been done already (an *archival* score). How then, might we analyse such works—compositionally but also experientially (if such a distinction even needs to be made)? The thesis that follows is an attempt at exploring some of these questions.

1.2 Thesis Overview

The focus of this thesis is twofold, encompassing both conceptions of space in connection to music; and the notion of "openness" as it relates to the compositional, performative, and experiential dimensions of musical activity. Using an expanded spatial framework to delineate various dimensions of "openness" circumvents heretofore formalistic ways of cognising musical spatiality (Born 2013: 9). This interest in spatiality comes with a renewed emphasis on understanding scores and practices of spatialisation beyond the distribution of objects in physical space. Though the subject of the thesis is bipartite, it will quickly become clear how its interpretation of openness is intrinsically spatial, and vice versa. Through this symbiosis it is possible to extend and expand our understanding of spatiality in connection to music.

More specifically, this thesis proposes an analytical framework for the exploration of contemporary experimental music practices in which conceptions of space are central concerns. Towards this aim, it also seeks to develop a new vocabulary for the analysis of and discourse surrounding musical "openness". Many of the practices that fall under the generic focus of this project have—either in academic literature, or more anecdotally—been referred to as "open".

My interest is in discerning what specifically about the music or work is “open”. The approach evinced here foregrounds the ephemeral and the communal—the fleeting sociality of performing or listening to music. So too does it emphasise the experiential, the sensorial, and the tactile. Accordingly, I am interested in how people and spaces are represented through and in scores, and how scores in turn reflect on the lived world in which they are situated. Furthermore, I seek to explore ways of describing spatialisation beyond the geometric and physical: as a situated, communal, corporeal practice.

1.3 Preliminary Definitions

This thesis departs from existing academic discourses in its formulation of both space and “openness”. Fundamentally, its focus extends beyond Euclidean geometry: space is understood not as an apolitical, homogenous container totally expressible through coordinates, but rather as produced, mediated, and orientated by and to a variety of individual, collective, institutional, historical, cultural, social, ecological and architectural factors. A central tenet of this approach is the renunciation of an “ideal listener”, including any idealism concerning scenario or position. Instead, this project embraces the messy, the noisy and the awkward as existent and sometimes unavoidable components of musical performance.

Similarly, my approach to score analysis departs from a formalist, geometric approach to spatiality. Instead, I propose a more dynamic relationship between score, executant and environment. The score is here conceptualised as an historically and culturally mediated document. If a principal aim of this thesis is

to acknowledge a more dynamic relationship between score, executant and environment, then accepted approaches to openness—discussed at length in Chapter 3.2—are unsatisfactory towards this goal. This thesis also differs from existing work in its sustained emphasis on the politics of artistic practices; for music need not be a self-contained object within which a politics is enacted or ventriloquised, but rather, a political event situated within the wider—"real"—world.

1.4 Theoretical Heritage

The theoretical heritage of this thesis lies predominantly within two key texts: Georgina Born's introduction to the edited volume *Music, Sound and Space: Transformations of Public and Private Experience* (Born 2013), and Richard Sennett's *Building and Dwelling: Ethics for the City* (Sennett 2018). Born's chapter draws attention to "three distinct lineages of practising and cognising musical spatiality", comprising formalist approaches to pitch spatiality, practices of spatialisation, and a third lineage that moves beyond a "musical or sound object" to embrace spatialities "configured by the physical, technological and/or social dimensions" of a performance or installation (Born 2013: 9, 16). Born's three lineages provide a foundation for exploring the myriad forms of spatiality in music scholarship. Indeed, my analytical framework builds on Born's research, pairing her "critical phenomenology"—discussed at length in Chapter 2—with a typology of openness introduced through Richard Sennett's writing during Chapter 3. Sennett's work details five "open forms for the city", an interesting prism through which to explore musical openness (Sennett 2018: 205). Building on Sennett's typology of open forms, we can begin to unpick

what exactly is “open”, how is it “open”, and to whom it is “open”. His five “dimensions” of openness—synchronicity, punctuatedness, porosity, incompleteness, and multiplicity—seek to cognise the open city in clearly articulated yet expansive categories (Ibid.: 205).

The notion of porosity links neatly to another theoretical foundation for this project: the concept of “situated listening”, a strategy developed by Gascia Ouzounian. Indeed, her influence can be read through this thesis in its pioneering distinction between the Euclidean spatiality of formalist analyses, and the ethical and political spatial imperative of later compositional and sound installation artworks (Ouzounian 2008, 2013). She writes:

> When space is understood not in abstract or absolute terms, but as socially and politically constituted, a spatial sound practice can emerge not only as a poetics, but as a politics, not only as an aesthetics, but as an ethics. (Ouzounian 2013: 74)

More broadly, the spatio-architectural turn exemplified here follows the work of a number of artists and theorists: Galia Hanoch-Roe’s work on the links between architectural and “open” forms (2003); Maria Anna Harley’s sprawling survey of musical spatial thought in the twentieth century (1994); and Brandon LaBelle’s writings on sound art, space, sonic culture and architecture (2010, 2015a, 2015b) are all of relevance. More generally, compositional texts—including exhibition notes and artist monographs—also play an essential role in my analytical approach.

This thesis also emphasises the heterogeneity and diversity of present scoring practices. These range from the conventionally notated towards more radical interpretations of scores as—to give just a few examples—processes[1], recipes[2], a demonstration of what can be done, a suggestion of what might be done, and an archive of what has already been done. A score can assume one or many of these identities, simultaneously or at different moments in its composition, rehearsal, activation, performance or construction. This loose definition is in part inspired by the work of Lawrence and Anna Halprin, whose "RSVP Cycles" assert the multifarious nature of "scoring", encompassing a processual loop (Halprin and Halprin 2014). One might also look to Christopher Dell's instructive volume *La ville comme partition ouverte*, as well as a variety of material produced by Theatrum Mundi whose work on scores and spaces continues to influence my research (Dell 2016; Adhitya et al. 2019; Bingham-Hall 2018, 2019; Kostourou et al. 2019).

1.5 Relationship with Portfolio of Original Compositions

In addition to my written work in this thesis, I am a composer, producer, performer and curator of music. Accordingly, I am interested in developing a vocabulary for discussing scores and spatialisation beyond the language of formalism. Much of my own work uses graphic or unconventional scoring techniques, including the production of three-dimensional scores using virtual

[1] See Luke Nickel's orally-transmitted scores, which set in motion a process of distortion and loss mediated by the inconsistencies of the human memory (Nickel 2020).

[2] See for example Jennifer Walshe's recipe scores. She writes: "if you buy a cookbook, there's probably only six to ten recipes you'll ever make… The pleasure that you get from reading all the other recipes is in imagining what it would be like to make them, or what the food would taste like, or what our life would be like if we were the sort of people with access to edible flowers to put on our artisanally-sourced quinoa flake chia pots. I think of cookbooks as devices for bringing a partially-realised, partially-imaginary new mode of being into play. And so I like to do that in my scores too sometimes" (Walshe 2016).

reality technologies, which I began creating in 2016. The earlier nod towards the corporeity of spatial performance is not accidental; my own virtual reality scores are “read” using the whole body. How can I discuss such work using language or analytical methods that are two-dimensional? With this said, it may seem peculiar that I do not analyse my own music at any great length in this thesis, and that I do not discuss the works submitted as part of my compositional portfolio. This thesis develops an analytical model. As will become clear, my own music is informed by this analytical practice in a number of ways.[3] The development of an analytical model necessitates case studies—test subjects—of varying lengths. I believe that the model, at least in its nascent stages, is stronger for having employed examples outside of my own work, but it can equally be applied productively to my own compositional output.

1.6 Thesis Structure

This thesis opens with an introduction to concepts of space, beginning in the fourth century BC. By discussing Euclid’s five postulates, as well as the Cartesian rectilinear system, it draws attention to accepted interpretations of space as—among other things—an homogenous container. Through classical phenomenology—and in particular the writings of Maurice Merleau-Ponty—a contrasting, more experiential approach is proposed. This leads to a discussion of the issues that a number of theorists raise with regard to classical phenomenology. In particular, I look to critical phenomenology to differentiate between the notion of “absolute space” and a phenomenology of space that

[3] In particular, I would direct anyone interested in links between this thesis and my compositional practice to seek out the documentation available online for *SECRET ANIMALS* (2018), *untitled (threshold)* (2018) and *BREKEKEKEX* (2019), a trio of works using virtual reality headset scores.

accounts for both subjectivity and sociality (Overgaard and Zahavi 2009: 96). Having discussed concepts of spatiality more generally, I then engage the notion of musical spatiality through Georgina Born's three lineages of spatial music writing (Born 2013: 9).

Chapter Three explores openness in music. It begins with a survey of literature on open form stemming from cultural theory, art history, and architecture studies, as in the writings of Umberto Eco (1979), Roland Barthes (1967), Thomas DeLio (1981, 1984), Nicolas Bourriaud (2009), and Oskar and Zofia Hansen (Kędziorek and Ronduda 2014). I also discuss the way openness has been expressed in the compositional texts of composers such as Earle Brown and artists associated with Fluxus. I then offer my own strategy for cognising openness based on Richard Sennett's "five open forms for the city", an intrinsically spatial way of thinking about what is open and how it is open. This approach allows for a consideration of openness beyond the relationship between the composer and the score, or the score and the performer.

Chapter Four is the first of two larger-scale case studies, applying the ideas elucidated in Chapters Two and Three in an analysis of Lin Chi-Wei's *Tape Music* (2004-2016), a work for an ensemble of volunteer vocalists. Synchronicity is discussed as it relates to the concepts of spatial consonance and dissonance. It also introduces the concepts of intra- and inter-performativity, a way of conceptualising how specific musical characteristics of a work's individual realisations are influenced and mediated by their performance context. It goes on to discuss how this interaction draws out the specific participatory, political,

and social character of the work as it relates to collective expressions of—for example—togetherness or disobedience. Analysis of several contrasting realisations of the work across a number of different settings aids an exploration of how culture, economics, history, and language affect performance practice in transformative ways. This is developed into the notion of "place-specificity", a means of exploring how ideas of site-specificity might be applied in instances where a work engages with its wider surroundings, but is designed so that this interaction might occur meaningfully across multiple different sites.

Chapter Five presents a second case study: Claudia Molitor's sound art work *Sonorama* (2015). I explore the spatial and sonic relationships present in *Sonorama's* complex score-work-performance configuration. My analysis follows Sennett's framework for openness. I explore the politics of spatio-temporal synchronicity as they relate to *Sonorama's* central theme of immigration; how notions of "punctuation" and "porosity" help individuals to situate themselves during a performance; how ideas of "incompleteness" help to make sense of *Sonorama*'s site-sensitive identity; and how "multiplicity" draws attention to the role of mediation in individual sensorial, cultural and political responses to the work.

This thesis thus aims to develop an analytical framework that interrogates notions of spatiality and openness in a generative and expansive way, whilst remaining attuned to the political and ethical commitments of the practitioners on whose work it centres.

2. Spatial Concepts

2.1 Introduction

Concepts of musical space are intimately connected to broader trends in philosophical and scientific thinking. This project's necessarily brief survey of the discourse begins with Euclidean geometry in the mid-fourth century BC. The most famous work attributed to the ancient Greek mathematician Euclid is his *Elements*. In this treatise, Euclid details geometric theorems that refer to "the laws governing the geometry of rigid objects… as they are moved around in three-dimensional space" (Penrose 2004: 11). Indeed, for the ancient Greeks "Euclidean geometry… provided an excellent approximation to a particular aspect of the physical world" (Ibid.: 11). Euclid grounds his work in five "postulates", which establish the fundamental properties of Euclidean space (Simson 1836: 8-9). As the mathematician and physicist Roger Penrose notes, these postulates suggest that space is "indefinitely extendible and without 'gaps'", and assert "the isotropy and homogeneity of space" in that "a figure in

one space [can] have the ‘same’ geometrical shape as a figure in some other place” (Penrose 2004: 29).

Though formulated in the fourth century BC, Euclid’s geometry remained “essentially unchanged without major methodical innovations” until the time of philosopher René Descartes (Lanczos 1979: 71). In the seventeenth century, he developed a “rectilinear system” for describing the position of objects in space (Kent and Vujakovic 2017: 190). Building on Euclidean geometry, Descartes “fixed a point’s position in the plane by assigning to it two ‘coordinates’... this setup is called the *rectangular* or *Cartesian* (for Descartes) *coordinate system*” (Hahn 1998: 81). The significance of this development should not be understated. Using Descartes’ system, geometry was expressible independent of aesthetic figures, and could be understood purely in terms of more abstract algebraic thinking. In other words, “one no longer had to ‘see’ what happens in space” (Lanczos 1979: 74).

In the twentieth century, Henri Lefebvre bemoaned this transition, noting that “the advent of Cartesian logic” brought with it an understanding of space as “absolute” (Lefebvre 1991: 1). Euclid’s postulation of space as isotropic and homogeneous–together with the Cartesian coordinate system that compounded its status as “absolute”–formed a conceptualisation of space as geometrically expressible independent or “superior to the evidence supplied by the body's sensory organs” (Ibid.: 1). This was problematic for many philosophers because “the relationship between mathematics and reality… was not obvious” (Ibid.: 2).

A number of theorists thus embarked on a critique of a Cartesian/Euclidean formulation of space, arguing that the model ignores the ineluctable corporeity of human experience. Maurice Merleau-Ponty uses the term “objective space” to describe the Cartesian/Euclidean formation described above. In “objective space”, “the body becomes nothing but a mere object among others, an objective body” (Shengli 2009: 135). Furthermore, “the relation between the body and space can only be termed as ‘a body in space’… a ready-made, objective body located in determinate positions” (Ibid.: 135).

Conversely, phenomenological thinking aims to understand space in experiential terms, a “spatiality of situation” rather than an “objective spatiality” (Merleau-Ponty 2012: 117, cited in Shengli 2009: 135). Space is not “homogenous”, but rather “orientated” (Ibid.: 135). However, a Merleau-Pontian account of experiential space is not without its limitations. Jürgen Habermas characterises his phenomenology as only “being able to conceive of the existence of… one single subject” (Overgaard and Zahavi 2009: 96). Furthermore, it could also be argued that a focus on the corporeity of spatial experience presumes a kind of universal “body” without acknowledging the hugely varied subjectivities of different individuals, including (but not limited to) notions of class, race, gender, and disability, as well as the variation in forms of human experience that occur across different historical eras and cultures. For Georgina Born, these shortcomings necessitate the development of a “critical phenomenology”, “recast” in fully “historical, cultural, and social terms” (Born 2013: 25). Born’s approach acknowledges the “multiple valences of social

mediation immanent in music and sound including hierarchical and antagonistic dimensions of human sociality" (Ibid.: 26).

This dissertation also employs a critical phenomenology, here positioned in contrast to the more limited understandings of space as illustrated by Euclidean/ Cartesian models and in classical phenomenological writing. In very general terms, we might draw a distinction between the notion of absolute space—an homogenous "container"—and an historically and culturally informed phenomenology of space that accounts for both subjectivity and sociality in its myriad and varied forms (Ouzounian 2013: 76; Overgaard and Zahavi 2009: 96).

2.2 Lineages of Spatiality in/and Music

In her introduction to the edited volume *Music, Sound and Space: Transformations of Public and Private Experience*, Georgina Born proposes that "it is possible to distinguish three broad ways of conceptualising space in/and music in musicological literatures: three distinct lineages of practising and cognising musical spatiality" (Born 2013: 9). These lineages are broadly labelled "pitch space formalism", "spatialisation", and "exterior spatialities", although—and especially in the case of the third lineage—these categories are necessarily aggregating in nature.

2.3 Pitch Space Formalism

The first lineage of writing on space in/and music discussed by Born encompasses formalist approaches that focus on the concept of "pitch

space” (Born 2013: 9). Associated primarily with “score-based, visual and graphic representations and analyses of music”, much of the scholarship in this area crystallises around two central categories of “pitch space”: “tonal space” and “frequency space" (Ibid.: 9). Tonal space is a means of conceptualising how music moves metaphorically through different tonal areas. Elaborate diagrams—detailing the “geometry” of tonality—are common to scholarship in this area. Familiar examples of such schemata include Leonard Euler’s *Tonnetz* (central to Neo-Riemannian theory and analysis), Arnold Schoenberg’s “chart of regions” (Schoenberg 1999) and the “circle of fifths”. Frequency space concerns the way individual or groups of pitched sounds are described and analysed in spatial terms, such as the convention of referring to a note with a higher frequency as “above” or “up” from a note with a lower one. Both of these categories lean heavily on a spatiality expressed only in geometric terms.

However, despite pitch space formalism’s limited or ambiguous account of musical spatiality, persisting with analysis of the score page—one focus of “pitch space”—can lead to some productive and meaningful analysis of musical works. It is however necessary to reconfigure the foci of previous analyses of this type: to move away from metaphorical spaces towards real ones, jettisoning idealised notions of performance or listening and instead embracing an historically and culturally informed perspective.

Of central importance is the acknowledgment of scores’ fundamental relationality. Indeed, studying the geometry of the score can aid practical discussion of how the space of performance, the performer, the scored material,

and sound interact. By opening out our understanding of “pitch space” beyond metaphor, we might seek to circumvent the pitfalls of writing about movements and spaces “whose relationship to actual bodies and spaces is not explored” (Clayton and Leante 2013: 197). In the same regard, it is also interesting to examine works whose scores already begin to explore the possibilities of a spatial practice beyond pitch space formalism; works whose scores defy—for example—the traditional “connotative linkage” between vertical ordinates and pitch, or more explicitly reference qualities and/or dimensions of the lived space and time of performance (Cazden 1961: 116). It is through these forward-thinking works that we might discover a *score spatiality* beyond the formalism of pitch space.

2.4 Spatialisation

Born’s second lineage of spatial music writing is concerned with “the diverse practices and discourses of ‘spatialisation’”, and its focus on “the localisation of sound in physical and perceptual space” through multi-channel loudspeaker arrays (Born 2013: 11). This network of practices is intimately connected to technological advances made in the electroacoustic music domain during the second half of the twentieth century. For Gascia Ouzounian, the lineage of “spatialisation” is:

> firmly grounded within Euclidean and Cartesian models of space, concerned with such elements as: the location of sound objects within three-dimensional space; the movement of sounds along sound routes or *trajectoires sonores*; the segmentation of (absolute) space for the

> purposes of serialisation; and the idea of time-space as an empty container wherein sounds can develop. (Ouzounian 2013: 76)

The work in this field predominantly assumes space to be an indivisible, homogenous and isotropic container for sonic activity. This lineage is almost exclusively associated with electroacoustic, electronic, acousmatic and computer musics, but sounds can also be placed in space without digital technology–that is, using acoustic instruments and human performers. As Harley writes, “from the acoustic point of view, one can distinguish three types of sound-space: (a) real sound sources (voices or instruments), (b) virtual sound sources (loudspeakers), and (c) a mixture of both. In all three kinds of sound-space, similar spatial effects can emerge” (Harley 1993: 128). Reexamining the development of acoustic spatialisation practices—as well as their representation—can shed light on the Euclidean commitments of this lineage.

Many accounts of prototypical spatial practices begin with the Venetian *cori spezzati* of the 16th Century, in which groups of singers and players were distributed around the Basilica San Marco during services. The spatial elements of this prototypical practice were grounded in ceremonial and religious symbolism, rather than the unique aesthetic and sonic affordances of space (Bryant 1981). In the eighteenth century composers continue this trend, using space as a “special effect” in secular instrumental works such as Joseph Haydn’s *Das Echo Suite* (1767), for two antiphonal string trios, or W.A. Mozart’s *Notturno in D* (1776-7) for four orchestras. One might argue that the “spatial”

qualities of these eighteenth century works could be more accurately described as examples of orchestration. Both the *Echo Suite* and *Notturno* use unusual instrumental combinations—two string trios and four orchestras, respectively—for which normative seating plans do not exist.[4] This discussion is relevant because of its proximity to the evolution of orchestration in the nineteenth century by composers such as Hector Berlioz, an important step in the development of spatial music. Indeed, Berlioz's own *Requiem* (1837)—with its four spatialised "brass-wind orchestras"—is an important prototypical work. Harley suggests that "it is not surprising that Berlioz—author of the *Traité d'instrumentation et d'orchestration moderne*—is also one of the important pioneers of spatialization" (Harley 1994: 200).

It is easy to see the legacy of these experiments with spatialised orchestral forces in large-scale works of the mid-twentieth century, such as Henry Brant's *Western Springs* (1936) or Karlheinz Stockhausen's *Gruppen* (1957). Unlike their predecessors however, Brant and Stockhausen include elaborate spatial diagrams that clarify exactly the positioning of performers. Brant's "spatial assembly" for two identical orchestras, two equal choruses, two identical jazz combos and four conductors details the arrangement of the ensembles within the performance hall in the preface (Brant 1936). Stockhausen's *Gruppen* (1957) for three orchestras takes an even more regimented approach, specifying exactly where all 109 musicians are seated. Such diagrams reflect another kind of pitch space formalism, in which the two-dimensional space of the score's preface is presented as commensurate with the three-dimensional

[4] Evidently normative seating plans for the string trio and the orchestra alone exist, but there is no standardised arrangement for two string trios or four orchestras.

space of performance. Though these diagrams are predominantly practical in function, their top-down approach lays bare their Euclidean predisposition.

Whilst Brant's work remained committed to spatial effects as a kind of extended orchestration, Stockhausen was also exploring spatiality through electroacoustic means. The development of early *elektronische Musik* at the *Westdeutscher Rundfunk* (WDR) studio in Cologne saw a proliferation of technological exploration alongside experimental artistic practice. Indeed, the lineage of "spatialisation" is intimately connected with technological advances made at—to name just a few—studios such as the WDR, the *Studio d'essai* at Radiodiffusion-Télévision Française (RTF) and the Columbia-Princeton Electronic Music Center (Iverson 2018: 82). Despite the atmosphere of innovation cultivated at the WDR, one cannot help but feel that this laboratory environment compounded a focus on spatiality as a predominantly technical or geometric phenomenon.

Stockhausen's 1956 *Gesang der Jünglinge* (1956) and *Kontakte* (1958-60) are testament to this philosophy; the latter's serial approach to—among other parameters—space is detailed meticulously in the sketches and "study score" produced by the composer himself as well as in diagrams that appear in Richard Toop's analysis of the work (Toop 1981). Stockhausen's "rotating speaker table"—as ingenious as it was infamous—belies a playful approach to spatiality; the prevailing impression is one of formalism (Manning 2013: 62). The following extract from *Kontakte*'s "form scheme" demonstrates this approach; each segment in the central graph represents the sum of parametric changes

across “spatial location, dynamic, group type (points, groups, lines), register, speed, and instrumental timbres” (Toop 2002: 170).

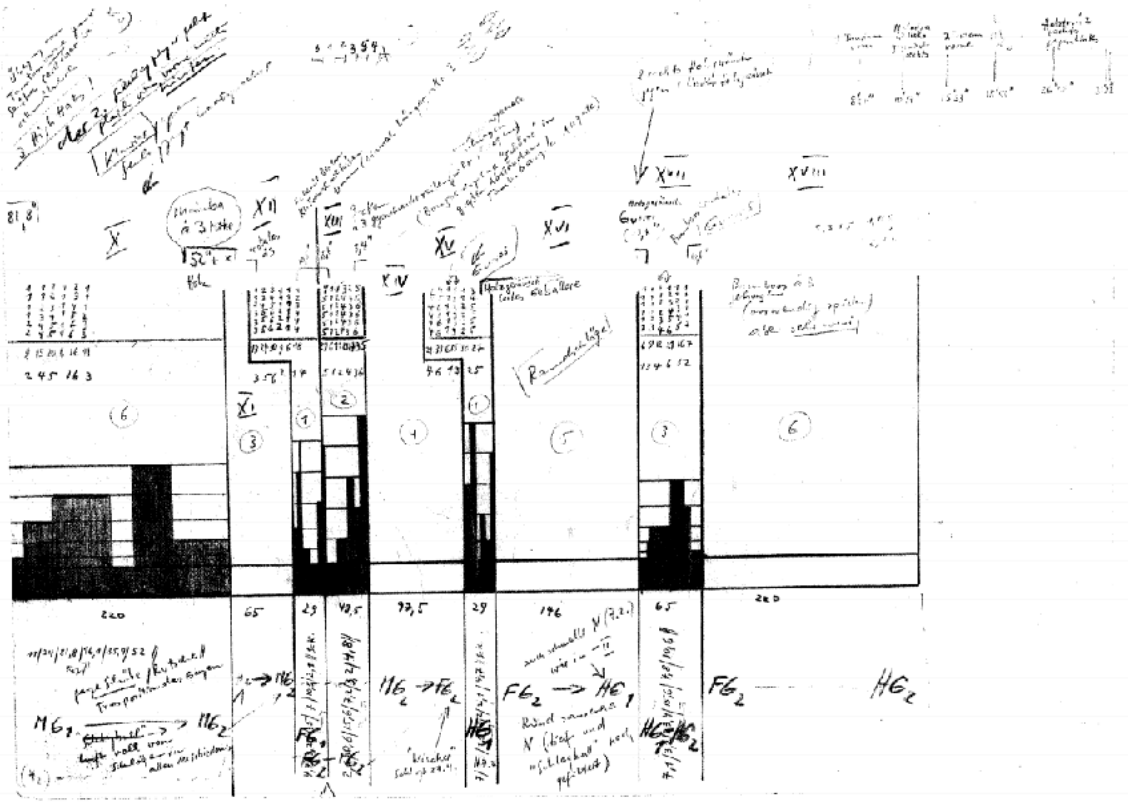


Figure 2.1: Extract from *Kontake*’s “form scheme”. Published in Toop 2002, 169.

In privileging “the location of sound objects within three-dimensional space” and “the movement of sounds along sound routes or *trajectoires sonores*”, the analyses fail to acknowledge the “spatiality of sound’s technological mediation”—ironic considering technology is what made such spatial effects possible (Ouzounian 2013: 76; Born 2013: 14). Furthermore, such accounts are limited in their discussion of the social, cultural and historical factors surrounding performance or—in the case of acousmatic music—diffusion context.

This said, there are occasional anomalies. Henry Brant wrote in an article for the *American Composers Alliance Bulletin* that “spatial music must be conceived in accordance with the premise that there is no one optimum position in the hall for each listener” (Brant 1967: 224, in Ouzounian 2013: 76). Whilst scholarship exploring Brant’s practice rarely strays from its Euclidean inclinations, the composer’s own words are prescient in their anticipation of a spatiality beyond a “single ‘aggregate’ space of experience”, a prevailing assumption in electroacoustic discourse of the time (Ouzounian 2013: 76-77).

This lineage of spatialisation is also bound up in the institutionalisation of electroacoustic music, and especially the music studios that emerge in the middle of the twentieth century across—in particular—Europe and the United States. One such studio was the San Francisco Tape Music Center. Founded as a “nonprofit cultural and educational corporation” in 1962 by composers Pauline Oliveros, Ramon Sender, and Morton Subotnick, the centre was established to “explore tape as a creative medium” (Moog 2020). However, whilst the WDR was more steadfast in its formalist understandings of space, this orthodoxy was considerably looser across the Atlantic. This experimentation was facilitated by a number of factors. SFTMC’s geographical proximity to several other artistic collectives meant that there was overlap in membership between the centre and other radical visual arts and activist initiatives in the area. Indeed, SFTMC shared 321 Divisadero Street with the KPFA radio station as well as the Dancer’s Workshop, and partnered with organisations like the San Francisco Mime Troupe and the Actor’s Workshop (Ibid.; Reyes 2018).

An interesting product of this more exploratory approach is 1963's *City Scale*, a large-scale "happening" conceived by composer Ramon Sender, playwright Ken Dewey, and visual artist Anthony Martin that took place in San Francisco on March 9, 1963 (Hill 2016: 21). Sarah Hill writes:

> It has no absolute coordinates, street names, directions, tempos, or timing; stipulations for performance include 'time: weekend night' and 'full moon.' It is site-specific, stretching out from the home of the San Francisco Tape Music Center at 1537 Jones Street. Their intention was to utilize the environment around them… (Hill 2016: 21)

City Scale is an experiment beyond "coordinates" and "directions"—hallmarks of Euclidean/Cartesian spatial practices—that emphasises individual sensitivity to the environment above an aggregated spatial experience. Whilst these experiments have more in common with Fluxus happenings in the late fifties and early sixties—to be discussed in more detail in the following chapter—it is interesting that this institutional collective produced such transgressive and explorative spatial work. The score is also reflective of this philosophy: whilst Stockhausen's technical form schemes are rigid and geometric, the score for *City Scale* is a more chaotic document, drawn freehand.

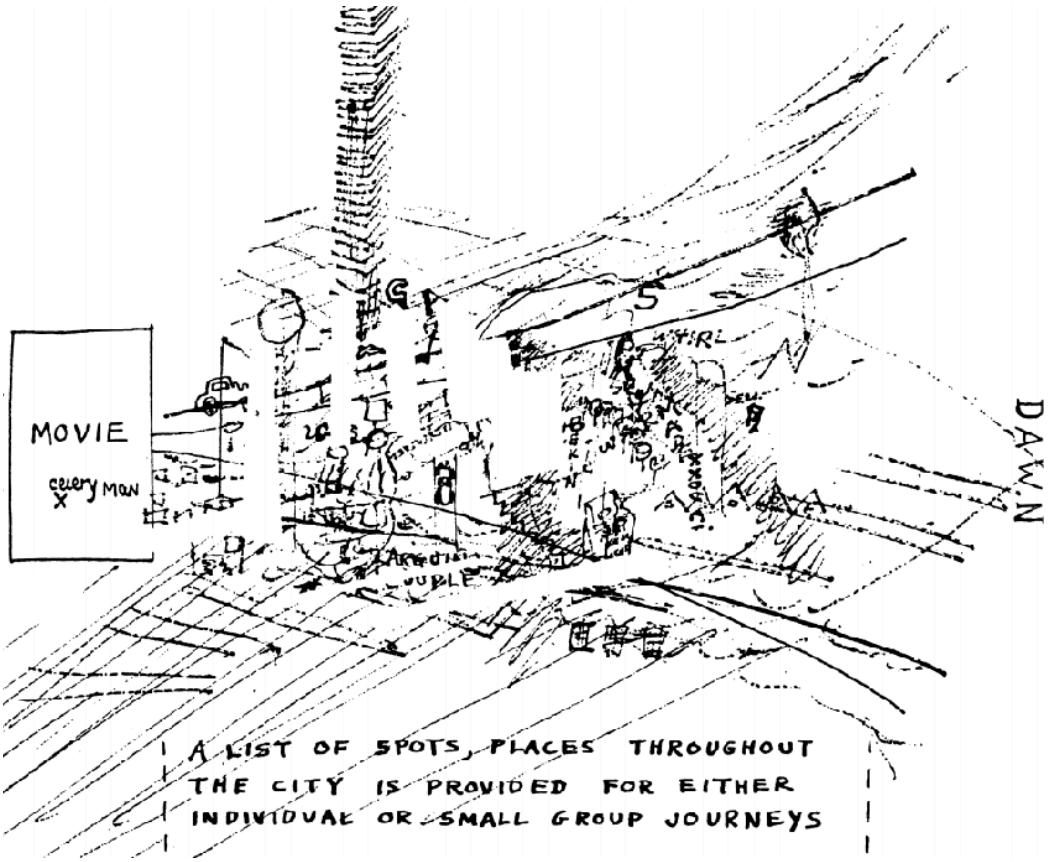


Figure 2.2: Extract from *City Scale* score (Sender et al. 1965: 186a).

Both Brant and the SFTMC's approaches to spatialisation—at least as exemplified in *City Scale*—can be set in opposition to the formalism recounted in Born's assessment of spatial music scholarship. Especially interesting is the contrast in score spatiality evinced in the *Kontakte* and *City Scale* examples. Nonetheless, these might be read as anomalies in a landscape that remains predominantly and inflexibly Euclidean.

2.5 Exterior Spatialities

The third and final lineage of writing on space in music "moves out beyond the musical or sound object to encompass 'exterior' spatialities: the spatialities configured by the physical, technological and/or social dimensions of the performance event or sound work" (Born 2013: 16). Though such dimensions

are evidently not unique to contemporary music and/or sound art, it is only in recent decades that there has been “an escalating and self-conscious creative engagement with them on the part of artists and theorists” (Ibid.: 16). This lineage transcends the formalism of the previous two in its “multiple” and “constellatory” interpretation of space (Ibid.: 16).

This lineage is also characterised by a destabilisation of the traditional concert hall performance situation, away from “environments with a single object of attention” and towards a “multiplicity of viewpoints” (LaBelle 2015a: xiv, in Ibid.: 17). Indeed, works in this category blur the boundaries between the “ritualised” space of musical performance and “everyday” lived space (Ibid.: 17). By dispensing with Euclidean and Cartesian forms of spatiality, the works and writings of artists in this category are focused on “social”, “political” and “ethical” considerations, with a particular interest in notions of “participation, interactivity, collaboration [and] community” (Ibid.: 18). More specifically, “participation” and “collaboration” figure in the artistic reimagining of the relationship between composer, score, performer, and audience.

2.6 Summary

This chapter has begun to explore the myriad spatialities in and of music through the three lineages detailed above. Elements of all three lineages are incorporated into this project’s approach. Despite the limited nature of “pitch space” formalism, working through the geometric spatiality of the score object—and in particular those employing graphic or non-standard elements—represents a worthwhile avenue for analysis and is an under-explored area of

contemporary musical practice. This approach is deployed with the acknowledgment that any conclusions must be informed by the cultural and historical context of the work. Similarly, my approach to spatialised music departs from a Euclidean interpretation of sonic diffusion—in particular focusing on the physical and social dimensions of performing acoustic spatial works, as well as the effects of technological mediation in electroacoustic, acousmatic or sound art works and their representations beyond limited “orthodoxies of ‘computer–human interaction’” (Ibid.: 14). This analysis is undertaken in the spirit of a “critical phenomenology” and is therefore also “recast” in its full cultural, historical, political and architectural context (Ibid.: 25). Born’s final lineage contributes a wealth of analytical vocabulary in the form of a loose network comprising music, sound, space, time, subjectivity and sociality (Ibid.: 19). Without wishing to demarcate the outer limits of this final lineage too explicitly, this set of mediations and multiplicities inform all the analytical work undertaken by this project. Indeed, any approach that originates in the formalism of pitch space and/or spatialisation is informed by the critical phenomenology exemplified by the third lineage.

3. Openness

3.1 Introduction

The primary focuses of this project are the related concepts of “pitch space” and “spatialisation”. Unlike much of the literature on these subjects discussed in the previous chapter, the analytical model evinced by this paper recasts both in their cultural, historical, political, architectural, physical and social context(s). In many respects, this approach is in the spirit of the “critical phenomenology” exhibited by Georgina Born’s third lineage of cognising space in music. At present there is a gulf between the formalist lineages of “pitch space” and “spatialisation” and the generative and expansive third lineage. One approach to thinking through the first two lineages using the more productive and expansive vocabulary set out by the third is through the related concept of “openness”.

3.2 Conceptions of Openness

Many accounts of openness in contemporary music begin with Umberto Eco's 1962 volume *The Role of the Reader*, which contains an essay titled "The Poetics of the Open Work" (Eco 1979: 47-66). Eco illustrates a distinction between what he terms "closed" and "open" works using musical examples. The former is "an assemblage of sound units which the composer [arranges] in a… well-defined manner before presenting it to the listener" (Ibid.: 48). Eco highlights a new "[form] of musical communication" pioneered by Karlheinz Stockhausen, Luciano Berio, Henri Pousseur, and Pierre Boulez (Ibid.: 48). Works by these composers (specifically, Stockhausen's *Klavierstück XI* (1957), Berio's *Sequenza I for solo flute* (1958), Pousseur's *Scambi* (1957) and Boulez's *Third sonata for piano* (1958)) "offer themselves not as finite works which prescribe specific repetition along given structural coordinates, but as 'open' works, which are brought to their conclusion by the performer at the same time as he experiences them" (Ibid.: 48-49). In these works, the performer is required to make various structural decisions concerning sounding identity, including linear sequence of events and duration of attacks.

As Eco's examples suggest, the notion of an "open form" was especially prevalent in the late 1950s and 60s, espoused by participants in the Darmstädter Ferienkurse at the Internationales Musikinstitut Darmstadt (IMD). One symptom of the Darmstadt-centricity of mid-twentieth century music historical writing is a continued commitment to this rather limited definition of "open form": a noun of yore rather than a living adjective. This historicisation is nowhere else more emphasised than in *Modern Music and After*, in which

musicologist Paul Griffiths claims that 1962 brought the end of open (or "mobile") form, with many viewing it simply as a "passing fashion", the expectation of continual or annual change enforced in part by "the rhythm of Darmstadt" (Griffiths: 2010).

It is important to recognise how central the work of Roland Barthes—and especially 1967's "The Death of the Author"—is to Eco's understanding of openness. Openness—though no doubt a specific and tangible quality of the aforementioned works by Stockhausen, Berio, Pousseur, and Boulez—is also a property of every artwork. Eco writes:

> the individual addressee is bound to supply his own existential credentials… comprehension of the original artefact is always modified by his particular and individual perspective. (Eco 1979: 49)

As Henry Brant observed in 1967, Eco acknowledges that each perceiver is uniquely placed to interpret a given work of art. However, whilst Brant's understanding is more literal—he could well be referring to audience members' individual seats—for Eco this notion applies in a broader sense. He suggests that every work is both a closed form "in its uniqueness as a balanced organic whole", and an open form "on account of its susceptibility to countless different interpretations" (Eco 1979: 49). This means that "every reception of a work of art is both an *interpretation* and a *performance* of it, because in every reception the work takes on a fresh perspective for itself" (Ibid.: 49, emphasis in original).

However, for Eco it is clear that the works mentioned above are far more tangibly open in their ability to "multiply formal possibilities" (Ibid.: 49).

This formulation of openness is echoed in much of the scholarship written later in the second half of the twentieth century. Thomas DeLio's 1984 book *Circumscribing the Open Universe* (building on a 1981 article in *Perspectives of New Music*) attempts to identify a number of properties of "open structure" (DeLio 1984). Though broad in scope, DeLio devotes most of the book to five composers—John Cage, Morton Feldman, Christian Wolff, Robert Ashley and Alvin Lucier—whose work functions as case studies for the theories outlined in the introduction. DeLio suggests that open form above all constitutes a focus "not so much upon the object of perception but rather upon the process of perception" (DeLio 1981: 358-359). A piece is open if "it presents no single fixed view of reality but instead reinforces those variable conditions under which each unique consciousness becomes manifest" (Ibid.: 359).

Phil Jones points out that DeLio's position is very "sympathetic to the composer's intentions" (Jones 1984: 44). Indeed, one can read DeLio's identity as a composer in his reasonably conservative understanding of "open structure". For DeLio, "the open composition is very much a natural event, and will make everyone who comes into contact with it aware of the role of their own perceptions and hence part of the creative process itself" (Ibid.: 44).

Broadly, this is also the position of composer Earle Brown. He remembers his burgeoning interest in "the problems of 'mobility'", having been influenced by the

work of Alexander Calder and Jackson Pollock in 1948 (Brown 1986: 192). Brown was looking for the spontaneous activation of mobility in performance, something he associated with Pollock's style of painting. This led to the development of the *Folio* group of pieces (1952), and *Twenty-Five Pages* (1953), the latter of which Brown considers to be "the first open form piece" (Dufallo 1989: 103). These pieces aim to produce a collaborative performance situation in which the realisation of a score is seen as a "communicative activity between the composer, the work and the performer" (Ibid.: 199). Brown sought to achieve this immediacy in part through the use of generalised graphic notations, encouraging a more spontaneous performance situation that—for him, at least—produced an "open" sonic experience for performer and listener alike.

it is also possible to offer a parallel narrative to the more established histories of open form as detailed in the previous few paragraphs. The diverse constellation of work under the banner of Fluxus is one such example. Like Earle Brown, Fluxus members George Brecht and Allan Kaprow were influenced by the work of Jackson Pollock and composed a number of "happenings" that privileged "interactivity and… performative multiplicity over authorial singularity" (Robinson 2009: 66; Kaizen 2003: 82; Lushetich 2014: 9). As Liz Kotz draws out, Roland Barthes—now fascinatingly writing after Eco—suggests that the interpreter or reader of such scores now takes on a collaborative role; they are called on as a kind of "co-author" (Barthes 1987: 163, cited in Kotz 2001: 59). By invoking Eco's more complex perceiver-interpreter-performer figure—in combination with

the concept of multiplicity—these scores can be readily drawn into the lineage of “open” form.

Nicolas Bourriaud conceptualises openness more fluidly, describing a variety of contemporary artworks as “composition by journey” (Bourriaud 2009: 114). In particular, notions of multiplicity, form-as-process and spontaneity are central to Bourriaud’s writing. He describes journey-forms as “the unfurling of a flow”, a structure defined “above all by an excess of information, which forces the viewer to enter into a process and construct his or her own personal path” (Ibid.: 116). One might think here of Brown’s “generalised notations” which suggest a multiplicity of possible interpretations, or of Barthes’ “text” which demands a practical collaboration with the reader (Brown 1986: 199; Barthes 1987: 163).

Conceptions of space also radiate through Bourriaud’s writing: he suggests that the journey-form is “no longer within the order of a static geometry”, conversely comprising a “spontaneous conception of space-time” (Bourriaud 2009: 117). It is interesting to observe how the language of Euclidean spatiality—geometry—is positioned in contrast with the notion of flux, an idea more immediately associated with the critical formulations of space articulated at the end of Chapter 2. Indeed, a conflict between Euclidean and more expansive conceptualisations of space also runs through the scholarship that distinguishes between “closed” and “open” forms.

If spatiality is a thread that connects many conceptualisations of openness, then it makes sense to examine how those working in the field of architecture and

urbanism have interpreted these ideas. Indeed, “Open Form” is an architectural idea commonly associated with the work of Oskar and Zofia Hansen. The former first presented the idea of Open Form at the 1959 International Congress of Modern Architecture (CIAM). Open Form emphasises the role of architecture in processes of individual expression, with a focus on the manner in which the built environment can be developed, transformed, shaped and adapted to the varying and changing needs of its users. More than this, Open Form represents a philosophy—an “attitude towards reality” (Kasuya 2017: 92). In emphasising the creative role of individuals as the “co-authors” of space, the Hansens echo Earle Brown’s understanding of the collaborative relationship between performer and score (Gorządek 2006; Brown 1986).

Open Form constituted the framework for the Linear Continuous System (LCS), which Oskar and Zofia Hansen developed in the 1960s and 1970s. Conceived as a model for the urbanisation of socialist Poland, it comprised four large linear zones extending across the whole country. By designing a nationwide infrastructure that was linear rather than concentric, LCS aimed to eliminate the disconnect between centre and periphery and thus undermine conventional architecture’s role in cementing class divisions. The equality-driven System was designed to work in tandem with the socialist policies of the state. As Łukasz Stanek writes, the Hansens’ project was “both a project “by” the state (to be implemented by the state) and “of” the state (of its modernization)” (Stanek 2014: 212).

Whilst Oskar Hansen maintained that his predisposition towards both Open Form and socialism were independent processes, he implies a compatibility between the two. Indeed, many accounts of open form speak to the political possibilities of more collaborative systems.

Another architectural or urbanist approach to open form is offered by Richard Sennett. In *Building and Dwelling: Ethics for the City*, he identifies five "open forms for the city" (Sennett 2018: 205). Sennett suggests that in urban construction, "*synchronous*, *punctuated*, *porous*, *incomplete* and *multiple* forms do not exhaust all the possibilities… but they are enough to turn… experiences into built form" (Ibid.: 205, emphasis added). His starting point for the city is not dissimilar to Eco's suggestion that each performance of an open work "*explains* the composition, but does not *exhaust* it" (Eco 1979: 58-9, emphasis in original). However, Sennett's work departs from Eco in his development of a theoretical framework comprising five separate typologies. The rest of this chapter details these five forms, and explains how they form the basis for an analytical model that examines open form in the spirit of a critical spatial phenomenology, as discussed in the previous chapter.[5] This said, it is necessary to first justify using an urban model to examine musical openness. Sennett's approach is reasonably broad—it could be applied to many fields and would yield interesting results—so it is important to explain why his approach has been selected for this project.

[5] Using Sennett's model as a way of understanding open form music was initially inspired by a provocation from Fani Kostourou at the *Scoring: Paris* workshop in December 2019, later published in essay form as Kostourou 2020.

An initial explanation lies in the work of Galia Hanoch-Roe. Whilst the aforementioned scholarship details individual lineages of openness as they relate intradisciplinarily, her work is interesting in its bridging of disciplinary boundaries between architectural scholarship and musicology. Hanoch-Roe's 2003 article "Musical Space and Architectural Time: Open Scoring versus Linear Processes" suggests that the process of performing an open composition is "similar to that of a movement within a structural space, where the observer chooses his way about it" (Hanoch-Roe 2003: 148). The score is imagined as a physical environment that is "explored" through the process of performance.

Indeed, Hanoch-Roe's work reveals a tendency in open form scholarship to use spatial language to describe the performance process. This is one reason for using an urban—and therefore fundamentally spatial—approach to openness. Earle Brown refers to his compositions as constituting a "field of activity in which you can go from left to right or right to left, up, down, or whatever" (Yaffé 2007: 300). More recently, pianist Philip Thomas has echoed this conceptualisation of score spatiality in his characterisation of Christian Wolff's works as "an arena" and the "mapping out of a situation to be explored" (Thomas 2007: 135-6). Even in Bourriaud's conceptualisation of a "journey-form" we grasp a strong sense of spatiality: after all, the construction of a personal "path" is central to his approach.

Accordingly, if the open work is so readily identified as an explorable, three-dimensional arena, then it makes sense to use vocabulary intended for the analysis of physical environments. It is clear, however, that the territories

described by Brown and Wolff are metaphorical “score spaces” rather than actual, physical environments. Using this language is not to assume that there is any kind of mapped relationship between metaphorical score space and the physical environment of performance. Rather, employing Sennett’s vocabulary as a starting point for analysis represents a bottom-up approach. Using his model facilitates a realised, situated, critical understanding of spatiality, whilst retaining the spirit of the scholarship on openness discussed above.

Rather than defining the limits of “open form”, this project explores various properties of openness to produce a generative and expansive model—based on Sennett—for discussing such musical works. In particular, my approach seeks to broaden the way we think about “pitch space” and “spatialisation” by examining these concepts outside of the confines of the relationship between performer and score. Indeed, this thesis also considers openness in realisation and in reception, rather than only thinking of openness as something set in motion by the composer and articulated by the relationship between the score and the performer. Sennett’s classifications allow for a more detailed analysis of some specific dimensions of openness, whilst remaining receptive to a general discussion of open forms.

Like Bourriaud’s interpreter, our journey through Sennett’s writing is “above all defined by an excess of information, which forces the viewer to enter into a process and construct his or her own personal path” (Bourriaud 2009: 116). Each heading in Sennett’s five-part system operates as a jumping-off point within a kaleidoscopic network of references and formulations.

3.3 Synchronous

For Sennett, there are two ways to organise activities in the city. In one, people do various different things at the same time; in the other, they concentrate on one thing at a time (Sennett 2018: 206). The former is a synchronic space, whilst the second is sequential. The ancient Athenian *agora* was a large gathering space that served a variety of public functions, housing monuments, altars, temples as well as a marketplace for use by free citizens. Here, events occurred synchronically. The inhabitant of the agora could only encounter numerous simultaneous "snatches of conversations", a more fragmentary experience of language and dialogue (Ibid.: 208). Conversely, the *Pnyx* was a space used for political meetings in which attendees could take in a more extensive linear sequence of words and sentences. Here, events unfolded sequentially. Sennett suggests that these kinds of spaces articulate contrasting politics, arguing that the "fragmentation of verbal communication in the town square can oblige people to use their eyes and ears", whereas the audience inspirited by a speaker's rhetoric is "unthinking" (Ibid.: 208).

Ostensibly the space of musical performance is sequential—more akin to the Pnyx with its "performances of dancing and plays" than the ancient agora (Sennett 2018: 206). However, through the prism of Born's three kinds of "multiplicity" at work in "musical and sonic experience", the space of performance can be understood as richly synchronous (Born 2013: 19). We can consider synchronicity in more and less explicit ways—though the concept of "synchronicity" should not be confused with "synchronisation" in the sense of entrainment. Like the agora—replete with a plurality of individuals using "their

eyes and ears”—the space of performance is habitually home to many different bodies, voices and interpretations of performers and audience alike (Sennett 2018: 208).

Considering the audience, there are two factors at play. To claim the spatio-temporal synchronicity of multiple audience interpretations is to acknowledge the Barthesian assertion that the perception of any art work involves the “interplay of stimulus and response”, and that each perceiver “is bound to supply [their] own response to their patterning” (Eco 1979: 48-9, see also Barthes 1967). Thinking more literally, each audience member will also experience a musical event from a unique point in space in the physical world. In many contemporary artistic and musical practices and especially in sound art or installation work, this might also change over time: an individual audience member might observe and listen to a work from a variety of different spatial positions. Imagining the audience as an assembled collective of individuated subjectivities, perceptions and listening bodies, we can speak of a synchronous “multiplicity of viewpoints” in the space and time of performance (LaBelle 2015a: xiv). This approach to audience reception plays into Born’s assertion that “any human subject’s experience of music and sound” will be “mediated by subjectivity, corporeity… given location and… movement through it”, as well as acknowledging the “social multiplicity given by the existence… of many human subjects” in the performance space (Born 2013: 19).

This approach can also be applied to performers. Imagine an ensemble work that employs a graphic score. In any single performance of this work there are a

number of “interpretations” of the score occurring simultaneously. There may be rules agreed in advance by the performers about approaches to specific graphic elements, but ultimately it is the responsibility of each individual to make decisions about what they play and how it relates to the score. Like the audience, we could imagine this ensemble as a synchronous “multiplicity of viewpoints” who each bring their own subjectivities to the space of the score.

“Synchronicity” aids our understanding of pitch space through the acknowledgment that notation houses the possibility of many concurrent interpretations, each mediated by the subjectivity of its individual performer. It also broadens our approach to spatialisation by recognising that each audience member can experience the work from a totally individuated viewpoint, figuratively, perceptually, and literally. In each case, “openness” is considered in terms of the work but also in its reception, in contrast with the discussions of “open form” mentioned earlier.

One example of a work that engages with the concept of synchronicity is Ragnar Kjartansson’s *An die Musik* (2012). The piece is a simple proposition: five pairs of singers and pianists play Franz Schubert’s song “An die Musik” at their own speed, on loop, in the same space, for seven hours. In December 2017 I attended a performance of *An die Musik* as part of LCMF (London Contemporary Music Festival).



Figure 3.1: Kjartansson's *An Die Musik* at LCMF. Photograph: Perry 2017.

Hearing five—or ten, counting pianists and singers separately—interpretations of the same short lied superimposed was an overwhelming experience. As Sennett notes, "this is the challenge of synchronicity: it breeds a spatial experience both stimulating and disorientating" (Sennett 2018: 211). As an audience member I continuously sought new entry points into the sonic sculpture: meandering between pairs of performers, leaning, sitting and lying down in a variety of positions around the space. I felt keenly the experiences of fellow audience members. Catching the eye of another concertgoer across the hall, I was struck by the notion that my foreground was their background—an individual performance of the song I felt so totally immersed in was lost in the ambient sonic wash filling the space from twenty metres away.

Kjartansson's synchronous space highlights each performer's unique interpretation by stacking five separate "readings" of the score on top of one

another. Individual audience members can then attempt to disentangle this sonic wash; their own perspective(s) “makes sense” of the chaotically beautiful sonic sculpture. As Born writes, such an experience is “mediated by subjectivity, corporeity… given location and… movement” (Born 2013: 19). The piece also explicitly acknowledges variety in audience reception, even leading us—as in my experience—to try and hear empathetically the perception of another in the space. We could thus say that *An die Musik*’s openness is vested in its synchronicity: of performer interpretation, but also of audience perspective. This approach to openness permits analysis of more than just a single “musical” dimension (e.g. pitch, rhythm, tempo), but also helps to indicate what specifically about the work is open.

3.4 Punctuated

The open city is “punctuated”. Just as writers curate our experience of words and sentences through carefully placed punctuation marks, it is also possible to shape an urban inhabitant’s journey by similar means. Like the “exclamation mark” of an obelisk that declares a town square’s importance, urban punctuation represents an “intrusion” in city space that asks the citizen to stop and consider their surroundings (Sennett 2018: 218).

How therefore might we understand this rather complex notion of “punctuation” in the context of musical performance? This category of openness is most applicable to the realm of “pitch space”—more specifically, in the score. Western staff notation already comprises a number of elements that could be considered “punctuation” in typographical terms: metronome markings,

articulation marks, dynamics, phrase markings, rests and bar lines are all punctuating in character. The double bar line is archetypical in this sense. In a Classical sonata, the double bar line might demarcate a key change, which itself would suggest the beginning of a new section within the piece's form (e.g. sonata, rondo, theme and variations).[6]

To my mind, this kind of punctuation demarcates a top-down compositional structure. Upon reading the double bar line, the performer is aware that a new section is approaching: perhaps it tells the performer to begin the next section with a stronger sense of structural importance, or perhaps it is a more practical concern—the key signature is about to change and the double bar line alerts the performer to new accidentals. In either case, I would argue that this kind of punctuation is composer-centric and serves to articulate a formalistic and hierarchical—but ultimately conventional—relationship between score, performer and composer.

What if the score could be punctuated in a way that acknowledges its inherent relationality, destabilises the hierarchy of composer and performer immanent in the aforementioned "monumental" forms of score punctuation, and recognises that musical performance is a live process of mediation rather than a passive realisation of the notation? An example of such notation exists in Christian Wolff's 1959 work *For Pianist*, which contains a curious example of "punctuation". In the score, Wolff indicates that a note should be performed "as soft as possible" (Wolff 1959). He offers three potential pathways to continue

[6] See Barry Cooper's 2007 article "Beethoven and the Double Bar" for more on the history and discourse surrounding double bar line usage.

reading based on the result of that action: if the performer feels the note was inaudible, they follow the line; if the performer feels that they succeeded in playing as soft as possible, they follow a second; and if they feel that the note they played was louder than “as soft as possible”, they follow a third line. Each of these lines comprises different notated material.

This punctuation mark draws attention to the fact that performance from a score is not a one-way, simplistic procedure in which the notation is realised perfectly but rather an ephemeral, sometimes chaotic process that brings both parties into active dialogue. The score includes a “fail state”: Wolff recognises that performance is not the dispassionate realisation of notation, but rather carries an element of risk. Furthermore, this moment relies on the subjective nature of listening—the focus is on “the individual ear” rather than any kind of perceptual objectivity (LaBelle 2015a: 10). The ambiguity of “as soft as possible” requires a performer to set for themselves the threshold between success and failure in completing this task. This emphasis on subjective listening calls to mind Cage’s notion of “renewed listening as a mode of absolute individualism” (Ibid.: 12). In this configuration, the whole is processually reliant on the individual. The system relies on the aural subjectivity of the individual performer, causing them to pause and acknowledge their role in the process of musical performance—like Sennett’s urbanite, who upon encountering such punctuation, “takes [their] bearings… reckoning where [they] are” (Sennett 2018: 213).

3.5 Porous

According to Sennett, there are two ways of thinking about edges in “natural ecologies”: “borders” and “boundaries” (Sennett 2018: 219-20). Borders are “porous edges” where “different groups interact”, whilst boundaries are edges “where things end”, a “low-intensity edge” (Ibid.: 220). However, to suggest such an explicit dichotomy is oversimplification, and it is more accurate to suggest that “porosity exists in dialogue with resistance”, in the same way that a cell wall and a cell membrane aren’t simply barriers and entry-points respectively, but rather, will let different things in at different times (Ibid.: 220). In this way, “porosity” acknowledges the fact that an edge is “sometimes open” and “sometimes retentive” (Ibid.: 220).

Musically speaking, we can think through porosity in a variety of ways. Every performance takes place in a space that is sonically porous. The sounds of humans—breathing, coughing, muttering, fidgeting—are commonplace in the concert hall. Similarly, the sounds of the street—cars, buses, bikes, commuters—may permeate the ticket-holders-only spaces of musical performance, despite a venue’s best efforts. There may too be more-than-human agents at work in this seeming cacophony: the sounds of plants, animals and the weather can figure in a listener’s experience of a given musical event.

Whilst it is nothing new to propose that the spaces of musical performance are replete with the commonplace sounds described above, existing discourses on spatialised music practices are somewhat resistant to this suggestion. Writing on spatial music often implies that the realisation of these works occurs in

hermetically sealed spaces, and that the “sound image” projected by the performer is a totally immersive sonic-spatial experience that precludes any of the “unintentional sounds” of the wider acoustic environment. The concept of porosity lends us a vocabulary to talk about practices of spatialisation that actively encourage a flexible membrane between the space of performance and “everyday” space, acknowledging that no performance—to use the age-old adage—takes place in a vacuum. These works actively engage with the sonic porosity of generalised or specific performance environments, calling to mind Born’s category of works in the third lineage that engage with “the wider sounding environment or acoustic ecology” (Born 2013: 16).

Two brief examples are interesting in the context of this discussion. R. Murray Schafer’s *Music for Wilderness Lake* (1979) is a composition for twelve trombonists, who are positioned around a lake and cued using flags from a raft or canoe. They perform music at dusk and dawn and their material often mimics the soundscape of the local area, like bird calls, wolf howls, and water sounds. Those present at a performance are encouraged “to listen to the trombones but also to listen to the environment” (Ramirez 2014). In Schafer’s composition the space of performance is porous to the more-than-human sounds of the acoustic ecology within which it is situated. Schafer suggests that audience members “[return] to a more remote era… when musicians played to the water and to the trees and then listened for them to play back to them” (Schafer 1981: i, in Harley 1994: 315). Thus, beyond merely accepting or tolerating the presence of the wider sonic environment, Schafer’s composition actively engages in a two-

way process, looking towards “unintended” and/or unexpected natural sounds as a key element of the performance.

A performance that engages with the wider sounding environment to a different end is Kathy Hinde and Jony Easterby’s *Nightingales and Cello* (2014). Composed for an immersive night walk in Ynys-hir (an RSPB reserve in Wales), the piece references a 1924 event in which Beatrice Harrison played cello with nightingales in her garden during a live BBC radio broadcast. In Hinde and Easterby’s homage, a live cellist performs the same music with “1920s recordings of nightingales from Beatrice’s garden, commenting on the dramatic drop in the UK Nightingale population” (Easterby and Hinde 2015).

Whilst both Schafer and Hinde and Easterby’s compositions are performed in sonically vibrant environments, the former engages primarily with what is present, whilst the latter draws attention to what is absent. In her analysis of *A Nightingale Sang in Berkeley Square* (an event organised by Extinction Rebellion in collaboration with “Sam Lee’s Singing with Nightingales” & The Nest Collective (Rebellion 2019)), Flo Lines suggests that works built around bird song “[create] a space that [gives] primacy to the sounds of more-than-human life” (Lines 2019: 28). Listening to 1920s recordings of nightingales “translates an abstract notion of extinction into a personal and sensory awareness of what is no longer *here*” (Ibid.: 28). The space of performance in Hinde and Easterby’s work is as porous as that of Schafer’s, but that porosity is employed to frame absence and extinction. As their work illustrates, porosity can be utilised to political end, situating performances firmly in the living—and

dying—human and more-than-human world “outside of” the space of performance.

3.6 Incomplete

The open city is incomplete “on purpose” (Sennett 2018: 228). One example of an incomplete form is the “shell”, “whose possibilities are not exhausted in any particular configuration imposed at the start” (Ibid.: 230). Such a design requires more than one individual to bring the form to fruition. Like Chilean architect Alejandro Aravena’s “half-built” houses that “inhabitants could fill in with their own labour”, the shell form makes collaboration possible (Ibid.: 228). However, the shell’s capacity to be built and re-built *ad infinitum* renders it vulnerable to becoming “pure process”, “degraded” by the “shapeless drift” of alterations over time (Ibid.: 230). Accordingly, the shell form is open—but it is also open-ended.

One way of thinking through the relationship between performer and score is through the notion of “incompleteness”. In sociology, “incomplete form” is known as “dialogics” (Sennett 2017). Dialogics concerns the way that good listeners can put “disconnected bits of ideas together” when we talk to one another, acknowledging that “people do not think or speak in… perfectly concise and clear sentences” (Ibid.). Naturally, the way these fragments are received and assembled is culturally and socially mediated and will therefore vary from interpreter to interpreter. The same is true of the score: each performer may see different performative possibilities in the notated material.

Accordingly, one might say that a score is “assembled” into a performance according to a number of factors, including but not limited to social, cultural, historical and corporeal considerations. This process of assembly produces meanings that transcend those immanent in the notation. It could be argued that Western staff notation already comprises numerous elements that are constructed at the point of interpretation and/or performance such as tempo, expression and dynamic range.

Perhaps then we can speak of a continuum of incompleteness when discussing the relationship between score space and interpreting performer. At one extreme are scores in which all the material is indicated “explicitly” (though the nature of performance and reception—as discussed above—means this process is mediated), and at the other extreme is music in which the score gives no instructions to the performer. This understanding leads us naturally onto Sennett’s final dimension of openness, the quality of being “multiple”. This dimension is intrinsically connected to incompleteness: if something has to be “finished”, then it can be finished in many different ways.

3.7 Multiple

If you sow a seed in “different circumstances of water, wind and soil”, you will yield different results (Sennett 2018: 236). In urbanism, “seed-planning” refers to an approach in which architectural spaces are built in such a way that they can change and grow based on the environments in which they are situated. Function completes form according to circumstance. Accordingly, a single “seed” type-form can produce a multiplicity of manifestations. Though this

process may be set in motion by the architect, it is “not entirely controllable”—there is always “something unforeseen… at work” (Ibid.: 237). Incompleteness and multiplicity productively coexist as dimensions of openness. As Sennett writes:

> seed-planning seeks to create ‘pockets of order’… the essence of seed-planning is minimum specification (*incompleteness*) of how form relates to function; this leaves room for maximum variation and innovation (*multiplicity*). (Sennett 2018: 237, parentheses added)

Sennett’s model for a “multiple” urban object is two-fold, requiring both an object to be multiplied—a “seed”—and conditions that generate “variation and innovation”: a “habitat” of sorts (Sennett 2018: 237). Situating the incomplete “seed” object in different environments makes possible the process of mediation and change based on those circumstances.

How might we think through this concept with regard to musical performance? In many practices we might understand the score space as the “seed” type-form, the “thing-being-situated”. The question is, then, how can score spaces be prepared deliberately for this kind of situated engagement? How do composers draw attention to the fact that performing or installing music in a specific environment changes our experience of that site; that sound informs our experience of the social, architectural, acoustic, political dimensions of space, and vice versa? My approach to multiplicity is inspired by Sennett’s interpretation. However, I am less interested in the more general category of

works which might be “interpreted” in multiple ways, and more interested in those for which the environment is a central factor in the process of multiplication. Though this dimension of openness places control into the hands of the environment, it is possible to prepare scores that they might find greater variability across different situated spaces.

One such preparation concerns systems that change based on material, spatial or environmental circumstances. Like Sennett’s seed-planning, notational systems can be constructed to create a “pocket of order” that may produce a multiplicity of results (Sennett 2018: 237). Many text or “event” scores house the potential for radically different realisations. For some of these, the circumstances surrounding the performance—and especially locality—are central to this capacity for multiplicity. Such works engage with site as a general category, but do not limit themselves to a single specific site. We will later define this concept more concretely using the term “place-specificity”.

3.8 Discussion

These five dimensions of openness—synchronicity, punctuatedness, porosity, incompleteness, and multiplicity—help to establish some of the more specific ways that musical compositions may be described as “open”, beyond the limited scope outlined in the literature on mid-twentieth century “open works”. Furthermore, each has offered a route into understanding score space and spatialisation in a more nuanced, situated way. Though the last two dimensions that Sennett describes (“incompleteness” and “multiplicity”) are in many ways reminiscent of a historicised “open form”, thinking through these dimensions

with a critical phenomenology in mind allows us to move beyond limited or generalised descriptions of openness and towards a more specific understanding of what is open and how it is open.

In particular, this situated approach is key to understanding the political dimensions of the work this thesis discusses. For Sennett, openness in urban design is conducive to a more democratic, equal society.

> The closed city can be designed and operated top-down; it is a city which belongs to the masters. The open city is a bottom up place; it belongs to the people. (Sennett 2017)

Can the same be said for open music? We have touched on the political implications of openness throughout this chapter, from Brown's murmurings about participation to the Hansens' avowedly socialist project (Ryan 2010). However, to my mind a critical analytical approach must first be attuned to the specific political conditions of the work in focus, rather than claiming a politics of openness on a broader scale. To make sweeping statements at this stage is to revert to a kind of formalism. Such an approach would be sympathetic to the composer and their imagined "intentions", but not to the hugely variable experiences of audience members and participants who may not read the score's call for participation as transgressive or revolutionary. It is not in my interest to flatten out the bumpy subjectivities, anomalies and idiosyncrasies that form the rich tapestry of the lived world. I am equally interested in the elements of performances that aren't planned or "don't work"—the people who

don’t participate, the people who feel alienated rather than empowered, the people who would rather stay quiet—and the politics of these encounters, instead of a one-size-fits-all approach.

The following chapters apply the analytical model discussed here across two longer-form case studies. The first is a participatory work of sonic performance art by Lin Chi-Wei, entitled *Tape Music* (2004-2016); the second is an audio work and graphic score produced by Claudia Molitor, entitled *Sonorama* (2015).

4. Lin Chi-Wei — *Tape Music*

4.1 Introduction

It is a cold March afternoon in Hökarängen and the last of the winter snow is still visible on the ground (Lin 2007b). In a launderette turned non-profit arts space in the centre of this Stockholm suburb, members of the local community are congregating. People are singing, speaking, and shouting. A little girl is meowing. They are making noise together.

Lin Chi-Wei (林其蔚), a Taiwanese transdisciplinary artist and writer, is demonstrating his ambitious *Tape Music* project (2004-2016).[7] At this Swedish

[7] The series is technically ongoing, but the last new iteration of the score was produced in 2016 for the London-based choir Musarc (musarc.org).

gathering in 2007, the composition had only been in development for three years. By 2014, Lin had presented it over a hundred times across numerous cities, regions and nations. The work currently exists in eleven different iterations, each consisting of a 25 to 204 metre-long ribbon wrapped around a spool. Phonetic characters are written upon these ribbons (see Figure 4.1). In ten of its eleven versions, the ensemble that performs the work is made up of participants drawn from the area in which the recital is taking place, rather than professional performers. Accordingly, each version of the score is produced with a specific community or location in mind.

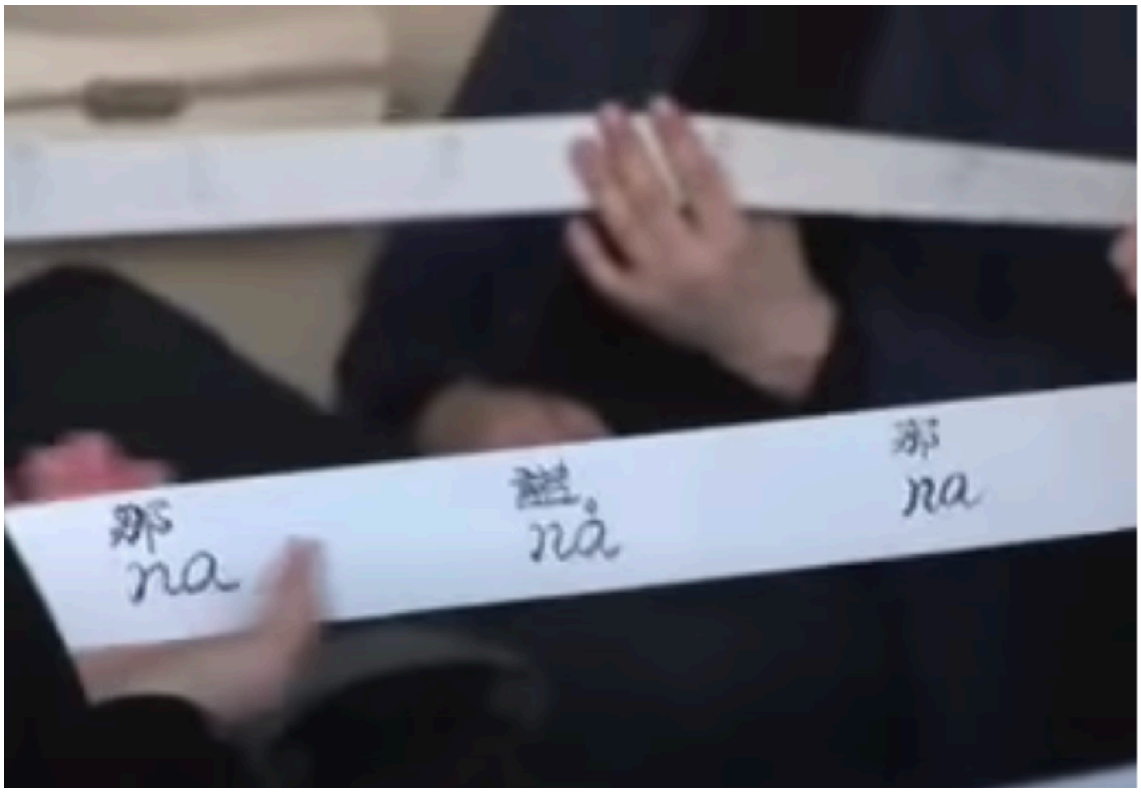


Figure 4.1: Close-up of a score for *Tape Music*. Screengrab from Lin 2008.

Tape Music is designed so that it might be realised across many contrasting environments. Lin writes:

> There have been around 100 sessions and more than 2000 people have participated. People from primary schools, temples, churches, factories, local governments, neighbourhoods… and also visitors and audiences of museums, music festivals, bars and venues. (Lin 2017)

As its performers vary widely in musical literacy and proficiency, it is advantageous that *Tape Music* is reasonably simple in its setup. Participants are seated in a spiral in the centre of the performance space. An individual sits at the spiral's outside edge—typically Lin himself—and begins to distribute the tape, unspooling the ribbon as it is passed around until it collects in the middle (Lin 2009). Performers can interpret the characters on the tape through vocal sounds of any pitch, timbre, or volume, and may read the ribbon at any tempo. However, Lin requests that individuals do not accumulate too much slack between them and the person to their left (Lin 2017). Ideally, the ribbon should be kept reasonably taut by way of unspoken cooperation between participants. As the ribbon is passed, performers may begin making vocal sounds of their own choosing. A great variety of chants, grunts, and whispers quickly fills the space. As each new symbol on the ribbon comes into view, performers repeat, alter and augment their sounding utterances to produce an heterogeneous and chaotic polyphony.

4.2 Inter/Intra-Performativity

In Chapter Three, the discussion of synchronicity considered two primary angles: that of performer interpretation—in that each executant expresses their individuated reading of a score through its realisation—and that of audience

perspective, in that audience members bring their own perspectives (both literal and interpretative) to a performance. In *Tape Music* the performers are also the audience. Whilst the executants' interpretation of the composition remains mediated by subjectivity, corporeity and given location, these are cross-cut by their participatory role in the performance—both individually and collectively (Born 2013: 19).

For performers, Lin's unusual ribbon score houses the potential for many concurrent interpretations. During any given realisation of *Tape Music*, a variety of simultaneous "readings" of the score may occur. These individual readings find voice in the same space: synchronous but not necessarily synchronised. Sennett suggests that synchronicity "breeds a spatial experience both stimulating and disorientating" (Sennett 2018: 211). Indeed, it is true that performances of *Tape Music* may develop into cacophonous gatherings. Unlike Kjartansson's Schubertian sonic wash, Lin's composition can produce a rich, chaotic polyphony. However, in other performances utterances seem to synchronise, either timbrally or rhythmically. In such realisations, the varied individual voices that characterise more heterogenous performances give way to a generalised collective tone or rhythm.

At the heart of Lin's composition is the potential any performance has to be either harmonious or cacophonous. In their programme notes for a performance of *Tape Music* in 2017, the arts organisation Liquid Architecture emphasise the same dichotomy, suggesting that *Tape Music* can "make difference audible", "'sound' disobedience", "choreograph dissonance" and "explore the harmonies

possible when we bring voices together (and apart) in a shared space" (Lin 2017).

However, it is important to clarify exactly how—or indeed whether—synchronicity "sound[s] disobedience" and "choreograph[s] dissonance" (Ibid.). A distinction must be made first between "sounding disobedience"—which I interpret as musical expressions that disrupt a generalised collective harmony or tone—and "choreographing dissonance", which concerns the interplay between the group of performers and the spatial dimensions of the performance arena (though evidently, musical expressions are also mediated by "external" factors like race, age, class, culture, and proficiency). The programme note's references to "sound" as well as "choreography" draw attention to the composition as both a sonic and spatial phenomenon. Like the distinction made above, this spatiality can be understood as bipartite, comprising both the intra-performative—"musical"—spatiality intrinsic to the passing of the score, and the inter-performative spatiality that interacts more explicitly with the performance location, both architecturally, geographically, and even geopolitically.

Accordingly, performances of *Tape Music* can be read as harmonious or heterogenous, and this reading may focus on intra- or inter-performative elements of its structure. In a realisation that can broadly be described as intra-performatively consonant, it is possible to identify a shared collective tone, range, and/or rhythm, which will be regular. The majority of performers will be synchronised. One such example of this is the realisation at Australia National University in Canberra on 17 October 2009.[8] The rhythm is regular and

[8] See http://www.linchiwei.com/wp-content/pics/ANU-canberra.mp4 for video documentation.

consistent, and most participants' utterances are within the same low tessitura. In a realisation that is intra-performatively heterogenous, a wide variety of sounding utterances will be present, across multiple ranges and timbres. Any rhythm will be irregular and inconsistent, and the general feeling will be one of cacophony. An example of this type of realisation is that at Bill & George in Sydney on 22 October 2009; the performance comprises many different individuated rhythms, timbres, and ranges.[9]

Inter-performative consonance and dissonance is more complex and realisation-specific, but it essentially concerns the way that the intra-performative quality of the work interacts with the wider environment. In order to understand this, we must consider architecture—and therefore, space more generally—as constructed beyond tectonics and encompassing social, political, cultural, corporeal, and economic factors. Inter-performativity is most readily evaluated on a case-by-case basis, and so rather than offer primitive analyses here, it will remain the focus of three longer-form investigations of specific realisations later. The following table aims to clearly summarise the points of the previous three paragraphs.

[9] See http://www.linchiwei.com/wp-content/pics/Kiss-clubsydney.mp4 for video documentation.

	Consonant / Harmonious	Dissonant / Heterogenous
Intra-Performance	Shared collective range, timbre and/or rhythm; majority are synchronised.	Many different timbres and rhythms occurring independently.
Inter-Performance	Intra-performative quality of the performance can be identified somehow with the architecture of the wider environment, consonant with the spatial circumstances.	Intra-performative quality of the performance is in contrast with the architecture of the wider environment.

Table 4.1: A Summary of Intra- and Inter-Performativity.

Whilst many performances could be said to be inter-performatively consonant with their surroundings in a superficial way—like for example the performance of liturgical music in a church—this approach considers inter-performativity specifically in combination with intra-performativity, which helps to draw out how the participatory nature of the score operates across multiple performance localities, as well as exploring the relationships between realisations and their environments.

This section began by talking about synchronicity, but there is clearly also a sense of porosity in the way *Tape Music* interacts with the wider environment. Whilst the terms intra- and inter- imply a hard boundary between the space of performance and the broader sounding arena, in fact this approach acknowledges that there is a flexible membrane between the two: intra-performativity is mediated by the wider environment, whilst inter-performativity is discussed only in relation to what is happening “within” the space of performance.

The role of porosity is emphasised through its attempted decentering in the handful of “concert” performances of *Tape Music*. Indeed, the London-based experimental choir Musarc have performed the piece numerous times between 2015 and 2019. Unlike any other performances of *Tape Music*, the choir realise the composition as a more conventional concert piece without inviting participants from the local area. Furthermore, their performances have predominantly taken place in established musical or artistic venues, such as Round Chapel in Clapton (2015) and Cafe OTO in Dalston (2015).

Both of these venues are located in the East London borough of Hackney, whose diverse population has been affected—among other factors—by regeneration schemes associated with the 2012 Olympic Games (Stirling 2016). Indeed, Round Chapel—in its own words a “beautiful, historic building in the middle of one of London’s most vibrant boroughs”—is on Lower Clapton Road, part of the so-called “Murder Mile” made infamous by the UK press during the late 1990s and into the first decade of the twenty-first century (Thompson 2001). Characterised in a 2002 article in *The Independent* as composed of both “pound shops” and “kebab houses”, it is clear which racial and class stereotypes such publications wished associated with the violent incidents of “Britain’s deadliest road” (Mendick and Johnson 2002).

Cafe OTO’s home in Dalston has been subject to similar regeneration schemes. Since the financial crisis of 2008—and expedited by the reopening of Dalston Junction railway station as part of the East London line extension (ELLX)—the area has been prey to vicious gentrification, including the construction of over

500 mostly buy-to-let properties of the Dalston Square development as well as the closure of a number of well-known nightlife establishments, the result of changes in Hackney licensing laws (Morton 2018).

Furthermore, Cafe OTO's emphasis on experimental and specialist musics may play into ongoing antagonism between newer "arts" and long-resident "non-arts" inhabitants of a number of East London boroughs, intensified by the regeneration programmes detailed above (Stirling 2016). Indeed, OTO's avowedly non-mainstream programme of jazz, free improv, noise, and drone—among other genres—lends it an air of exclusivity that may contribute to the aforementioned conflict.

In their performances at Round Chapel and Cafe OTO, Musarc realised *Tape Music* without the participation of local inhabitants. By demarcating between performers and audience, they inadvertently create a hard boundary between the space of performance and the wider environment. One could then argue that these performances lack the same richness of inter-performativity because the relationship between the performers and the space is predominantly and more conventionally institutional/occupational, rather than distinctly geographical or social. The piece loses a degree of its interpretative variety—and therefore conceptual richness—in not engaging with the wider environment and community in these performances.

However, taken in tandem with the context detailed above, one could argue that this exclusionary approach is basically congruent with the lack of genuine

community engagement evidenced by the actions of these institutions, or at least the broader narratives of gentrification into which they can readily be drawn. At best, Musarc are simply ventriloquising the participatory elements of the piece in order to present the work to a different type of audience; at worst they are playing out and reaffirming the “tacit forms of exclusion” perpetuated by establishments like Round Chapel and Cafe OTO as they exist and operate in their urban contexts (Stirling 2016).

One could also argue that these performances also enforce a boundary along lines of proficiency. Whilst participatory realisations of *Tape Music* exist without any barrier to entry, most members of Musarc have “a background in music” (Musarc 2020). The piece itself does not require any specific music literacy—hence its participatory identity—but it is interesting that these concert performances also play out “tacit forms of exclusion” on the basis of musical proficiency (Stirling 2016). A strong sense of intra-performative consonance—Musarc’s realisations are by and large very synchronised and rhythmically regular—is echoed inter-performatively through the exclusionary programming of the performance venues. One might link this to the antagonism between the music literate, knowledgeable “arts” crowd and the excluded “non-arts” residents referenced earlier.

Very simply, intra- and inter- performative consonance and dissonance operates as a model for understanding how space, place, participation and porosity come into complex dialogue during different realisations of *Tape Music*. This model is

especially useful when examining a number of performances of the work across different locations and with different participants.

4.3 Multiplicity

Perhaps a more familiar way of understanding this idea is through Richard Sennett's "seed-planning" metaphor (Sennett 2018: 238). Lin's scores are "seed" objects that may grow and flower diversely according to the conditions of the performance space—or "habitat"—in which they are situated and activated. This habitat is comprised of both immediate conditions—the performers and their individual and collective identities at the time of the realisation—as well as more embedded circumstances such as geographic location, including any significant notions of demography, culture, or history. We might think of the immediate conditions as like the soil in which a seed is planted, whilst those wider properties operate more like a climate. Of course, the nature of the soil is determined hugely by the wider climate, just as the environment plays a mediating role in the actions of the performers. The intra-performative interacts with the inter-performative: the sonic result of any given performance of *Tape Music* is directly shaped by its environment across multiple scales.

One goal of *Tape Music* is to interact with the social and political formations at the site of performance. For Lin the piece is a "sociological experiment" in which "space, time, [and] the specific gathering of people" produce "a distinctive way of sound making" (Lin 2009). As discussed above, there are eleven different iterations, each prepared and transliterated specifically for a performance or group of performances. Lin has produced his own meticulous documentation of

every iteration of the piece. This archive begins to map out the differences between performances. A report on each is written, detailing its time, space, curators/programmers, context, sponsorships, audience, feedback and “other personal observations” (Ibid.). Lin’s reports highlight the difference between an intra-performative “space” of musical activity—where we might observe the complex and variable socialities governing any ensemble performance—and a more localised “place”, within which community-specific and inter-performative forms of social interaction may find voice. Examining multiple performances of *Tape Music* in situ can help to further this discussion.

4.4 Konsthall C, Stockholm (March 2007)

The performance described at the start of this chapter took place at Konsthall C, an arts centre and former community launderette in Hökarängen, Stockholm. The building was designed by David Helldén and constructed in 1949 as a social meeting place for residents of the area. In 2004, the arts space Konsthall C came into being as a kind of “democratic social development” (*demokratisk samhällsutveckling*), founded on a commitment to values of diversity, equality and solidarity (Konsthall C 2019). Version 6 of *Tape Music* (“version *soutien-rideau-swedish*”) was prepared for this performance in March 2007.

In his report, Lin commends the cooperative and communicative spirit of the Stockholm cohort. He suggests that this performance was “special” because “the participants [kept] on listening to [each other] all the time” (Lin 2007b). For Lin, the passing of the ribbon score operated as a practical and symbolic act of cooperation, and the sounding realisation reflected this notion of collaboration

through participants' acts of "listening" and "harmonising". As the report suggests, "every participant [listened] to the collective sound and [tried] to… integrate [into] it", producing concurrent sounds that Lin perceived as forming a coherent whole (Ibid.).

However, in terms of the model discussed above, this performance was not intra-performatively consonant in a simple way. There were a great number of different repeated utterances varying in range and timbre, producing a more heterogenous texture. So why did Lin perceive the performance as so harmonious? Reading on in Lin's report reveals the presence of several choir members' "free rhythmic improvisations" an octave higher than most of the participants, as well as a young girl's constant "miaowing" during the performance at Konsthall C (Lin 2007b). The higher octave improvisations in particular are audible in one recording of the performance (Lin 2008: 3:24-3:38 and 4:05-4:09). Interestingly, their sustained and consistent tone indicates a level of vocal proficiency, at least in comparison with the majority of the utterances audible in the documentation. These conflicting readings of the score might be understood as protestations against the harmonious collective, undermining Lin's perception of social unity. It is worth noting that these differences of approach occurred across boundaries in capability—at least one of the rhythmic improvisers' vocal tones suggests previous experience—or age —the miaowing girl's youth is specifically highlighted.

This still brings us no closer to comprehending why Lin perceived such a coherent whole. Looking at the larger—inter-performative—picture may help us

to understand his reasoning. The cooperation exhibited by the performers could be interpreted as a community-specific form of sociality. In his report, Lin describes a discussion by participants after the performance about the idea of "lagom":

> There was a funny talk concerning the idea of "Largom" [sic] (the Swedish idea of "normalized" social value?) in the discussion after performance, the Swedish talk about how the performance "demonstrates" this common Swedish idea in the harmonic forming… they talked about everyday politic here. (Lin 2007b)

"Lagom" is popularly translated as "not too little, not too much" and is a culturally significant notion of having "just the right amount" of something. A common—but sadly apocryphal—etymology for the term references Vikings, who might pass around the same horn or bowl in circles so that everyone could have their fair share "around the team" ("laget om"), an image not dissimilar to a performance of *Tape Music* (Kamann 2016). Though the term more likely originates from "laghum", meaning "according to law", the myth adequately explains the concept of lagom through an image not dissimilar to that of a performance of *Tape Music* (Ibid.).

Lin's interpretation of the performance as coherent and cooperative helps to demonstrate that inter- and intra-performativity are not mutually exclusive categories. Though the relevant place-specific form of sociality (epitomised by the term "lagom") is most obviously active at an inter-performative scale, Lin's

perception of the performance as intra-performatively harmonious demonstrates the way that this “everyday politic”—for better or worse—seeps into his perception of its (acontextual) sounding identity.

Moreover, the cooperative spirit of the Konsthall C performance might be read as the “voicing” of a culturally significant mode of behaviour: in this instance, the sense of community, consensus, and harmony exemplified by the term “lagom”. Though this remains a subjective and potentially imperceptible quality of any performance, it remains significant that Lin’s participants discussed this topic. We could thus think about the process of performance as one of sonification: the “voicing” of an “everyday politic” (Lin 2007b). The inhabitants of the local area—its citizens—literally “make their voices heard” by performing *Tape Music*, but in doing so they also make audible a more abstract “voice” of the suburb, city, region, or nation in which the performance takes place.

Whilst a totally rhythmically synchronised and timbrally unified performance of the piece might exemplify social togetherness, there is also something to be said for the approach of the Konsthall C cohort, who—at least for Lin—find harmony through diversity. Perhaps this is more in keeping with the broadly democratic socialist identity of the community centre: participants cooperate and communicate (“every participant [listened] to the collective sound and [tried] to… integrate [into] it”), but do not thoughtlessly and repetitively synchronise the same vocal utterance (Lin 2007b). Lin’s report interprets the suburb of Hökarängen as “a… socialist community” constructed during the 1940s, suggesting that the former launderette and neighbourhood meeting space

represents “a critique against the notion of rational construction” in the form of “community planning” (Ibid.). Though this is no doubt a rose-tinted view of the area, its spatial characteristics—in tandem with the culturally specific “everyday politic” detailed above—contribute to a musically collaborative performance with a “harmonic” sonic result. There is inter-performative consonance between the community-focused architecture of Hökarängen and the *lagom*-driven performance at Konsthall C. Lin’s composition aims to give the power to be noisy to the community and the urban conditions of this performance are cooperative toward this goal.



Figure 4.2: Lin’s *Tape Music* being performed at Konsthall C. Screengrab from Lin 2008.

In this realisation of *Tape Music* it is clear that the circumstances of performance operate beyond the notion of a simplified or “inert” context and instead are of significance at multiple spatial and urban scales (Born 2012: 267). Konsthall C’s identity as a local community arts space draws attention to the way *Tape Music* produces a situation in which people can sing together and —in a very basic sense—“harmonise” vocally: Lin is quick to recognise participants’ attempts to “integrate” into a “collective sound” (Lin 2007b).

However, the space's home in the larger "socialist" suburb of Hökarängen—and the harmony-through-diversity approach Lin associates with these politics—highlights the piece's capacity to empower and encourage individual, diverse voices that may not "harmonise" with one another so readily. Intra-performative characteristics that are seemingly at odds—a collective tone and a heterogeneous texture—are both accentuated by the same architecture. The deciding factor is perspective. At a smaller, community-based scale ideas of togetherness and harmony are more resonant—when we zoom out to a more macro urban level, ideas of democracy and diversity appear more politically prominent. Here, a conception of space as multiversal allows for a more nuanced analytics, transcending an embedded or sedentary understanding of a performance's "context". Looking beyond those seemingly more rigid tectonic properties of a space facilitates this flexibility: physical walls may seem immovable, but urban and social context are more subject to flux and may have different characteristics at different scales.

In *Tape Music*, these social circumstances are of particular interest as they more explicitly shape what happens musically. The tactility of the ribbon score object necessitates a greater immediacy of social interaction amongst participants through shared holding and passing. Perhaps because the score creates a tangible physical link between individuals, performances of *Tape Music* are well-placed to question, destabilise, or amplify social formations implicit or explicit in the architectural or urban circumstances of a single realisation. Through this process *Tape Music* might transfigure more abstract political or local ideologies—like ideas of "democracy", or "lagom"—into a

sensory collective experience, perhaps even bringing about feelings of participatory solidarity (Garratt 2018: 13). It is through the social circumstances governing a performance space—in terms of both its immediate architecture but also its fit within a community or city—that we may glimpse the political.

4.5 Fringe Club, Hong Kong (May 2007)

A contrasting performance of *Tape Music* took place at Fringe Club in central Hong Kong in May 2007. The Fringe Club is a "club-like space for bourgeois art lovers" (Lin 2007a). The participants of this realisation were a combination of "local guys" and "artists", the implication being that both a "non-arts" and "arts" audience was present (Ibid.). Lin writes in his report that "nobody really listened to the others (except for the very few who remained silent)" (Ibid.). His account of the realisation emphasises its intra-performative heterogeneity, and this interpretation is corroborated by the brief recording of the performance (Lin 2009). It is an extremely fast-paced, frenetic recording replete with a variety of different timbres, rhythms, and ranges. Though not particularly audible in the short recorded extract, Lin remarks on the presence of several more well-known and "distinct noise maker[s]" such as Dokaka (a Japanese beatboxer known for working with Björk on her 2004 album *Medúlla*) and Steve Chan (a vocal improviser with *Zero and Sound Liberation Organisation*), who made sounds that were "nothing to do with phonetic implications on the 'Tape'" (Lin 2007a).



Figure 4.3: Lin's *Tape Music* being performed at Fringe Club. Photo from Lin 2009.

These "outstanding performances"—in the sense of both standing out, and demonstrating greater vocal proficiency than was generally on show—created irregular eruptions of laughter amongst the audience (Lin 2007a). The presence of more qualified or proficient participants created an inadvertent boundary between "musicians" and "non-musicians". One could suggest that this performed and audible difference in proficiency destabilised the work's careful repurposing of the audience into participants, creating a rift not dissimilar to that present in Musarc's non-participatory approach. Indeed, the small bourgeois space of Fringe Club is not dissimilar to Cafe OTO—though the boundaries here are engineered within the participating group, rather than between the performer and audience groups. Nonetheless, perhaps the specialist nature of the venue—one could reasonably presume that there is usually a hard boundary between performers and audience—contributed to this rift.

Again, we can observe a link between intra-performative properties of the realisation (dissonance between musicians and non-musicians) and the inter-performative properties of the wider environment (in that the space is predominantly used in a manner that demarcates between performers and audience more rigidly). In his report, Lin suggests that the sonic result of this realisation was similar to a “traditional market-like ambience” (Lin 2007a). Indeed, he identifies the cacophonous sonic result of this performance with a localised point of reference. Again, thinking about the space at different scales helps to draw out different political resonances. Within the venue space of the Fringe Club, the performance is inter-performatively consonant. The split along lines of proficiency correlates with the way that the club itself splits audience and performers. Within Hong Kong more broadly, Lin references the notion of the traditional market or bazaar space: the intra-performative dissonance finds inter-performative consonance with a market atmosphere that Lin identifies as explicitly local.

A question that arises out of this discussion is whether presenting a musical work in a particular type of venue precludes a certain kind of politics. Indeed, both Lin’s reports and this thesis’s analyses lean heavily on the immediate circumstances—and especially notions of local culture—of the performances spaces as determining factors in our reading of specific realisations. Whilst—as Garratt notes—every collective musical activity can be understood on some level as political, “this is not the same as claiming that this capacity is intrinsic to it” (Garratt 2018: 32). Inter-performative consonance is not necessarily the same as collusion or “agreement” with broader ideological issues such as

gentrification, or elitism in the arts. Similarly, simply moving the Fringe Club performance to the street in front of the bourgeois arts venue as a means of "solving" the issue of exclusivity would fail to address issues of—for example—proficiency, and would bring into play a whole new urban territory with its own social and political context. Indeed, context—in the broad, flexible sense evinced above—remains key, and it is important to acknowledge that there may be more or less at stake politically in certain performances than others.

4.6 Tomiyama Tech Limited, Shenzhen (November 2009)

A realisation for which the political appears deeply ingrained is the final case study of this chapter. The last performance of *Tape Music* that I want to consider took place in a factory owned and operated by the Tomiyama Group, an organisation that manufactures precision metal for electronic appliances and medical equipment. One of the group's three factories is based in Shenzhen City, China, an economic hotspot that was one of the fastest-growing cities in the world during the last two decades of the twentieth century. Indeed, Shenzhen was one of the first five "Special Economic Zones (SEZs) of the 1980s" that came about through "Deng Xiaoping's 'Open Door' experiments with market economics" (Easterling 2014: 35-36). Crucially, these SEZ offer tax holidays, low rent, and cheap labour (Ibid.: 29). Despite "thousands of labor strikes each year and petitions for higher wages", the state is reportedly active in limiting workers' rights in such areas (Ibid.: 29).

A performance of *Tape Music* took place in Shenzhen in November 2009. Its participants were a "folk music group, supported by the factory owner, whose

members are also labourers in the enterprise" (Lin 2017). They performed in a "repetition room" at the factory that also employs members of the ensemble. Instructions were circulated amongst the participants, and Lin began to distribute the tape according to the conventions described at the beginning of this chapter. However, though the performers were content to pass the tape amongst themselves, they did not produce any sound. Lin remarks that "no-one emitted a word"; the participants "silently transferred the ribbon without making any noise for 15 minutes" (Ibid.). Intra-performatively speaking, this is an extremely consonant realisation: participants' timbres, ranges, and rhythms are entirely synchronised—all are silent.

Lin interprets their sonic inaction as an affirmation of their position as "musician-labourers", suggesting that "if there is no instruction given, they just won't work" (Lin 2017). Here it is the socio-economics of labour practices—rather than an abstracted sense of local or community behaviour—that informs *Tape Music*'s performance practice. This said, it could be argued that in SEZs, the "community" is structured by socio-economic means. Many workers live in "labour compounds", ferried endlessly back and forth between their accommodation and their place of work. One worker, when "asked if he ever visited the downtown skyscrapers and shopping malls" in Shenzhen, replied: "I have to work every day" (Easterling 2014: 57; French 2006). In this instance, the "everyday politic" is not made audible, but rather revealed through silence. We might argue that there is friction between the democratic potential of Lin's work and the industrialist/capitalist forces which govern the factory space. *Tape Music*'s grounding in collective and cooperative experience suggests

circumstances in which its participants have ownership of and responsibility for both the means of production as well as that which is produced.

The performance site is an institutional space of work. Here, the division and serialisation of labour is paramount to the production of goods and ensures that the factory creates profit for its owners, managers, and shareholders with maximum efficiency. However, the qualities of the space that function towards economic gain and industrial efficacy are not necessarily as serviceable in pursuit of music performance. Tectonically speaking, the factory room is as good a space as any—perhaps the acoustic is slightly dull, or maybe there's not enough space for people to sit comfortably—but there is nothing about its four walls that suggests a musically satisfactory performance of Lin's piece couldn't occur. To my mind, the fact the musicians involved in the performance are labourers for the company and therefore spend time in this room regularly is key to the spatial dissonance at play in this iteration of Lin's composition. One could link the serialisation of labour on the factory production line with a loss of individual agency and ownership, notions central to a sonically rich and genuinely participatory performance of *Tape Music*. Lin's "sociological experiment" is derailed because his evaluation takes place in the space of work, a site in which sociality is rigidly defined and/or limited by a management regime that serves to implement and uphold anti-worker industrialist labour practices in order to increase profit (Lin 2009).

The performance in Stockholm emboldened the voices of its citizens, amplifying a localised form of social behaviour and providing an opportunity to make noise

and take up space. In Shenzhen, the performance makes painfully audible the politics of silence that reigns in SEZs. As Keller Easterling writes:

> maintaining autonomous control over a closed loop of compatible circumstances, the isomorphic zone rejects most of the circumstance and contradiction that are the hallmark of more familiar forms of urbanity. In its sweatshops and dormitories it often remains a clandestine site of labor abuse. (Easterling 2014: 26-27)

In the SEZ, localised forms of social interaction are more explicitly mediated, controlled, or regulated by the capitalist and industrialist ideologies that brought about the existence of the zone in the first place. We could conceptualise this tension through Georgina Born's theoretical framework: as a conflict between the microsocialities of musical performance—the first plane of social mediation—and institutional forms of production and market exchange—the fourth plane (Born 2012: 266).

Whilst discussion of the performance in Sweden emphasised "wider social identity formations" such as "nationality or locality" through its focus on the effects of the third plane, the iteration in Shenzhen is far more explicitly "entangled in the institutional forms that enable [music's] production, reproduction, and transformation, including nonmarket or market exchange, elite or religious patronage, public or subsidized cultural organizations, or late capitalism's multipolar cultural economy" (Ibid.: 266-7). Though the institutionalised forms of organisation implicated in this performance are

capitalist/industrialist rather than distinctly musical, this form of organisation still impacts performance practice. It could be argued that *Tape Music*'s dissonance with the spatial reality of the factory environment lies in its conception of property. By placing more ownership into the hands of its executants, Lin's practice is at odds with capitalist modes of production.

One might read this realisation of *Tape Music* as inter-performatively consonant. The politics of oppressive silence that dominate and control the SEZ are played out again in performance. However, what if we could interpret the factory workers' silence not as political inaction, but rather, as a striking statement of solidarity? Their collective silence might then be understood as an act of protest against their environmental circumstances, in stark contrast with the inter-performative consonance observed in Hökarängen.

As Sophia Hatziavvidou writes, whilst studies of collective political action have shifted away from a focus only on speech towards non-verbal "performative acts", the "silent subject has received relatively limited attention" (Hatziavvidou 2015: 2). In her view, silence "disrupts the primary of language as a means of communication of political demands" (Ibid.: 3). Remaining silent in an instance where vocal utterances might be employed to political end is not to "refuse to communicate", but "is a very means for communicating resistance by proclaiming an injustice to a superior part" as an emerging "collectivity" (Ibid.: 6-8). Silence's inherent polysemy means that timeliness is central to its perceived meaning, insofar that its efficacy is bound up with the circumstances of its deployment (Ibid.: 2). In the same vein, Hatziavvidou characterises certain

silent protests in terms of Michel de Certeau's concept of "tactics". A tactic "takes an order by surprise", and engages with the circumstances of the moment, rather than more embedded political dimensions of the space (de Certeau 1984: 37).

The Shenzhen factory space is not necessarily empowering for its participants and inhabitants. *Tape Music* offers a momentary situation in which participants can make their voices heard—literally, but also figuratively. It is therefore interesting that it is during this opportunity to speak that the participants chose to remain silent. Though Lin reads their inaction as grounded in economics ("if there is no instruction given, they just won't work"), I would instead characterise their timely silence as "tactical" in de Certeau's sense of the term (Lin 2017). By disturbing the conventional performance situation through "an alternative way of acting and challenging established power relations", the participants demonstrate political agency and—in Hatziavvidou's words—open "a space for political intervention where previously there seemed to be an impasse" (Hatziavvidou 2015: 20). Ultimately, their approach is an "unexpected blow" that represents a challenge to the institutional forms of power apparent in the spatial circumstances of the performance (Ibid.: 13). *Tape Music* as a composition is the perfect environment for such a tactical approach: the conventions of musical performance create a situation in which the expectation is that sound will be produced. When this turns out not to be the case, their collective silence proves a powerful and unexpected act of inter-performative dissonance. If this silent protest was undertaken during normal factory working hours, it might not be noticeable. The collective refusal of a rare chance to

make their voices heard in a work environment renders this version of *Tape Music* one of the most interesting iterations to date.

4.7 Discussion

Examining a number of performances of *Tape Music* extends the previous chapter's discussion of synchronicity, porosity and multiplicity as they might be understood in context. This analysis explores synchronicity as the existence of multiple performers—and therefore interpretations or readings—but also as the co-presence of a performance and its wider architectural, social, political, and economic environment. This links to the related concepts of intra- and inter-performative consonance and dissonance. Ultimately, the terms are a means of analysing realisations of *Tape Music* as situated and participatory phenomena, predominantly across Born's first and third planes of social mediation (the micro-socialities of performance, and wider social relations respectively) (Born 2012). The concept of porosity was also crucial to this analytical approach, as evidenced in relation to several performances undertaken by experimental choir Musarc at venues in London. More specifically, it demonstrates the way that performances at two venues in Hackney were cross-cut by notions of proficiency, class, culture and the politics of exclusion and/or gentrification.

This chapter also fleshed out the idea of intra- and inter- performativity through Richard Sennett's seed-planning metaphor, which helps to show how *Tape Music* flowers differently across changeable performance locations as a kind of place-specific multiplicity. By "place-specific multiplicity", I mean that the multiplicity of the work is evidenced through its capacity to be performed in

diverse ways across many different locations, but also that the variable material circumstances of these performance locations contribute to this diversity.

We might here underline a distinction between “place-specific” and the more commonly used “site-specific”. For Brandon LaBelle, site-specific practices aim to incorporate elements of the space of presentation into the work itself, drawing on architectural, curatorial, social or cultural properties of the site (LaBelle 2015a: xii). Whilst these sensitivities are also central to many place-specific practices, a few distinctions can be made. Firstly, for many exhibition or installation-style site-specific works there is only one instantiation of the sonic artwork, because there is only a single site. Whilst audience interpretations and user experiences of such works may vary hugely, the embedded properties of such practices means it is more difficult to isolate individual activations or realisations of the work. This gives way to analyses that focus more on individual or aggregated experiences of the work, or on the more temporally sensitive notion of “process”. Example of these include those site-specific works that change continuously—such as Rafael Lozano-Hemmer’s *Voice Tunnel* which plays back the voices of the last 75 people to speak into an intercom at the centre of the tunnel—or those that transform over a more significant time-scale, such as John Luther Adams’ *The Place Where You Go to Listen* (2006), a permanent sound and light installation in Fairbanks, Alaska that sonifies both short and long-term geophysical changes in the environment.

Conversely, in place-specific works such as *Tape Music*, the architectural, curatorial, social, cultural, or institutional context remains central—but these

elements are brought into play across multiple realisations in a variety of venues. Place-specific works interrogate each individual locality as a site-specific work might do, but also make possible a new form of locational sensitivity engendered through the diverse network of realisations generated by decoupling from just a single site.

This chapter analysed a number of performances of *Tape Music* in order to demonstrate this place-specific quality. Exploring a performance of *Tape Music* at Konsthall C in Stockholm demonstrated the difficulty in evaluating intra-performative dissonance in a reductive way, showing how conventional musical "harmony" is just one way of expressing or demonstrating social unity. Another realisation at Fringe Club in Hong Kong showed more acutely how proficiency figures in performances of *Tape Music.* The outstanding performances of several more qualified vocal performers created a rift between musicians and non-musicians, undermining the participatory character of the work. The final performance in this chapter—in Shenzhen—evinced a similarly close relationship between the place of performance and the intra-performative properties of the realisation. The localised forms of sociality that energise performances in Stockholm and Hong Kong were more acutely and forcefully quelled by the industrialist and capitalist ideologies of the wider Shenzhen environment.

Lin's composition is a self-proclaimed "sociological experiment" (Lin 2009). Indeed, sociality informs performances of *Tape Music* across multiple planes, allowing us to glimpse both intra-performative and wider sociocultural

formations specific to the site of activation. At the same time, one must not understate how the unique topology of the score produces a tactile and participatory situation that renders in sound both the characters on the ribbon, and—in a more abstract way—a sense of the local participants. Lin suggests the score is like a cassette tape, but as it turns out—like the ambient whirring of the Walkman—the machine is audible too.

5. Claudia Molitor — *Sonorama*

5.1 Introduction

It's a sweltering day at the end of August, and so when the doors of the train finally light up to let me inside I'm grateful to get off platform 12 and into the relentlessly air-conditioned interior of the train. As I board I'm greeted by a familiar voice: "welcome aboard this Southeastern service to Margate, calling at…"—but before they can finish, I've placed my headphones in my ears. I take my choice of seat (in a row of two, by the window, facing forwards—like always), but I can still vaguely hear what the announcer is saying as the opening track of Claudia Molitor's *Sonorama* begins. A cacophony of steam train and crowd sound effects belies the empty-looking Southeastern service before me, and soon Florrie Forde is singing the once-popular music hall song "All Aboard for Margate". Her words mingle with the announcements: "*I know a place where*… calling at Stratford International, Ashford… *it's the one place to go!*… Ramsgate, Broadstairs, and Mar… *down by the river, it's not far away"*. This collage eventually gives way, and Forde's distorted melody takes centre

stage as the train pulls away from London St Pancras and I begin my journey to sunny Margate.

5.2 Context and Structure

Claudia Molitor is a composer, artist and performer based in Brighton. Her diverse output comprises both compositions for conventional instrumental groups, but also works that might more readily be described as sound art—either in their deconstructive approach to the roles of performer, audience and score, their emphasis on ambient or "noisy" sounds of the environment, or in their concern with what Brandon LaBelle calls "locational sensitivity" (LaBelle 2015a: 11).

Sonorama is an audio work composed for "the otherwise silent view of the train journey between London St Pancras and Margate" (Molitor 2015a). Inspired by "trains, journeying and the disconnect between looking at the passing landscape and hearing only the interior sounds of the carriage", Molitor's work "fills the gap between the visual and sonic realities of train travel" (Ibid.). Hierarchies of listening and seeing are central to this work. Molitor suggests that "the train carriage does not necessarily have to be a non-space which is endured in order to reach the desired destination, but that being in this moving space might be a meaningful experience in and of itself" (Molitor 2015b: 7). Accordingly, *Sonorama* uses the train journey between London St. Pancras and Margate as a "score" from which material of various types is composed, collected, and arranged. She writes:

> So I started to wonder... what if I were to use a particular train route as the score for a work, where I would become the interpreter of this score by making an episodic work made of original compositions, field recordings, archive recordings, readings and conversations. A piece that could be listened to whilst travelling along this score, and importantly one that would relate specifically to that route. (Molitor 2015b: 8)

Sonorama is structured in five sections that each comprise several audio files. These audio files are intended for listening whilst taking the train between London St Pancras and Margate, though Molitor suggests you are free to listen "on any train journey" (Molitor 2019b). Table 5.1 details the nature of these audio files more comprehensively. As is clear, each section soundtracks a specific section of the larger journey. Many of these audio files make use of pre-existing recordings of archival material. Molitor worked in close collaboration with several other individuals on the project, including media historian David Hendy, who spent time "digging around in the history of the London-to-Margate train journey" and drawing out a number of relevant archival recordings from the British Library and BBC Sound Archives (Turner Contemporary 2015).

	Title	Type	Duration
1: St Pancras to Ebbsfleet	*All Aboard for Margate*	Recording (British Library Archive)	2:08
	Tunnel Waltz	Original Composition including Field Recording	3:58
	Night on London's River	Recording (BBC Sound Archive)	4:27
	Thames Suite	Original Composition including Field Recording	3:40
	Reading 1 (railway)	Reading	5:38
2: Ebbsfleet to Ashford	*The Crane: Quayside Dreaming*	Original Composition including Field Recording	4:19
	Reading 2 (journeying)	Reading	5:45
	Pylon Murmurings	Original Composition	3:30
	Evan Parker and Graham McKenzie in conversation	Conversation	9:29
3: Ashford to Canterbury	*Interlude 1*	Original Composition	3:14
	Subterranean Histories	Original Composition including Field Recording	3:02
	Reading 3 (hop picking)	Reading	5:38
	Woodland Variations, no.14	Original Composition including Field Recording	3:06
	Interlude 2	Original Composition	2:53
4: Canterbury to Ramsgate	*Stour-Rhine*	Original Composition	4:48
	Reading 4 (looking & listening)	Reading	3:58
	Bird Song	Original Composition including Field Recording	4:40
	Charlotte Higgins reflections on Roman Kent	Conversation	5:20
5: Ramsgate to Margate	*Die Muschel von Margate*	Recording (European American Music Corporation)	4:21
	In celebration of immigration	Poem with Original Composition	4:52

Table 5.1: Structure of *Sonorama*, assembled by the author based on Molitor 2015b.

In addition to the twenty audio tracks detailed above, *Sonorama* also comprises a graphic score that represents Molitor's reading of the journey (*The Sketch of the Score for Sonorama*), which was exhibited at the Turner Contemporary

gallery in Margate between 20 June and 13 September 2015 (Molitor 2015a).[10] Accordingly, the relationship between sound, space and score is complex. The "train-journey-space" between London St Pancras and Margate is used as a "score" for the audio material detailed above. This composed material has been prepared for listening in the same train-journey space. Moreover, because the graphic element (*The Sketch of the Score for Sonorama*) was also inspired by Molitor's reading of the train journey as a score, it too functions as a representation of the train-journey-space.

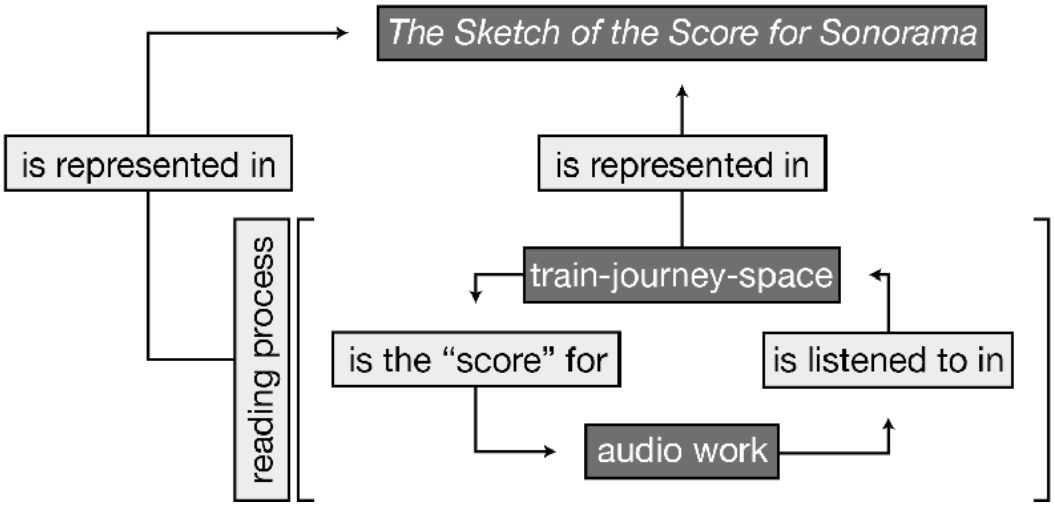


Figure 5.1: Relationships between sound, space and score in *Sonorama.*

Viewed holistically, *Sonorama* triangulates the three closely linked objects highlighted in dark grey in the diagram above. This complex relationship between score, site, and sound is typical of Molitor's sonic art practice, compounding its distinction to her more conventionally scored work.

[10] These audio files are currently playable only through a mobile, tablet or laptop browser. Originally, they could be played via a dedicated app developed by Strangeloop Limited, however this is no longer available on the iOS App Store.

5.3 Synchronicity

As detailed in Table 5.1, *Sonorama* draws from a wide variety of archival and recorded sources. Curator and researcher Irene Revell suggests that “from the very start [there is] a powerful underlying ambivalence about the past and the present… *Sonorama* is a singular work, yet fragmented in as much as it comprises these heterogenous elements; the knotted web of relations” (Molitor 2015b: 82). Molitor weaves a rich tapestry of cultural and historical threads—from immigration and Britain’s relationship with Europe, to ancient Roman history, Kentish hop-picking, or even the history of the rail network. These are presented through superimposition or juxtaposition as a network of subjects, whose unanticipated interconnections are as rich a seam to mine as the subjects themselves.

Though Florrie Forde’s voice “heralds us from more than a hundred years past into the work” in the opening track “All Aboard for Margate”, the very next sounds—a low rumbling followed by heavily processed cello recordings—are unmistakably of the late twentieth or twenty-first century (Molitor 2015b: 82). Similarly, whilst the penultimate track is a performance of “Die Muschel von Margate”—a 1928 protest song by Kurt Weill decrying the destructive effects of petrocapitalism—the same radical politics find voice 71 years later in “Immigration RSVP”, a text written and performed by Lemn Sissay that forms part of the subsequent movement “In celebration of immigration”. It is no accident that both Forde and Weill are migratory artists: Forde emigrated to the United Kingdom in the 1890s after Australia was plunged into a depression,

whilst Weill fled Nazi Germany in 1933 for New York City.[11] References to seemingly disconnected eras in *Sonorama* are not only juxtaposed, but superimposed. Each of the four “Reading” sections integrate quotations from temporally divergent historical sources, whilst a number of movements—such as “Woodland Variations, no. 14” and “Bird Song”—incorporate newly composed music by Molitor and less recent field recordings concurrently. These juxtapositions and superimpositions attempt to dissolve the divisions between temporally disparate subjects. One could consider this a kind of temporal synchronicity, in that many different eras are equally accessible from *Sonorama*’s nuclear centre.

Molitor’s commitment to a kind of temporal synchronicity is complemented by a similar approach to geography, primarily expressed through the concept of immigration. The aforementioned text by Lemn Sissay is a perfect example of this. A first-generation immigrant himself, Sissay’s poem emphasises the cosmopolitan synchronicity of our present culture in a playful but thoughtful way.

> The lemons you suck are from Spain
> And the orange you drink's from South Africa.
> Shoes you wear are made in Pakistan
> And your oil is from Saudi Arabia.
>
> You import your petrol from the Gulf States
> And your toys are made in Taiwan.

[11] See Alomes 1999 for more on Australian performers who emigrated to the UK around this time.

> Your coffee they send from Columbia
> And your cars are driven from Japan.
>
> You've flooded yourself with foreign good
> But foreigners you tell me are bad.
> You say you're afraid that they'll overrun you
> But I'm afraid they already have. (Sissay 1999: 26)

The text mirrors Molitor's own proclivity for "working with people from different backgrounds" (Molitor 2019b). Indeed, *Sonorama* features a diverse cast of collaborators. This diversity also extends to instrumental forces: the final track "In celebration of immigration" features Jan Hendrickse playing flutes from Afghanistan and Turkey. Fittingly, the material played on these flutes is adapted from folk tunes indigenous to England and France, a sonic exemplar of the richness of multiculturalism.

The concept of spatial or temporal synchronicity is no clearer than in Molitor's conversation with Charlotte Higgins in section four ("Canterbury to Ramsgate"), which references the complex history of immigration in Kent. Higgins recalls:

> The Romans were just one layer: the Celts would have arrived at some point in the deep past, and then the Romans, the Saxons, the Normans, and so on. Very close to here [Richborough Fort, Kent] there was a huge refugee camp during the Second World War for young male Jewish refugees from continental Europe… it's kind of hard to imagine the

> cacophony of voices of all nations… people talking Latin in different accents; British people talking in funny accents, or amongst themselves in their own language. (Higgins, in Molitor 2015b: 67-68)

Spatial synchronicity is here rendered as a diverse set of individuated geographies, superimposed in a tiny corner of England. In her preface to the book about the *Sonorama* project*,* Molitor suggests that the work engages with a number of "contemporary concerns", and most relevantly "the negative attitude towards immigration that has reared its ugly head once again" (Molitor 2015b: 8-9). At the time of writing and release, the political landscape of the UK was changing rapidly.[12] A sharp rise in anti-immigration and anti-multiculturalist rhetoric was accompanied by a renewed sense of British exceptionalism, conveyed especially in prominent debates in the House of Commons over the European Union Referendum Act of 2015 (see for example HC Deb 9 Jun 2015 vol 596 cc 1047-1062), which had come into force by early 2016 and made possible the European Union membership referendum of June that year (UK Parliament 2015). At the same time, Britain was implicated in a profound human tragedy on the continent. A shipwreck off the coast of Libya in April 2015 brought into sharp focus a "European migrant crisis" that saw large numbers of predominantly Syrian refugees and asylum seekers attempt to cross into Europe via dangerous sea and land routes (see UNHCR 2019). Then-Home Secretary Theresa May announced that she would take no responsibility for migrants or refugees under the proposed "EU emergency resettlement programme" (Travis 2015). By July 2016, following the UK's vote to leave the European Union, she would be Prime Minister. In the midst of such events,

[12] *Sonorama* was available on the App Store between 19 June and 13 September 2015.

Molitor's work extols the "social and cultural enrichment that immigration brings" (Molitor 2015b: 9).

One could argue that Molitor's incorporation of the "sounds of the past" constitutes a kind of sonic archaeology, a concept compounded by the inclusion of historical texts as well as in her conversation on Roman Kent with writer Charlotte Higgins (Ibid.). As David Hendy writes:

> Immersed in sound, we become not detached spectators, but fully implicated participants. We are, for a moment, right there—side-by-side—with our ancestors. History and Imagination and Empathy all become deliciously entwined. (Molitor 2015b: 81)

This process of entwining happens in and through sound, emphasising the complex geographies of history through references to many different spaces and times. Listening to *Sonorama*, these are experienced in the same moment: past and present, near and far, fascinatingly interwoven.

It is interesting to also consider this process in terms of intertextuality. More than just examining the origins of referential material in *Sonorama*, such an approach brings with it "an acknowledgment of the flow of movement, meaning and ideas" (Iqani 2009: 5). The flow of texts across temporal, cultural and geographic boundaries emphasises the multiculturalism and internationalism that characterises *Sonorama*'s spatio-temporal synchronicity. Whilst we have so far mostly focused on the globalised world more in terms of the "utopian vision

of world citizenry" latent in McLuhan's "global village", we might also consider it through the lens of international capitalist expansion (Ibid.: 14; McLuhan and Powers 1989). This apparent dichotomy brings to the fore the politics of immigration and citizenship at play here. In particular, the unabated international movement of capital highlights the fact that this freedom does not exist for a large number of displaced peoples, emphasised especially by recent changes to immigration policy set in motion by the vote to leave the EU. From January 2021 migrants to the UK will be judged by unsympathetic and rigidly economic criteria as part of a "points-based system" (UK Government 2020).

Sonorama's activation within a journey-space is extremely pertinent here: for whom does the journey represent an enriching opportunity to experience different cultures, and for whom is travel a necessity provoked by—among other things—interventionist foreign policy? For whom is the train an image of leisure —"all aboard for Margate!"—and for whom does it accentuate feelings of foreignness, homelessness and displacement? These are also questions that may be experientially central for any executor of the work. The unnamed portrait painter at the centre of Haruki Murakami's *Killing Commendatore* suggests that "memory can give warmth to time" (Murakami 2018: 407). It follows that personalised knowledge and circumstances might affect—or "warm"—our experience of *Sonorama*'s spatio-temporal synchronicity. Irene Revell reminds us that "our understanding of history can only ever be partial, fleeting and, situated by our own personal histories" (Molitor 2015b: 82). Individuated "personal histories" help to punctuate the chaotic, global intertextuality of these synchronous spaces and times, rendering them more comprehensible.

5.4 Punctuation

Richard Sennett stresses the challenges involved in constructing and experiencing synchronous spaces. A central issue, he writes, is the balance between “stimulation” and “confusion” (Sennett 2018: 211). His solution is to “mark [the space] in some way which provides orientation” (Ibid.: 211). The complex web of allusions discussed above disrupts the linear sequence of experiential time. We might then make sense of this chaotic referential synchronicity through “punctuation”. Molitor suggests that *The Sketch of the Score for Sonorama* figures as a “kind of visible glue”, allowing the composer to conceptualise the piece “not as blocks but a line” (Molitor 2019b). The score presents in a more stable form what is experientially “multiversal” and therefore in constant flux (Molitor 2015b: 82). If on the one hand we have the entirety of history, and on the other the tiny sliver that comprises everything we have experienced, the score represents a way to “bridge this fracture” (Ibid.: 82). Reflecting on our own experiences is one way of making sense of history, just as *The Sketch of the Score* is one way of making sense of an audio work that can be listened to in infinitely variable train-journey-spaces (Ibid.: 82). This conceptualisation sets in opposition an overwhelming and fluctuating totality with snapshots of individual perspective. These stabilised snapshots punctuate the confusing whole, giving us an opportunity as participants to orientate ourselves—in Sennett’s words, to “take [our] bearings” (Sennett 2018: 213).

Interestingly, *The Sketch of the Score* incorporates a representation of this opposition. It maps the “train-journey-space” between London St Pancras and Margate in two chief ways: topologically—resulting in a familiar cartographic

rendering of the geographical space—and perspectivally, illustrating an individual's viewpoint from the moving train.

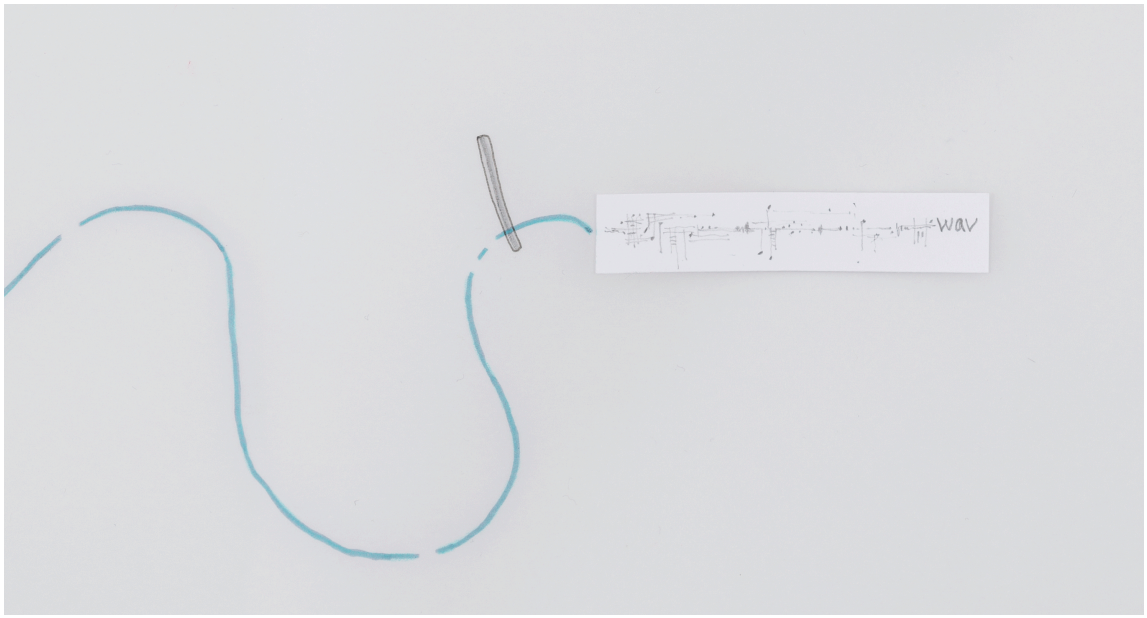


Figure 5.2: Extract from *The Sketch of the Score to Sonorama* (Molitor 2015b: 17).

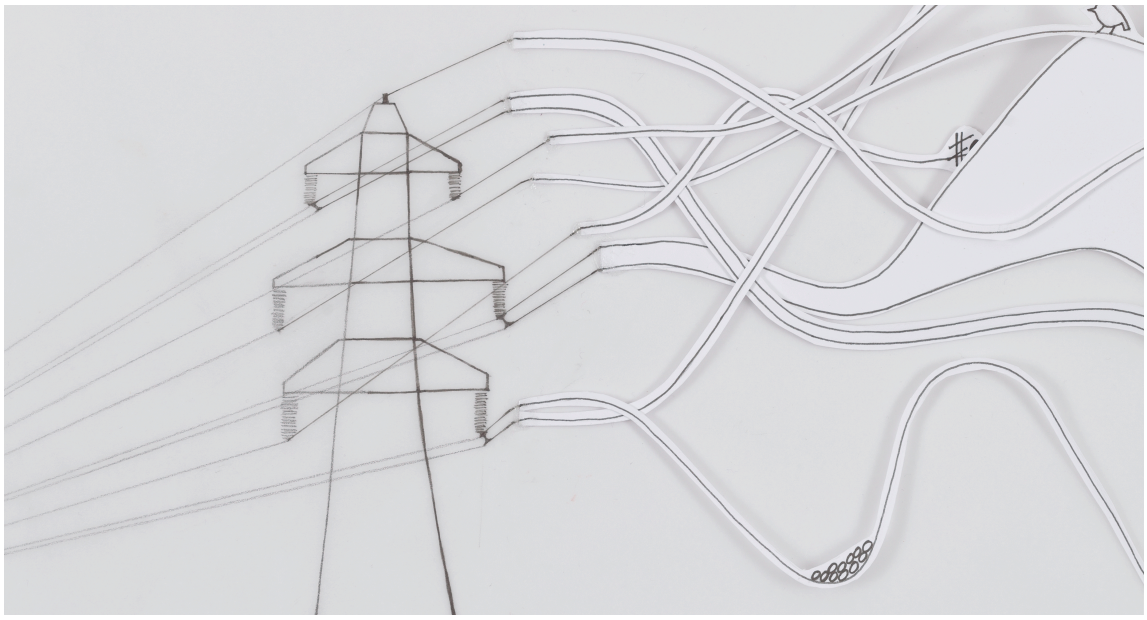


Figure 5.3: Extract from *The Sketch of the Score to Sonorama* (Molitor 2015b: 26-27).

Following Henri Lefebvre's understanding of spatial representations as "informed by ideology", these contrasting approaches can be interpreted in political terms (Sletto 2002: 395). In Chapter 3, we examined the "flattening"

effect of top-down, composer-centric structural punctuation. In the same way, we might interpret the topological approach as dictatorial, rigid, and alienating. For Molitor, this kind of representation emphasises the notion of "land… as controlled and observed by God" (Molitor 2019b). Topology shows space as possessed, not as experienced—a land surveilled at a distance, rather than lived or felt. Indeed, such a vision of the world might remind us of the compassionless capitalist infrastructure—both historical and contemporary—that mediates our experience of *Sonorama*: the advertising boards plastering every inch of saleable space through the concourse; the proliferation of overpriced chain shops at St Pancras International; the extortionate ticket fare on the privatised Southeastern Railways. This infrastructure may make us feel like simply passengers in the environment, as if we might never change the spatial banality of the commercialised public world with its endless Pret a Mangers and WH Smiths. Indeed, Gabe Meier describes the disorientating effects of the "intentionally unfathomable dimensions of multinational capital" (Meier 2020). We could be anywhere and thus are nowhere.

This said, the perspectival view incorporated into the score suggests there is an alternative. In *Postmodernism, or, The Cultural Logic of Late Capitalism*, Fredric Jameson briefly touches on the notion of "disalienation", a "practice of spatial contextualization" (Meier 2020). Jameson's strategy—which develops the work of urban theorist Kevin Lynch—aims to "provide the individual subject with a 'heightened sense of its place'" in the face of an unsympathetic late capitalist urban totality (Ibid.; Jameson 1991). Lynch's writing emphasises the city as "perceived by its inhabitants" (Lynch 2005: 3). Building on Lynch's central thesis

—that citizens navigate cities predominantly using mental images of the city, based on their sensory experiences—Jameson suggests that the alienated city is "above all a space in which people are unable to map… their own positions" (Jameson 1991). Accordingly, Jameson's disalienation strategy proposes "the reconstruction of an articulated (or punctuated) ensemble which the individual subject can map and remap along the moments of mobile, alternative trajectories" (Jameson 1991, parentheses added). Articulation—or punctuation—helps us to take our bearings.

We might readily extend this discussion through Nicolas Bourriaud's concept of a "journey-form". He characterises the form as defined by "an excess of information", an adequate description of the complex and multiple historical and cultural threads woven through the work (Bourriaud 2009: 116). However, just as Bourriaud's interpreter enters into a process of constructing their own "personal path" through the chaos, so too does Molitor's score allow for an individually punctuated journey through the material. In *The Sketch of the Score*, more conventional cartography is punctuated by the representation of individual perspective. Moments of perspectival drawing remind us that we might orientate ourselves according to our senses. The alienating effects of topology are counterbalanced by an acknowledgment of the power of individual perspective. This is also the experience of the listener on the train, who orients themselves anew with each passing station or audio file. As Irene Revell points out, *The Sketch of the Score* "allows the traveller, the listener to gain their own position" (individual perspective) within "specific space-time co-ordinates" (topology) (Molitor 2015b: 83).

5.5 Porosity

A train carriage can be a very busy place. Many travellers—each the protagonist in their voyage across this small island—may chatter, eat, laugh, or listen to music at a volume that just "leaks" into the public realm. The train carriage is full of people taking up space, and—even in the so-called "quiet carriage"—these people are noisy. Like many works in Born's third lineage (those that "encompass the wider sounding environment or acoustic ecology"), *Sonorama* encourages a flexible membrane between the private auditory world of the headphone listener and the public world of the train carriage (Born 2013: 16).

Sonorama as an audio work is porous to the sounds of the wider acoustic ecology. As Molitor notes, at times "it's hard to tell where the sounds are coming from: headphones, the carriage, the outside" (Molitor 2019b). The instability of source-bonding is of interest because it ties into Molitor's wider concerns around listening. One of the primary focuses of the composition is the disconnect between the "static interior" of the train carriage and the picturesque passing view that is seen and not heard. In many ways the audio work is an attempt to bridge this gap, drawing attention to a central question: "what are all the sounds I'm missing in the (outdoor) space" (Ibid., parentheses added)?

However, we could also apply the same logic to the headphone listener. Molitor draws attention to the sonic border between interior and exterior space through her emphasis on "listening to the view" (Molitor 2015b). The predominant silence of the passing view is emphasised by the audio work. Moreover, the

process of listening to the audio work produces another sonic border between interior and exterior—or public and private—that is much less retentive. Despite a number of scholarly contributions that characterise headphone listening as a kind of privacy-producing "bubble" (see for example Bonini and Perotta 2007; Bull 2014; Groening 2016), in the absence of active noise cancelling technology they can be a porous listening environment. This draws attention to the fact that a wider acoustic ecology exists beyond the segregated "listening space" of the work. Molitor's self-professed interest in "nested sound spaces" produces an additional form of synchronicity, as sounds "interior" to the composition mix with those from the wider sounding environment (Molitor 2019b). Accordingly, one could argue that in *Sonorama* porosity frames a request to "listen"—to be open to the sounding world. If we believe that our musical experiences can offer more than just the ventriloquism of ideologies but can instead function as arenas for staging genuine change, then Molitor's situated practice is deeply political.

5.6 Incomplete Form

Sonorama's audio files constitute an incomplete form: they may only be experienced in their full conceptual richness through listening in situ. Molitor's resistance towards ocularcentricism—a prevailing focus on the visual experience of a landscape rather than its sonic properties—can help make sense of this interpretation. She writes:

> The landscape we see passing by... [is] *stripped of its sounds* as well as its smells and tactile sensations, it no longer touches us like a 'real' experienced space, but rather like a filmic space... gazing out from inside

> the train carriage we experience a constantly evolving panorama, but its *soundworld lies silent* behind the window glass. (Molitor 2015b: 7 and 22, emphasis added)

One goal of Molitor's "quasi-sonic reading of the passing view" is to "transform the traveller's experience of [the] geographical space" (Ibid.: 7). *Sonorama* looks to reconfigure the sensory hegemony of our ocularcentric culture, engendering a more embodied and subjectively-oriented spatial encounter. For such an encounter to occur, the auditor's experience must be situated in the space of the train. The "space of the train" is not a universalised phenomenon. An incomplete form produces a multiplicity of possible personalised activations, demonstrating again the practical link between "incompleteness" and "multiplicity".

5.7 Multiplicity

It is evident that *Sonorama* contains the potential for a variety of diverse interpretations and realisations. In addition to the spatio-temporal synchronicity of multiple audience interpretations present in the performance and reception of any work of art, *Sonorama* is complicated by the fact that the listener is in many ways the performer. By this, I mean that the listener "performs" the work in their specific approach to listening to the collection of audio files in the train-journey-space. Born suggests that "any human subject's experience of music and sound" is "mediated by subjectivity, corporeity… given location and… movement through it" (Born 2013: 19). In *Sonorama* these variables are subject to change radically from performance to performance. Whilst there are elements

of the situation that are controllable—such as when to press play, which track to listen to, or which headphones to use—there are many circumstantial conditions over which they have little or no influence, such as the speed at which the train travels, the frequency and duration of its stops, and the density and noisiness of other passengers.

One strategy for thinking through the multiplicity of different realisations is in terms of Sennett's seed-planning metaphor. We can understand the train as comprising a number of nested habitats for Molitor's "seed" audio score, in which different aspects of the political message behind Molitor's sonic intervention are amplified. By focusing our analysis on these nested spaces we can begin to decode *Sonorama*'s multiplicity more broadly, instead of speculating on the variable elements discussed above that both composer and listener/performer have little control over. This approach requires a form of what Gascia Ouzounian calls "situated listening", which reveals the "particular, contingent situations of hearing *as these occur within specific listening environments*" (Ouzounian 2006: 72, emphasis added). Accordingly, situating our understanding of Molitor's political agenda as it is realised in and through Sonorama's specific listening environment(s) reveals the role of space in the construction of musical meaning.

Sonorama's spatial architecture could be said to exist across three scales. The first "habitat" is the space of travel. This generalised space of the train journey is significant because for Molitor "the technology to travel allows cultures to intertwine, our perception to be altered and our experience to be

expanded" (Molitor 2015b: 9). Listening to *Sonorama* in such a space is intensified by the contemporary and historical significance of the train as it appears in migratory narratives, lending affective weight to the pro-immigration texts throughout the work.

Secondly, Molitor's politics resonate within the more specific geographical space between St Pancras and Margate. Margate is of particular interest much of it resides in the parliamentary constituency of South Thanet, where Nigel Farage of the UK Independence Party (UKIP) stood during the 2015 general election. UKIP is a right-wing populist and Eurosceptic political organisation founded in 1991 as a single-issue party campaigning for the United Kingdom's removal from the European Union. In a speech at UKIP's spring conference in the Winter Gardens, Margate during February 2015, Farage claimed that Kent was "one of the most Eurosceptic counties in the whole of this country" (The Guardian 2015a). Indeed, during the 2015 General Election Farage received 16,026 votes, albeit losing to Conservative Craig Mackinlay (a defector from UKIP) by a little under 3,000 votes (The Guardian 2015b).

More generally, the history of migration weighs heavy on this county: it has "accreted like archaeological layers over the landscape" (Higgins, in Molitor 2015b: 64). Kent's identity as a place of "national exits and entrances" and "the point of arrival for wave after wave of people arriving in Britain" makes it a resonant site for Molitor's multiculturalist beliefs, in contrast with its current political reality (Ibid.: 68). At the time of *Sonorama*'s release, one of the Roman forts described in the conversation between Molitor and Higgins was the site of

the Dover Immigration Removal Centre. A blog post from May 2015 written by a detainee there said “there are no human rights at all. There is no medication. They say you’re not entitled to it. There are people with HIV, Hep B, Hep C and they’re not getting any medication” (Detained Voices 2015). This alleged physical and psychological abuse of detainees, alongside the populist anti-immigration rhetoric being championed at the polls, puts *Sonorama’s* specific references to the region into frightening context.

The final and most localised habitat for Molitor's political seed object is the private auditory world produced through the listener’s use of personal headphones. Earlier, the porosity of headphone listening was emphasised. Whilst this remains pertinent, it is also the case that headphone listening allows users—in Michael Bull’s words—to reconfigure “everyday experience” with “personalized meanings” through more private auditory arenas afforded by the use of individual earphones (Bull 2001: 193).

It is important to acknowledge that “everyday experience” is not a monolithic entity. Here the reception of Molitor’s political message is more explicitly mediated by individual subjectivities, such as class, race and gender identity. For example, Judy Wajcman has argued against the suitability of public transport for women’s needs, suggesting that the “physical burden of undertaking the multiple trips that often characterise women’s daily time-space, together with the problems associated with fear of sexual harassment… limit mobility and create a very different experience of spaces of transport that can

be mapped out along gender lines" (Bissell 2009: 174-5, citing Wajcman 1991: 129-133).

Whilst encounters with public transport are mediated by gender, economic background is also a potential determining factor in a listener's experience. Indeed, the technology that allows the listener to engage with *Sonorama* as an audio work is also cross-cut by notions of class and economic standing. Like the "well-to-do train travellers" of the nineteenth century, who "paid a pretty penny to avoid the din of the… third-class carriages", contemporary travellers reinforce similar acoustic hierarchies through wireless or noise-cancelling earbuds (Hendy, in Molitor 2015b: 81).[13] In an article on Apple AirPods, Tomi Obaro writes that "class barriers are represented in extremely visible ways... AirPods say, 'I can afford not to hear the same sounds you do'" (Obaro 2019). Though the employment of specific texts and recordings are allied to a political agenda, the highly subjective nature of headphone listening means that users may be led towards conclusions more tangibly mediated by their personal "everyday experience", and in directions unanticipated by Molitor.

5.8 Closing Thoughts

For Molitor, travel allows "our perception to be altered and our experience to be expanded" (Molitor 2015b: 9). This altering of perception and expansion of experience happens through sound. Through explicit and implicit references to the enriching properties of immigration, *Sonorama* attempts to sonically reconfigure the spaces of travel, the spaces of migration, and the spaces of

[13] For more on noise cancellation, see Mack Hagood's 2011 essay "Quiet Comfort: Noise, Otherness, and the Mobile Production of Personal Space" (Hagood 2011).

personal listening. In the same way that the audio work seeks to destabilise an ocularcentric understanding of the landscape, so too might the political landscape be rendered more empathetic by Molitor's sonic intervention. If "cultural geographies of inclusion and exclusion are played out in sound", then perhaps sound can also destabilise these boundaries (Revill 2000: 598).

As a closing thought, it's interesting to consider the theme of connection as it relates to the privacy of the headphone listening environment. At the heart of *Sonorama* is both an emphasis on the advantages of a more inclusive, multicultural and empathetic society, and a call to listen and feel more: to connect to one's environment and its history and culture in a more multi-sensory and "multiple" way. Whilst Molitor has stated that she "doesn't do activist art" (Molitor 2019b), there remains a curious tension between the notion of forging connections—with those whose backgrounds differ from ours, with the wider world in all its multi-sensory glory—and the ultimately individual experience of the audio work itself.

6. Conclusion

6.1 Introduction

The central focus of this thesis has been the elucidation and application of a new analytical framework that connects existing discourses on open form, sonic spatiality and urban theory. It represents a new way of understanding the interconnections between different disciplines, and constitutes a new tool through which to analyse and experience contemporary sonic practices, thinking especially about the broader significance of site, space and place. Two case studies—Lin Chi-Wei's *Tape Music* and Claudia Molitor's *Sonorama*—demonstrate a critical examination of spatiality, rethinking the notion of "open form". This analysis has been undertaken with attention to the politics of these artists' practices, in the spirit of a critical phenomenology.

This conclusion aims to show how this work enables new approaches to conceptions of space, place, subjectivity, the personal and the private, and nestedness. Ultimately, this chapter invites us to think about what we are now able to do with this thesis's contributions: how can we consider the aforementioned concepts in connection to art and music, and how might this approach constitute a more expansive—or open—analytics beyond formalism?

6.2 A New Framework for Openness

First and foremost, this thesis's new conceptualisation of openness—using a wide variety of scholarship across the disciplines of musicology, sound studies, and architectural theory—assists us in investigating what exactly is "open" in the "open work". What kinds of soundings, activations, realisations, and interpretations are these works open to, and how is this process of opening out effected? Using a specifically spatial conceptualisation of openness—in combination with an understanding of a performance/installation event's "architecture" that encompasses social, political, cultural, sensorial, corporeal and economic factors—helps to draw out some of the specific ways that our experience of sound is shaped by spatial circumstances. Moreover, thinking about the multiplicity of audience interpretation as both a social and spatial phenomenon demonstrates the way that reception can operate in multiple registers. Indeed, this project considers the audience's reception as both something oriented to and by the social conditions of the performance context, but also as a spatio-acoustic situation with its own physical properties governing the diffusion of sound. This also ties into the project's wider emphasis on the messy, the noisy, and the awkward; my analytical approach leaves room for

instances when there may be a disconnect between political intentionality, (mis)interpretation in reception, and sounding context.

More than being only the subject of this project, the ideological implications of openness also energise this thesis. Open is flexible, multiple, constellatory, and reflective of the more critical and expansive approaches to space detailed in the second chapter of this thesis. Openness as a political strategy champions growth and experimentation, rather than equilibrium, predictability and alienation.

6.3 Disalienating Strategies

Indeed, a second contribution of this thesis that it is interesting to highlight concerns the notion of "disalienating strategies" as they might be related to music and sonic art practices. Drawn from the work of Frederic Jameson, and connected to Sennett's notion of "punctuation" via Kevin Lynch's *Image of the City*, a disalienating strategy is an act of self-contextualisation that aims at "the practical reconquest of a sense of place" (Jameson 1991). Disalienating strategies in an artistic context may materialise in scores, sound itself, curation, or in broader architectural or institutional framing devices.[14]

6.4 Intra/Inter-Performativity and Place-Specificity

The concept of intra- and inter-performativity is another conceptual tool proposed by this thesis, specially employed here as a means of exploring the connections between multiple realisations, performances or activations of a

[14] See 3.1.3 in my Prefaces to Portfolio of Original Compositions document for an example of a disalienating strategy in my own compositional practice.

work—in this instance, Lin Chi-Wei's *Tape Music*. It is possible to read the influence of Georgina Born's "four planes of mediation" in this conceptualisation of spatiality and sociality as they relate to notions of place (Born 2012: 267). Indeed, Born's delineation between the first two planes (micro-socialities of musical performance, and imagined communities) and the last two planes (wider social formations, and institutional forms) is mirrored in my distinction between intra-performativity and inter-performativity. Like Born's dynamic assemblage, intra- and inter-performativity are shown to interact nonlinearly and unpredictably.

The notion of place-specificity is also closely linked to this conceptualisation, which acts as a bridge between the expansive, critical analytical approaches to music and sound art devised and proposed by scholars like Brandon LaBelle or Gascia Ouzounian and works that employ modes of production more typical of concert art music (e.g. using conventional scores across multiple performances), connecting them more directly. This aids a discussion of how locational specificity functions in works that are realised across multiple sites. Indeed, place can be conceptually, sonically, socially or politically resonant even in sonic artworks that are not explicitly "site-specific".

6.5 Future Pathways

The pathways for future research generated by this project are numerous. There is room for further exploration of how meaning is generated through the multiple interpretations engendered by these open forms, and in particular how reception is more explicitly mediated by corporeity and embodiment. Discussion

of mediating factors has focused more on wider social identity formations—including notions of class, gender, race, and nationality—as well as spatial factors, but has yet to explore more deeply the way that corporeity operates within this project's model of interpretative multiplicity. Perhaps in the consideration of headphone use in *Sonorama* we glimpsed a sense of embodiment as it might relate to the analytical model discussed here, but more detailed and critical exploration of the interaction of body and sound in such contexts would surely enrich my analytical model.

One way that this might figure is through the idea of nestedness, a theme running through much of the analytical work in this thesis. Discussions surrounding the porosity of the performance space, the concept of inter-performativity, and the politics of *Sonorama* referenced this way of thinking about sound and and mediation. Indeed, further study might explore more deeply the scales at which the spatiality of sound finds conceptual, social or political resonance, from individual and private embodied and corporeal experiences, through site and place-specificity, and into the broader politics of the local, the urban, and the global.

6.6 Closing Thoughts

This thesis then, represents both a practical strategy as well as a broader analytical philosophy, principally geared towards the exploration of openness in spatially sensitive music and sonic artworks. Richard Sennett writes:

> a closed system is meant to be integrated. Ideally, every part of the system has a place in the overall design; the consequence of that idea is to reject, to vomit out, experiences which stick out because they are contestatory or disorienting; things that “don’t fit” diminish in value. (Sendra and Sennett 2020: 25)

In this thesis, those “things that don’t fit” represent some of the most valuable instances of openness in action. It is clear that this framework goes beyond a formalist analytics, “opening out” these previously dominant strategies for spatial analysis into a more generative, expansive and ultimately flexible model.

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Prefaces to Portfolio of Original Compositions

Jonathan Packham

SECRET ANIMALS (2019)

THROWN (ACROSS) (2019)

Copper House Music (2020)

BREKEKEKEX (2019)

DER TINTENFISCH (2020)

DELICIOUS (2020)

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Complete List of Attached Files

1. SECRET ANIMALS (9′30″)

- SECRET ANIMALS | 2D Reduction of Video Score *.mp4*
- SECRET ANIMALS | Audio Recording *.wav*
- SECRET ANIMALS | Max MSP & Jitter Patch* *.zip*
- SECRET ANIMALS | Performance Directions *.pdf*
- SECRET ANIMALS | Video Recording *.mp4*

2. THROWN (ACROSS) (7′52″)

- THROWN (ACROSS) | Binaural Audio Recording *.wav*
- THROWN (ACROSS) | Max MSP & Jitter Patch* *.zip*
- THROWN (ACROSS) | Multichannel Audio Recording Files *.zip*
- THROWN (ACROSS) | Score *.pdf*

3. Copper House Music (Indeterminate)

- Copper House Music | Score *.pdf*
- Copper House Music | Video Documentation *.mp4*

4. BREKEKEKEX (10′36″)

- BREKEKEKEX | 2D Reduction of Video Score *.mp4*
- BREKEKEKEX | Audio Recording *.wav*
- BREKEKEKEX | Max MSP & Jitter Patch* *.zip*
- BREKEKEKEX | Performance Directions *.pdf*
- BREKEKEKEX | Video Recording *.mp4*

5. DER TINTENFISCH (9′00″)

- DER TINTENFISCH | Full Score and Parts *.pdf*
- DER TINTENFISCH | Stereo Audio Recording *.wav*

6. DELICIOUS (32′32″)

- DELICIOUS | Audio Recording *.wav*
- DELICIOUS | Full Score and Parts *.pdf*

*Note that the Max MSP & Jitter patches are not available as part of the archived version of this thesis, please contact the author if you would like a copy to review.

0. Preface to the Prefaces

0.0 Preliminary Remarks

0.0.0 Introduction and Background

This section of the submission comprises prefaces to each of the compositions in the accompanying portfolio. Before I embark on more focused analysis of individual pieces, it may be useful to consider briefly the artistic motivations that energise these compositions, as well as discuss possible connections therein—both between individual works and across the portfolio as a whole. This preliminary text is a more informal discussion of my practice and represents a reflection on how the last four years of study and experiment have affected the music that I write, and how I write it. It is also important to note that understanding the music through these broader connections represents just one way of perceiving this portfolio. Indeed, it would do a disservice to these pieces as self-contained musical compositions to suggest that it was only these wider issues that motivated their production.

0.0.1 Sounding Identity and Lore

First and foremost, I am interested in making music that I want to listen to, and to this end the sonic identity of a work remains my primary focus. However, it is also true that many of the works in this portfolio—and especially *SECRET ANIMALS*, *Copper House Music*, and *DER TINTENFISCH*—are underpinned by extensive conceptual foundations that seem to undermine this sound-focused method. In media set in fictional universes, the word “lore” is often used flexibly to refer to background information about the setting that is not explicitly referenced within the text itself, but that contributes to the rendering of a fully

fleshed-out universe. Whilst the main media text is unlikely to detail this information at any real length, its existence in secondary literature, written on online forums, spoken amongst fans, and in the mind of the creator themself contributes a richness to the world: a sense that it has existed long before the events of the primary story begin, and will continue to exist long after its conclusion. In the same way, I see the conceptual foundations or compositional techniques that contribute to the production of a work as a kind of folkloric assemblage of references, concepts, and approaches that inform the sound of the piece. Such elements build the "world" that the piece occupies, and contribute a sense of conceptual richness without drowning the sound in perceptible referential allusions that are sensorially overwhelming and/or distracting.

For example, in *SECRET ANIMALS* I write in the programme note about the idea of undiscovered fauna beyond the outer edges of a Flat Earth. The specific sounds I have chosen in this piece are broadly unaffected by the presence of this concept, but to my mind this reference points to my compositional engagement with the wider literature on the topic as part of the process of producing the work. Similarly, naming the long, bowed gesture that returns several times a "roar" references this concept in the context of the collaborative workshop environment of the piece's development—but the sound itself is perceptually unaffected by this naming convention, even if the performer may on some level be inclined to play this gesture as if it were a "roar". Connections like this enrich the world that the piece occupies and help to anchor more abstract sonic materials to a concrete conceptual foundation. In *Copper House*

Music, the piece's "world" is informed primarily by the architectural identity of the Piper Gallery space. As detailed extensively in Section 3.1.2 of these prefaces, the Piper's dimensions, proportions, and visual identity are all referenced in the piece in more or less explicit ways. The space itself, in combination with the ways I use and interpret its properties, constitute a kind of extended world building that contributes a conceptual richness to the sound of the work.

An obvious exception to this approach is *DER TINTENFISCH*, where many of the references that would normally comprise the unheard "lore" element of the work are placed front and centre in a highly ritualised performance situation. This includes the numerous texts that are read aloud—including extracts from football commentary and classical texts—as well as borrowed musical material like the Ghanaian national anthem that appears around two-thirds of the way through the piece. Unlike the supportive—but silent—elements detailed above in the context of *SECRET ANIMALS* and *Copper House Music*, these references impact the sonic identity of the work and are perceivable to the listener.

My compositional methodology draws on this notion of lore to achieve conceptual depth and richness in works that have no or minimal explicit extramusical references in their sonic material. Creating a small, internally coherent world for each piece allows me to connect the (silent) conceptual or referential elements that underpin the work with the way that it actually sounds.

0.0.2 A Personal Performance Practice

One element of my developing practice concerns the—largely sonically obfuscated—referential "worlds" from which each of these compositions springs forth. However, another private narrative running through these works is the development of a personal practice that emerges predominantly through my decision to begin performing my own work. The two pieces for which this is most relevant are *THROWN (ACROSS)* and *DELICIOUS*—I appear as a performer in both. The decision to perform my compositions was informed by two major factors. Firstly, the life of the composer who hands over their works to be performed can be a lonely one: you can spend hours alone in the studio working on material, and then you sit in the performance space, listening to your work—and you're still alone. Conversely, in pieces I am involved with as a performer, my relationship to the composition and to the referential world from which it emerged feels far more involved, present, embodied—and social.

Secondly, in creating scores for myself as a performer I aimed to unearth in more concrete terms a performance practice for realising my work: to discover the things that I was not writing down in scores created for others, but had internalised and assumed about the way my music should be played. This lack of self-knowledge had—prior to my DPhil—led to a number of somehow unsatisfying workshop situations with ensembles or performers, where I felt I did not possess vocabulary to describe the way my music should be approached from a performative standpoint. Having undertaken numerous cycles of composing, performing, recording, and appraising works myself, I am closer to

understanding the performance practice I am seeking in realisations of my work—though it remains difficult to express in words alone.

0.0.3 Scoring

Tied into the development of this personal performance practice is my approach to making scores. The portfolio that accompanies these prefaces comprises six quite different works, but there is consistency across these scores' visual appearance. I use a consistent visual language in these scores in the same way that a graphic designer might repeatedly use a typeface—it does not preclude the type of music I am able to produce, but it lends my body of work a consistency and coherence that underpins my wider artistic identity. My score aesthetic is one element that links every piece in this portfolio. If—as discussed above—each piece takes place within its own individuated world, then this approach to score-making lends some coherence to the wider universe or galaxy within which those worlds sit.

0.0.4 Possible Connections and Discussion

It is perhaps also helpful to reflect briefly on some of the connections that emerge from presenting the six works in this portfolio together. The—at times, cavernous—reverberation effects in *SECRET ANIMALS*, *THROWN (ACROSS)*, *BREKEKEKEX*, and *DELICIOUS* lead me to consider my relationship with reverb and its role in the construction of performance environments. As may be clear already, I am drawn to reverb for its specific sonic affordances, but also appreciate how it creates a sense of safety for myself as a reasonably inexperienced vocal performer. Furthermore, reverb seems to operate in many

of these pieces as the connecting tissue between performer, space, and audience, seeking to produce an immersive—immersive like a swimming pool, not “immersive” like an IMAX cinema—performance environment where every participant is enveloped by reverberating sound.

There are also a number of smaller connections between specific works in this portfolio. It is clear that *BREKEKEKEX* represents a development of the approach devised for *SECRET ANIMALS*, and continues my experimentation with VR headset scores. As the individual prefaces for each piece reveal, there is a certain amount of overlap in the technical realisation of these works, and in the collaborative method developed for devising and naming gestures that appear in the score. Similarly, the "decision tree” approach to scoring indeterminate material in the woodwind parts of *DER TINTENFISCH* is developed by the extensive string part diagrams in *DELICIOUS.* The elaborate string diagrams of the latter piece render more sophisticatedly the binary indeterminacy of the former.

This brief consideration of some of the connections between pieces in this portfolio begins to show that whilst each composition occupies its own world, the contributions collected here represent a snapshot of my practice as a coherent entity. In summary, awareness of my sound-focused philosophy, the concept of “lore”, my consistent approach to scoring, and my desire to create “immersive” sonic environments will help contextualise the rich and varied compositional work that follows.

1. SECRET ANIMALS

for Cello and Live Electronics
2018

Relevant Files:

SECRET ANIMALS | 2D Reduction of Video Score (.mp4)
SECRET ANIMALS | Audio Recording (.wav)
SECRET ANIMALS | Max MSP & Jitter Patch (.zip)
SECRET ANIMALS | Performance Directions (.pdf)
SECRET ANIMALS | Video Recording (.mp4)

1.1 Preface

1.1.1 Introduction and Background

SECRET ANIMALS is a composition for solo cello and live electronics. It employs a virtual reality (VR) video score produced for playback using the Oculus Rift Head-Mounted Display (HMD). The title for this piece came from an anecdote a friend told me about the so-called “Flat Earth” theorists, some of whom believe that in the outer regions of the world there are new fauna that the government is committed to keeping confidential. Though the exact whereabouts of such beasts must remain subject to speculation, this piece imagines the untamed roars of these secret animals.

The piece was composed for Deni Teo, principal cellist for the London-based new music group Explore Ensemble. It was premiered at the JdP Music Building on 16 May 2018 as part of the *Rendezvous* series of concerts. The piece has been played a number of times since then, including a performance at the Royal Northern College of Music’s *Future Music+* Festival, where I was also invited to speak about the piece and on my work with virtual reality technologies more generally.

SECRET ANIMALS is bipartite and consists primarily of a video score and a Max/MSP & Jitter patch. The video score must be viewed in a virtual reality headset. A VR headset consists of two screens that display separate images side by side (“one for each eye” (Smith and Andronico: 2016)). A pair of lenses are placed over these panels, “focusing and reshaping the picture for each eye,

and creating a stereoscopic 3D image" (Ibid.). The headset has sensors that monitor global movement and "adjust the image accordingly", in order that the user feels they are moving around a virtual space (Ibid.). The score is this virtual space. This will be discussed in greater detail in due course.

1.1.2 Max/MSP & Jitter Patch

The Max/MSP & Jitter patch for the piece uses Graham Wakefield's Worldmaking Package.[15] The Worldmaking Package allows for the Max/MSP & Jitter patch to simultaneously host and play back the video score in the headset, whilst also tracking head movement and running the live electronic element on a single machine. The patch uses two principal inputs: an audio stream produced by the DPA microphone attached to the cello, and a data stream produced by the Oculus Rift's *Constellation* head tracking system.[16] Both of these streams function in the signal chain for the live electronics patch.

Audio is processed via two channels. The first is a ring modulator, which uses a scaled number input from the headset's live tracking to control the frequency of one of its sinusoidal oscillators. Moving one's head changes the modulation. This output is sent through the IRCAM-produced reverb unit *IRCAMverb*, with a long decay time (14.00s).[17] The second is a transposer and delay unit, which also uses a scaled number input from the headset's live tracking to control the interval of transposition (from -2400 cents to 0 cents). This transposed output is

[15] Additional information about the Worldmaking Package (developed by Graham Wakefield and the Alice Lab for Computational Worldmaking at York University, Toronto) can be found at the following link: https://github.com/worldmaking/Max_Worldmaking_Package.

[16] For specifics on how this head tracking system works, see Heaney 2019.

[17] *IRCAMverb* is part of the Spat (or *Spatialisateur* in French) package. For more information see: https://forumnet.ircam.fr/product/spat-en/.

always delayed by 200ms. The transposed output is then split between two different instances of *IRCAMverb*. One signal chain uses a short decay time (2.00s) and applies a high pass filter at 2756.25Hz. A longer decay time (5.11s) and a larger Room Size (6270m^3) is applied to the other branch of the audio stream, as seen below:

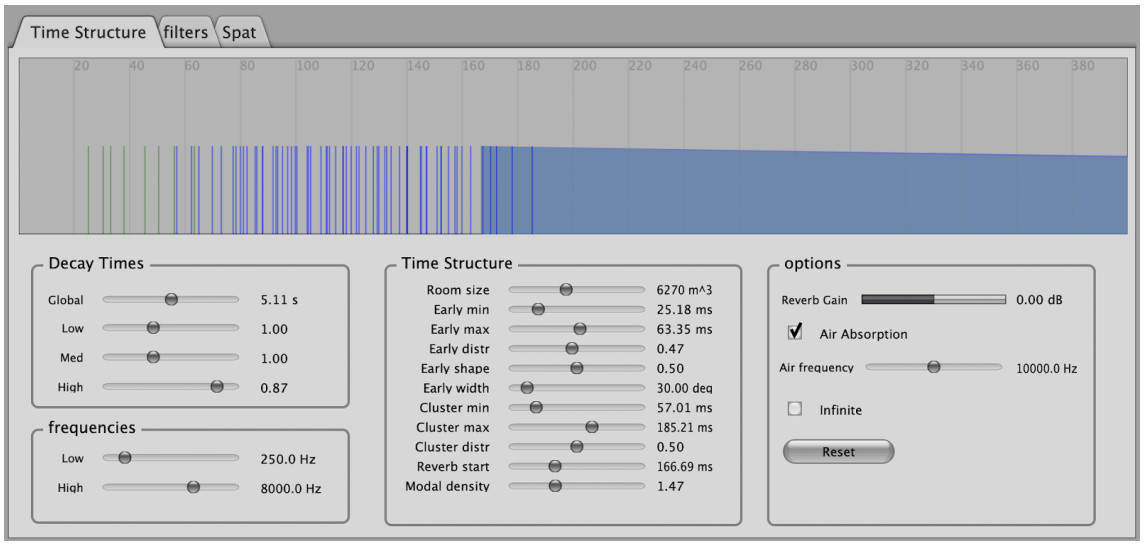


Figure 1.1: *IRCAMverb* preset for Transposed Output as seen in Spat window.

The ring modulated and transposed/delayed outputs, as well as a clean input from the cello microphone—also fed through the reverb preset above—are mixed into a stereo spread. This mix is dispersed using two speakers placed either side of the performer in the concert space. A simplified patch diagram for *SECRET ANIMALS* appears on the following page.

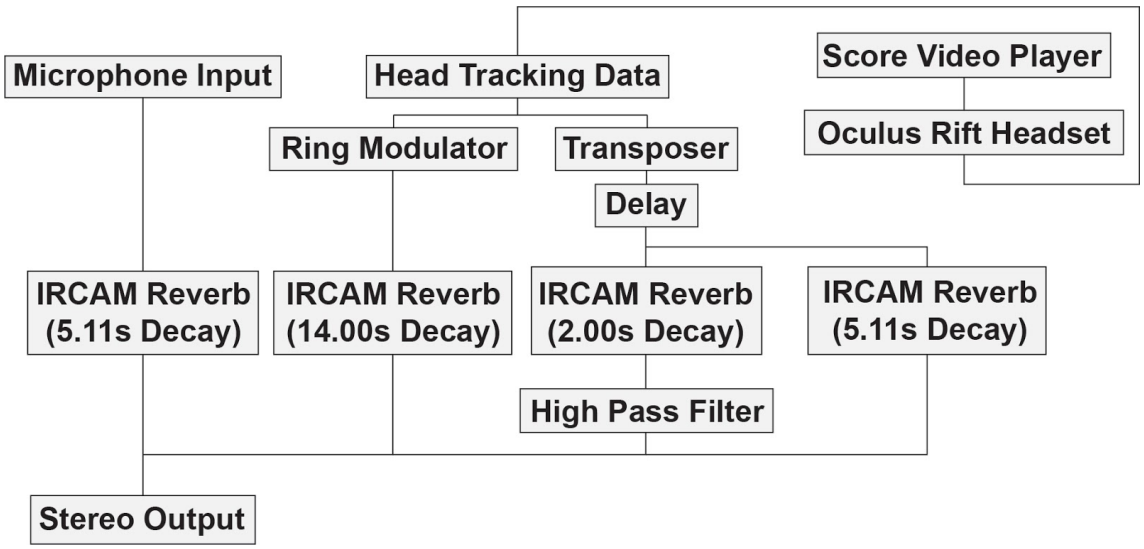


Figure 1.2: Simplified patch diagram for *SECRET ANIMALS.*

1.1.3 Video Score

Though the stream of live data produced by the *Constellation* system is vital in the audio processing section of the patch, it is also central to playback of and engagement with the score, as this head tracking system allows the performer to “look around” in the virtual score space. This is vital as the score appears to the performer as a 180° panoramic field (see Figure 1.3), meaning not all of the material is visible in a single glance or from a single perspective. In *SECRET ANIMALS*, head movement controls content—in order to play from the score, you have to make an embodied decision to look in a particular direction—but it also controls the context in which you hear this material, because head movement affects the processing of the audio signal.

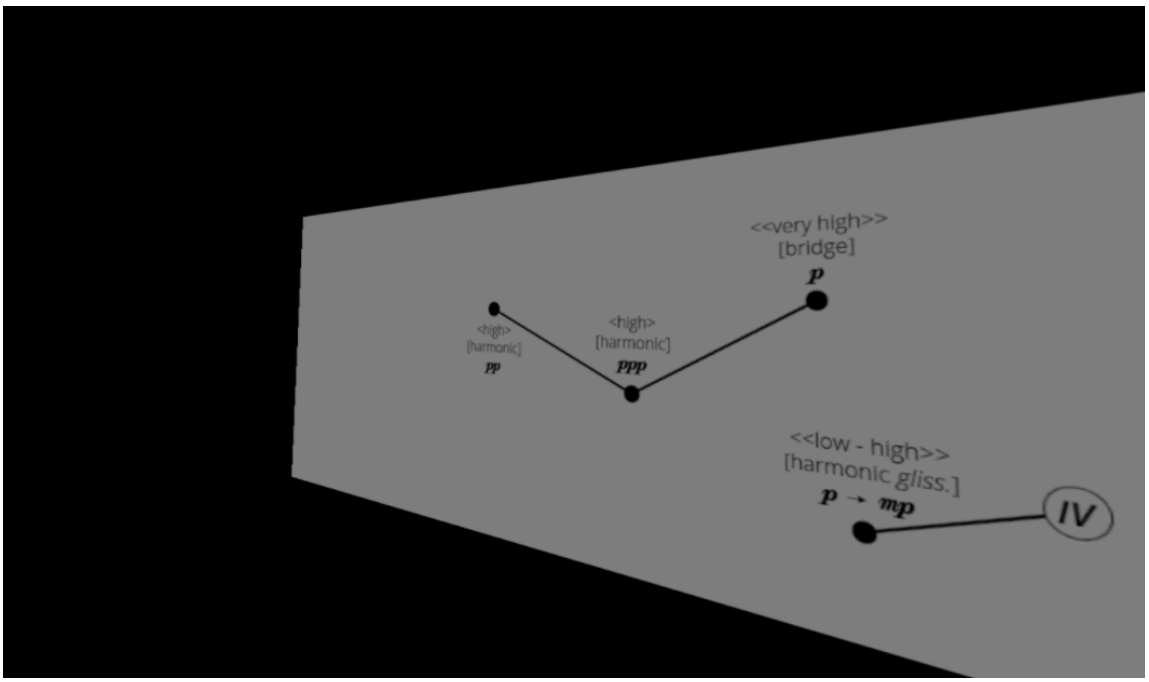


Figure 1.3: Screencap from *SECRET ANIMALS* score (as viewed in HMD).

The headset score presents musical material as graphical instructions in the form of “constellations”. Each constellation is formed of one or more nodes connected by lines. Within a constellation instructions are to be executed on the same cello string; sometimes a specific string is indicated, and sometimes string choice is free. Each node is split into three lines. The top line indicates range (finger position within a single string) and the number of attacks, with single brackets (< >) indicating a single attack, and double brackets (<< >>) indicating multiple (2-6) attacks. The middle line refers to a set of gestures/sound types specified in the preface material; these were workshopped and named in collaboration with Deni Teo, who premiered the piece. The bottom line indicates a dynamic level for the gesture. For example, the constellation in Figure 1.4 consists of two instructions on the lowest string.

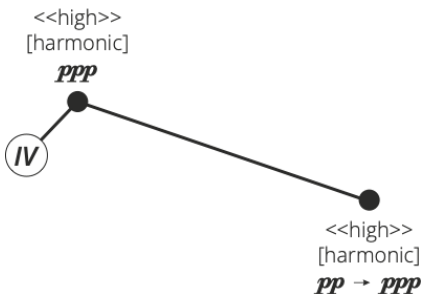


Figure 1.4: Constellation example from *SECRET ANIMALS* score.

Both these instructions indicate the “[harmonic]” sound type which is “a reasonably stable natural harmonic at a node broadly within the indicated range”. These would be played in a high register on the lowest string, for multiple attacks at *ppp* or *pp* to *ppp*. A full list of gestures appears below:

Gesture/Sound	Explanation
[harmonic]	A reasonably stable natural harmonic at a node broadly within the indicated range.
[harmonic gliss.]	Low finger pressure (as if playing a harmonic), glissando up the string.
[bridge]	Bowing just behind the bridge to make unstable, high pitched sound(s).
[roar]	Bowing IV slowly and deliberately with high bow pressure; a long duration—let ring.
[double]	Low finger pressure (as if playing a harmonic) double stop across two strings—let ring.
[stac-harm]	Staccatissimo, violent short attacks at harmonic nodes in the indicated range.
[down-up]	A “roar”-like down-bow on an open string immediately followed by a up-bow on the same string, with fingers held at low pressure in the indicated range—marked as multiple sounds (<< >>) because it always involves two attacks, but should exist as a standalone gesture.
[halt-roar]	A “roar” in which bow speed slows to a halt—as slow as possible by the end, producing almost no sound.
[failed]	“Failed harmonics”—extremely high harmonic nodes played carelessly, with little regard for stability or clarity of pitch—may produce noise sounds as well.

Table 1.1: Table of Gestures/Sound Types in *SECRET ANIMALS*.

1.1.4 Scordatura

The move from a single string towards gestures across the whole instrument is also drawn attention to through the piece's scordatura. The C and G strings (IV and III) are tuned down a semitone, whilst the D string (II) is tuned up a quarter tone, giving a tuning of B/F#/D quarter sharp/A. By comparing the harmonic series for these pitches (see Figure 1.5), it is possible to foresee a number of interesting potential dissonances: including between the second partial on II (D 1/4 sharp) and the fifth partial on IV (D#); the fifth partial on II (F 3/4 sharp) and the eighth partial on III (F#); and the sixth partial on II (A 1/4 sharp) and the fifth partial on III (A#).
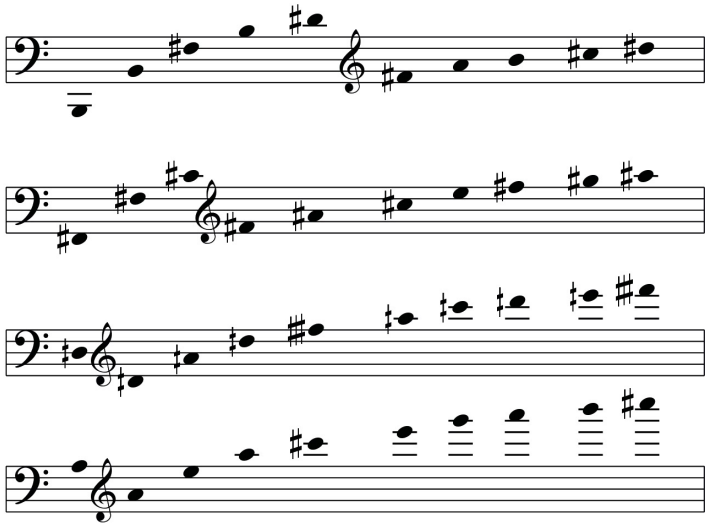


Figure 1.5: Harmonic Series for *SECRET ANIMALS* Scordatura.

1.1.5 Discussion

To close, it is interesting to consider *SECRET ANIMALS* briefly in terms of the idea of alienation. In *Scoring Space in the Open Work*, I consider the disorientating effects of multinational capital as a kind of spatial alienation (see Sections 5.4 and 6.3). One might argue that a similarly disorientating or alienating effect is produced in this piece through the separation of audience

and performer: the performer cannot see the concert space through the VR headset, and the audience are unable to see the score environment from their position in the concert space. In Section 0.0.4 I referenced the idea of reverberation as a kind of “connecting tissue” that encompasses performer, audience, and the space of realisation. The lengthy reverb times in *SECRET ANIMALS* work to destabilise this sense of alienation felt by performer and audience alike, aiming to produce a shared, immersive sonic environment in which both coexist. In this sense, it might be considered a kind of “disalienating device”, working to create a less segregated experience for audience and performer through this relational sonic space of reverberation. The documentation submitted for this portfolio features a performance that uses a conventional stage setup—the video only shows the performer, and the audience appear offscreen and offstage. Whilst this spatial arrangement makes for clear documentation of the composition from an analytical perspective, documentation detailing a performance of the piece with the audience surrounding the performer from all sides and at a close distance would help emphasise this notion of a “connecting tissue” in practice.

In an inspiring essay from the mid-nineties, Karen A. Franck suggests that:

> virtual reality is very physical. I won’t just see changing images on a flat screen; I will have the feeling of occupying those images with my entire body. I will enter a graphic, three-dimensional, computer-constructed world that does not look real but feels real, one that may respond immediately to my movements and commands. (Franck 1995)

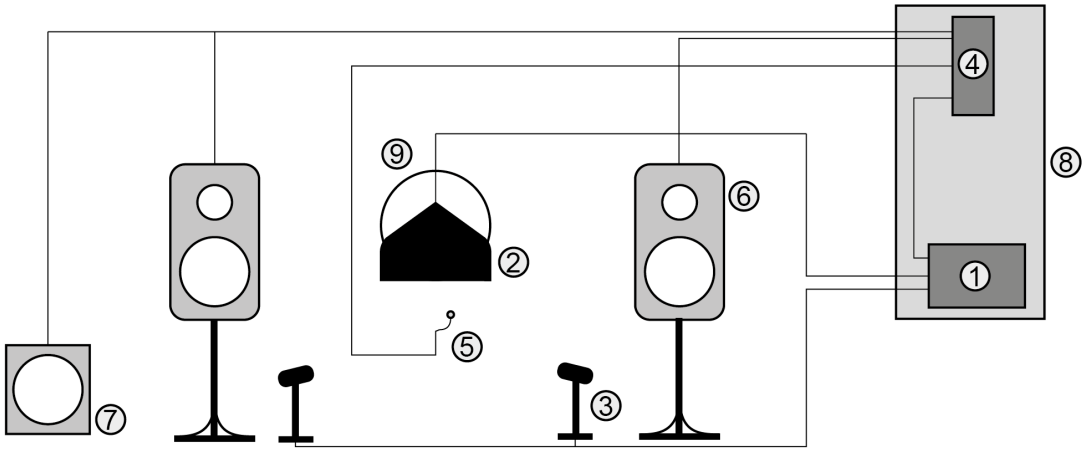
My starting point for compositions using virtual reality technologies is the notion of “occupying [a score] with [one’s] entire body” (Franck 1995). I want to create scores in which the process of performing involves embodied decision-making that is structurally and sonically important. Though there is a degree of chaos in the specific result of the interaction between movement and electronic processing (e.g. the pitch of the transposition or the oscillators within the ring modulation) it always falls within tight constraints, so that I can exercise compositional curation whilst encouraging performer freedom. A later piece in this portfolio—*BREKEKEKEX*—will build on these ideas.

1.2 Technical Specification

A performance of SECRET ANIMALS will require the following technical equipment:

- Oculus-ready PC (NVIDIA GTX 970 / AMD 290 equivalent or greater, 8GB+ RAM, Compatible HDMI 1.3 video output, 3x USB 3.0 ports plus 1x USB 2.0 port, Windows 7 SP1 64-bit or newer) with Max 8 installed, plus monitor, mouse and keyboard.
- Oculus Rift CV1 HMD
- 2x Oculus Rift Sensors
- Audio Interface (RME Fireface UC if available)
- DPA 4099 Instrument Microphone with CC4099 Adapter for Cello
- 3x 10m Male XLR to Female XLR Lead
- 2x 15m XLR to Jack Lead
- 2x Speakers (Genelec 8050b if available)
- 2x Speaker Stands
- Subwoofer (Genelec 7040a if available)
- Cello Stool
- Large, sturdy desk

The stage should be set up according to the diagram on the following page. Alternative arrangements are most likely acceptable, but please contact the composer to confirm technical details in any case.



1. PC
2. Oculus Rift CV1 HMD
3. Oculus Rift Sensors
4. Audio Interface
5. DPA Mic
6. Speakers
7. Subwoofer
8. Desk
9. Cello Stool

1.3 Score and Patch Information

As will be clear from the video recording, preface, and performance indications, the score for *SECRET ANIMALS* is viewed in a virtual reality headset. For logistical purposes, I have submitted a 2D reduction of this score that can be viewed without an Oculus-ready PC or Oculus Rift HMD. It is thus necessary to explain the differences between the score as viewed by the performer and the score as submitted here. The principal difference between the HMD score and the 2D score concerns what is visible in a single glance. To a performer wearing the headset, the score appears as a panorama that extends beyond their field of vision. Accordingly, it is necessary to look left, right, up or down in order to see and engage with all of the score's content. Conversely, in the 2D score, all of this panorama is "flattened" into a long horizontal image that does not require the same head movement. I hope that this will make the holistic appraisal of the score an easier process.

The .ZIP file attached comprises the Max/MSP & Jitter patch required for a performance of *SECRET ANIMALS*. Please run the patch in Max 7 if possible. In the absence of an Oculus Rift HMD and Oculus-ready PC (see Technical Specification for more details), the patch can still be perused, but the score player will not operate and you may be met with a number of error messages. If you are in possession of the requisite equipment, please download Graham Wakefield's Worldmaking Package (https://github.com/worldmaking/Max_Worldmaking_Package) on your machine before running the patch.

2. THROWN (ACROSS)

for Voice and Live Electronics
2018

Relevant Files:

THROWN (ACROSS) | Binaural Audio Recording (.wav)
THROWN (ACROSS) | Max MSP Patch (.zip)
THROWN (ACROSS) | Multichannel Audio Recording Files (.zip)
THROWN (ACROSS) | Score (.pdf)

2.1 Preface

2.1.1 Introduction and Background

The title of this piece refers to the idea of “throwing” one’s voice (as in ventriloquism), but also the Latin *traicio* (throw, cast across), which is etymologically linked to the word “trajectory”. A single performer’s voice is multiplied eight times, “thrown” to a ring of speakers, and echoes and resonances of their utterances are traced across the space through various Ambisonic shapes and trajectories. The piece was composed for an event at Modern Art Oxford titled *The Art of Noises II* on 29th November 2018, organised by Dan Hulme through a research group called *EMPRES* (Electronic Music Practice Research Group).

2.1.2 Max/MSP Patch

THROWN (ACROSS) employs a Max/MSP patch that uses the ICST Ambisonics package for spatialisation.[18] The patch processes one microphone input in a number of ways. Principally, the signal is routed through eight separate voice channels, which are faded in and out by the live electronics operator according to the score. Four of these channels comprise autotune modules, and four are pitch-shifters. The autotune modules are set to retune the input to four overlapping groups of pitches (CDA, DEA, CAB and EGA); often producing awkward digital shifts between the note that is sung and the re-tuned pitch. The pitch-shifting modules transpose material by four different intervals

[18] The ICST Ambisonics package comprises five externals and was developed at the Institute for Computer Music and Sound Technology at Zurich University of the Arts. See https://www.zhdk.ch/forschung/icst/software-downloads-5379/downloads-ambisonics-externals-for-maxmsp-5381 for more information.

(-2400 cents, -450 cents, +400 cents, +1200 cents). Accordingly, the eight voice channels together constitute a kind of “harmoniser”. The harmonised voices are then processed through the IRCAM-produced reverb package *IRCAMverb*. The custom preset for *THROWN (ACROSS)* is as follows:

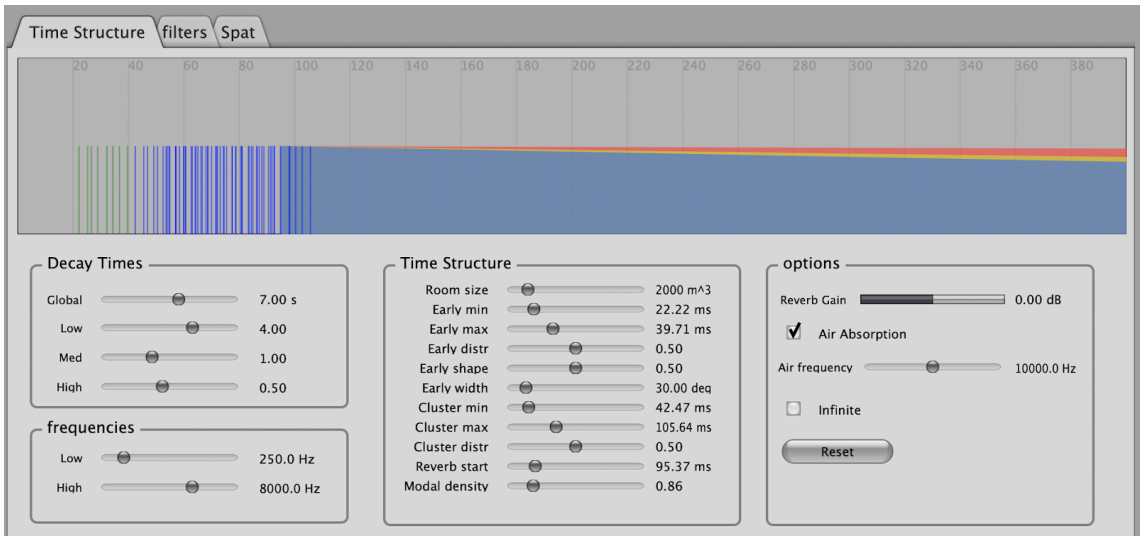


Figure 2.1: *IRCAMverb* preset for *THROWN (ACROSS)* as seen in Spat window.

The most notable alterations in this window are in the Decay Times section. The Global Decay Time is stretched to 7.00s, and the Low Decay Time is boosted to 4.00s. These longer delay times have the effect of a large, reverberant wash on the vocal input.

There are also two additional processing channels. The first uses spectral granulation. This channel jumbles tiny samples of the incoming audio stream according to a constantly changing preset. These scattered grains are also transposed by a randomly generated interval between -600cents and +600cents and are subject to a 200ms delay. They are also fed through *IRCAMverb*, though the decay times are much shorter in this instance. The second additional processing channel is a “droning” spectral delay. This channel also uses a kind

of spectral granulation and delay, but many of the grains are played back in a more similar order to that of the input, resulting in a more perceptually present melodic contour. The images below clarify how the first preset (Spectral Granulation) uses a more scattered approach to grain playback, whilst the second (Spectral Delay) uses a more linear approach that retains more of the melodic identity of the original input.[19]

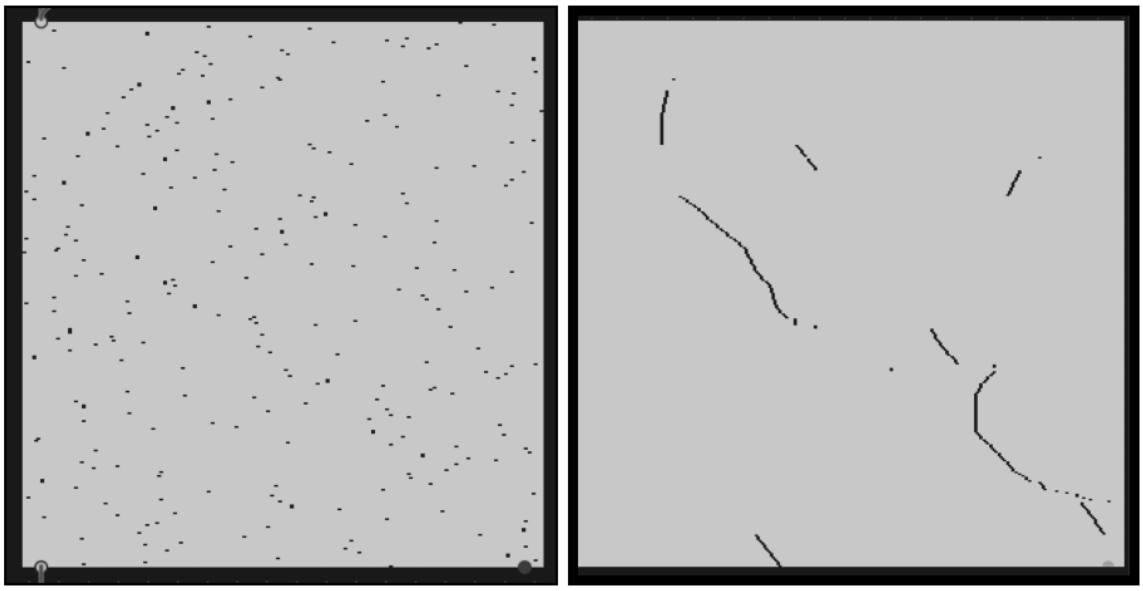


Figure 2.2: Spectral Granulation (left) and Spectral Delay (right) presets.

All of the voices are spatialised through the ICST package. The eight "harmoniser" voices are equally spaced in a ring that spins at a speed analogous to the intensity of the input (ie. the louder the input, the faster these voices spin). The spectral granulation is spatialised using different trajectory presets. These broadly relate to the shapes in the graphic score, cutting long, straight lines or awkward triangles through the space. The moaning spectral delay rotates consistently around the performer in 360°, at a closer distance than the granulation. The Ambisonic format has been employed in this instance

[19] The spectral plugin/subpatch used to achieve these effects was originally created by Johannes Kretz, and is available for download at https://johanneskretz.org/downloads-2/.

for a number of reasons. Firstly, Ambisonics is “speaker-agnostic”, meaning that it can be decoded across any array with three or more speakers.[20] Both performances of the piece so far have used an 8.1 setup, but the flexibility permitted by the Ambisonic format allows for the “freedom... to decode into any reasonable number of loudspeakers in any reasonable array” (Gerzon 1975: 6). Secondly, the Ambisonic format is isotropic, meaning that it is not as “front-focused” as other surround sound formats (Waves 2017). This suits *THROWN (ACROSS)* because it does not assume a specific orientation. Finally, one of Ambisonics’ strength is its ability to reproduce a “smooth, stable and continuous sphere of sound, even when the audio scene rotates” (Ibid.). Furthermore, “pannings are smooth and do not suffer from ‘jumping’ artifacts of… VBAP” (Arteaga 2015: 24).[21] This is particularly relevant to *THROWN (ACROSS)* because of the “spinning speakers” effect described earlier. The diagram below attempts to visualise the signal chain for the patch, albeit in a somewhat simplified manner.

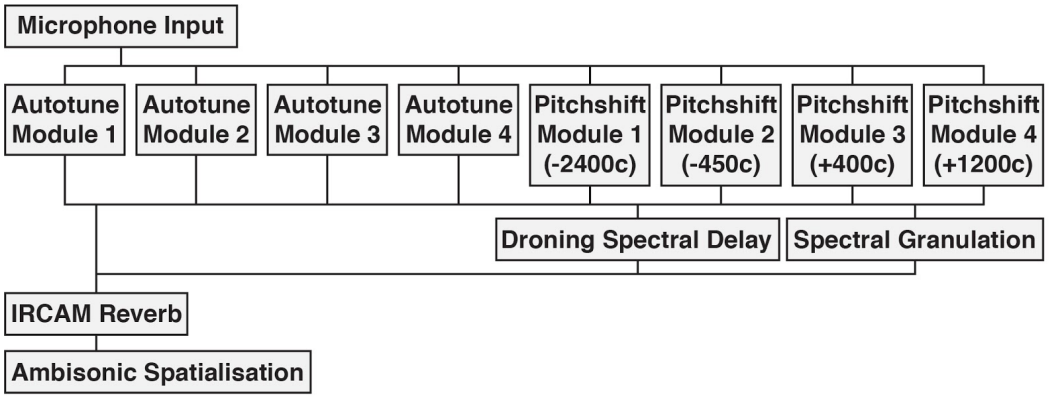


Figure 2.3: Simplified Patch Diagram for *THROWN (ACROSS)*.

[20] Please note that though the piece is diffused live using the ICST Ambisonics plugins (which are speaker agnostic), the recording provided is a multichannel *.wav* designed for playback on a fixed octophonic (8.1) system. This is because the studio version provided has been subject to some editing in an attempt to replicate the effect of the live performance using a smaller studio-based playback system.

[21] VBAP is Vector Base Amplitude Panning, a method for placing virtual sound sources in space using any number of speakers. It was developed by Ville Pulkki at the Helsinki University of Technology (see Pulkki 1997 for more information).

2.1.3 Score and Discussion

The score attempts to graphically realise some of the aforementioned spatial trajectories in the piece; connecting the electronic portion of the composition to the score object. The four spatialisation presets in the Max/MSP patch articulate shapes that are reflected in the different sections of the score. For example, the material that follows both instructions for Preset 1 appears in a triangle, mirroring the triangular trajectory of the spectral granulation in the electronics.

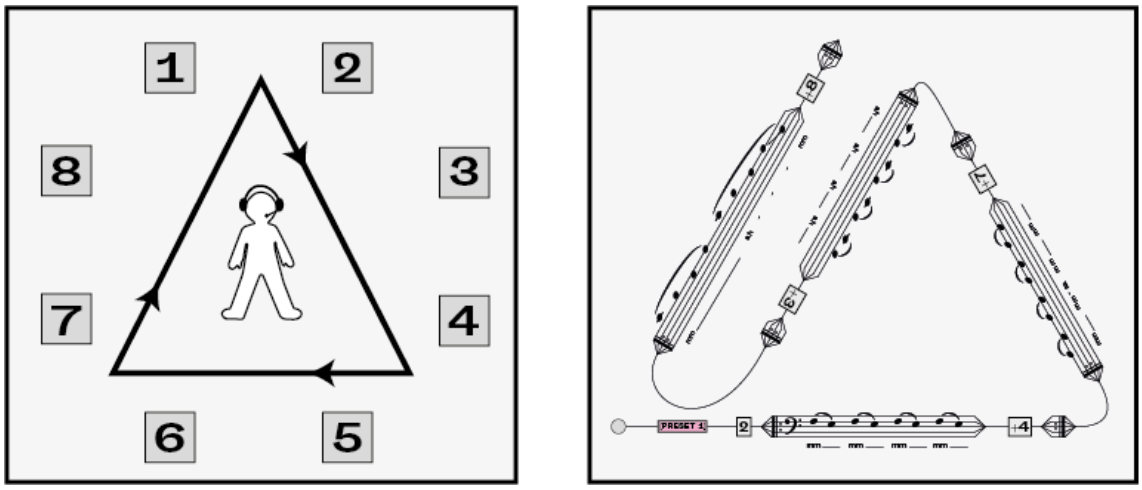


Figure 2.4: Spatial Preset 1 showing spatial movement of sound (left) and extract from score following Preset 1 (right).

This graphical approach was born from my frustration with a perceived separation of electronics and score in my compositional process, as well as a desire to demonstrate some of the vital spatial elements of the piece through the score object. Furthermore, and perhaps due to the quasi-improvisational quality of the composition, this also helps to imprint a stronger sense of the realised piece into the score object. Indeed, one could argue that the score is light on expressive markings and performance indications. Broadly speaking, I follow Jennifer Walshe's notion of scores as "maps and guidelines" that give the material "space to breathe and come alive on the page and in

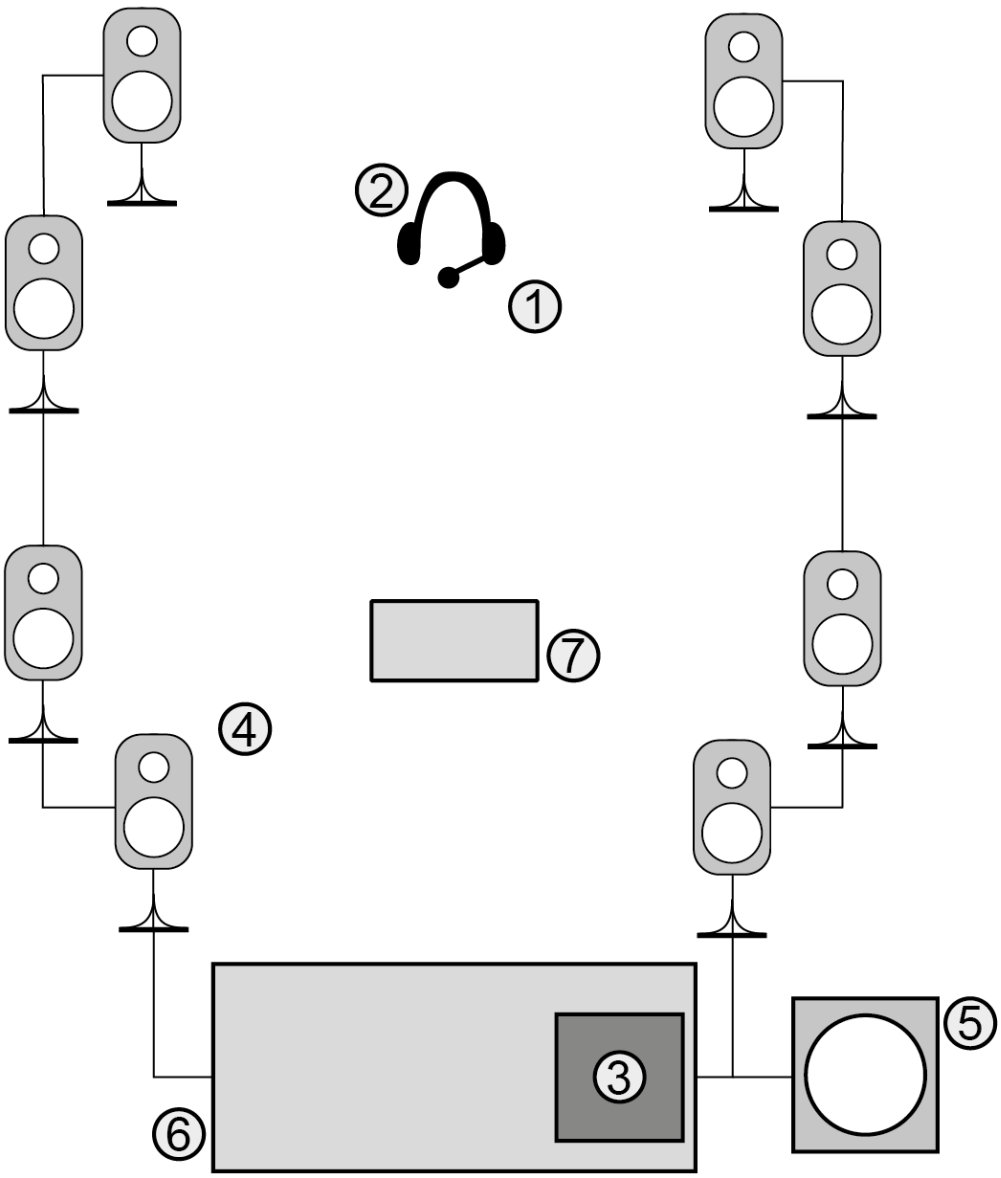
performance" (Saunders 2009). This approach serves firstly to leave room for flexibility in live performance. However, it also reflects the nature of the performance context: principally, that I am the piece's intended performer and therefore am able to use a pared back notational shorthand. I empathise here with Walshe's later reflection that in these instances the intended sound is "hardwired into your brain", so a fully notated idiom feels superfluous (Ibid.). Furthermore, I have always performed *THROWN (ACROSS)* in near-dark situations in which the detail of the score was slightly lost to the eye. Accordingly, working with clear, mostly text-free notation affords greater comfort in an undesirable reading environments, but desirable performance environments.

2.2 Technical Specification

As detailed in the score, the piece can be diffused through any array consisting of three or more speakers. This said, the technical specification below details the setup used for both performances of *THROWN (ACROSS)* thus far:

- Audio Interface (RME Fireface UFX II if available)
- DPA 4066 Omni Headset Microphone
- 8x Combi Leads (XLR to Jack + Power)
- 2x 15m Male XLR to Female XLR Lead
- 8x Speakers (Genelec 8020d if available)
- 8x Speaker Stands
- Subwoofer (Genelec 7040a if available)
- Large, wooden box or crate that can comfortably support one person standing
- Large, sturdy desk

The diagram on the following page details how an octophonic setup should be arranged for a performance. Alternative arrangements are most likely acceptable, but please contact the composer to confirm technical details in any case.



1. DPA Microphone
2. Headphones
3. Audio Interface
4. Speakers
5. Subwoofer
6. Desk
7. Wooden Box or Crate

2.3 Recording Information

Two recordings of *THROWN (ACROSS)* are attached. The first is a binaural reduction of the piece, which should be listened to on headphones. The second is a multichannel recording, which should be diffused using an octophonic array with subwoofer (8.1). Should you wish to playback the piece in Studio 2 at Oxford University's Faculty of Music, the tracks are routed as follows:

Track	Output Routing
Speaker 1	LINE 1
Speaker 2	LINE 2
Speaker 3	LINE 3
Speaker 4	LINE 4
Speaker 5	LINE 5
Speaker 6	LINE 6
Speaker 7	LINE 7
Speaker 8	LINE 8

Table 2.1: Output routing for *THROWN (ACROSS)*.

As discussed earlier, this multichannel recording was subject to some studio editing in an attempt to reproduce the spatial effects of the live performance in a smaller space.

3. Copper House Music

for Any Number of Players, Singers or Listeners
2019

Relevant Files:

Copper House Music | Score (.pdf)
Copper House Music | Video Documentation (.mp4)

3.1 Preface

3.1.1 Introduction and Background

Copper House Music is a composition commissioned by Modern Art Oxford in response to the architectural plans of the John Piper Gallery. It received its first performance on the 31 October 2019 as part of EMPRES' *Art of Noises IV* event, and was performed again on 21 November 2019 during the *Modern Art Social* evening at the gallery.

I was approached by Sara Lowes (Curator of Creative Learning) to compose a new sound work in response to the Piper Gallery space at Modern Art Oxford. She provided me with the architectural plans for the gallery, as well as a history of the building compiled by 6a Architects (2015). Before Modern Art Oxford (then MOMA) was founded in 1965 by Trevor Green, the site was home to the City Brewery, operated by the Hanley family since the early 1800s. The Piper Gallery itself was at one point the Copper House of the brewery, home to the large metal vessels ("coppers") in which wort and hops were boiled (see Figure 3.1). Thus, the title is a nod to the history of the room, acknowledging the many ways that the Piper space has been purposed and repurposed even prior to its artistic function. Indeed, the notion of adaptability and (re-)use was my starting point. The Piper has been home to work by a wide variety of artists since the gallery's opening, each of whom brings their own energy to the space. The notion that the blank canvas of this gallery space can be transformed by this kind of artistic presence is central to my approach with *Copper House Music*.

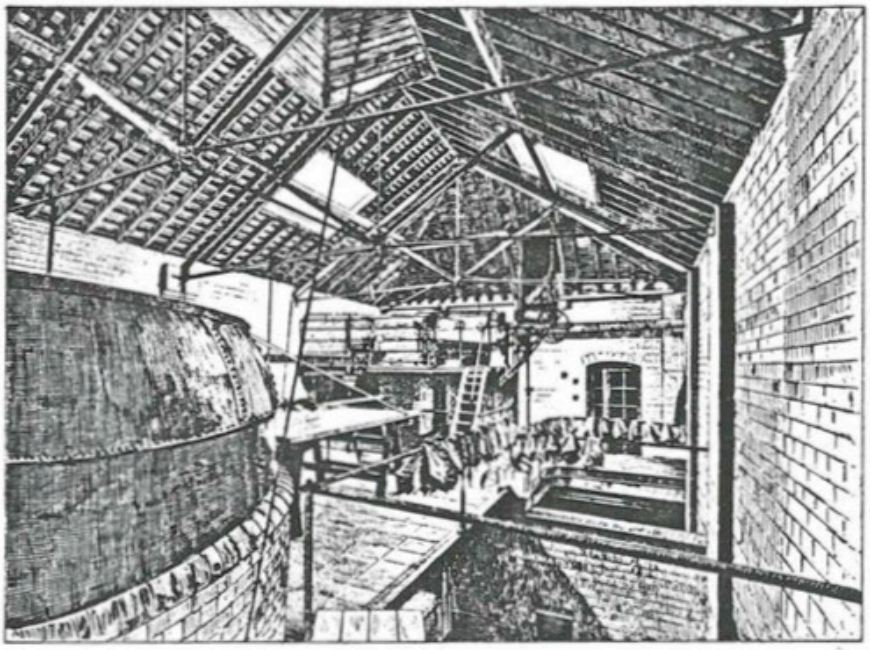


Figure 3.1: The Copper House at the City Brewery, c. 1900 (from 9a Architects 2015).

3.1.2 Score

The piece is experienced and activated through playing instruments, singing, or listening. Each of these roles employs a user-created score as a guide for action. Each participant in the piece is given a “base sheet” (see Figure 3.2), which details a top-down view of the Piper Gallery space.

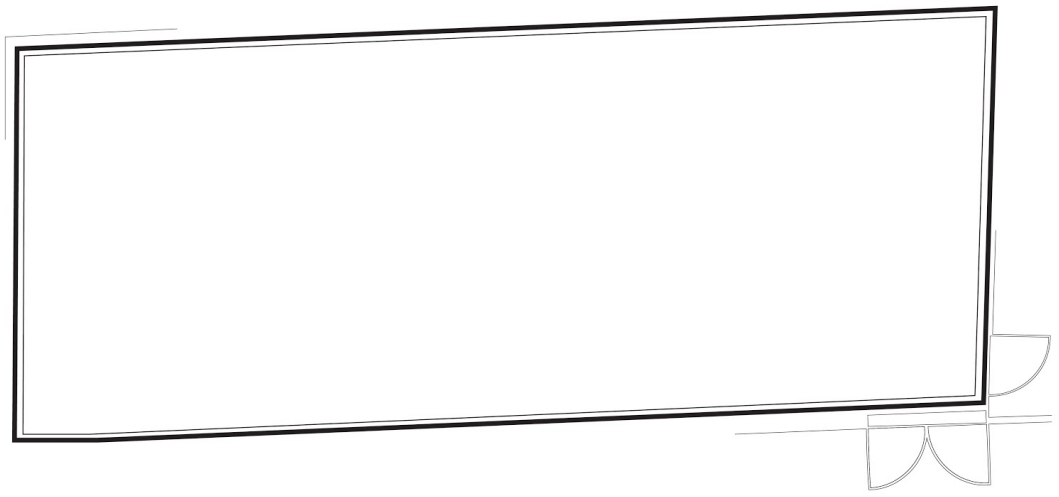


Figure 3.2: Base sheet for *Copper House Music*.

Each user affixes paper fragments of their choosing onto their base sheet, placing instructions directly into the space. These fragments are drawn from several pages of potential instructions, separated into “Fragments for Players”, “Fragments for Singers” and “Fragments for Listeners”. Fragments composed for participants playing instruments detail sustained pitches to play whilst moving around the space. The visual identity of these fragments is loosely based on the space frame nodes in the ceiling of the Piper Gallery (see Figure 3.3).



Figure 3.3: Space frame nodes in Piper Gallery (left), fragment for player (right).

The circled numbers refer to one of ten possible pitches; these pitches are numbered freely by individual performers in order to ensure maximum variability between players’ fragments. Participants then cut out fragments and affix them to their base sheet, producing a personal score for performance indicating pitches to play (circles) and potential paths for spatial movement (lines) in the gallery space. The completed base sheet thus acts like a “map” for the performer. Fragments for singers function in a similar way. In this instance however, specific pitches and their frequencies are notated simultaneously (see Figure 3.4). Like instrumentalists, singers cut out individual fragments of their choosing and affix them to their base sheet.

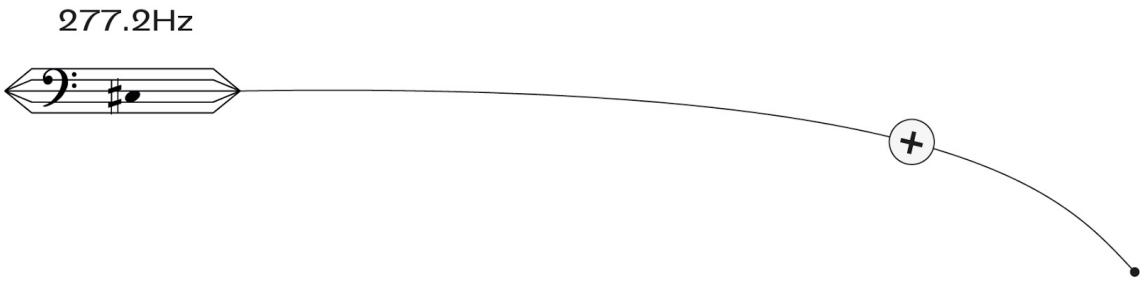


Figure 3.4: Fragment for singer.

The specific pitch material that the fragments for both instrumentalists and singers use is produced using ratios based on the architectural plans for the Piper Gallery. Using a “base frequency” of 220Hz, I then employed ratios drawn directly from the architectural proportions of the Piper space to create a network of related pitches that form the harmonic content behind *Copper House Music* (see Figure 3.5).

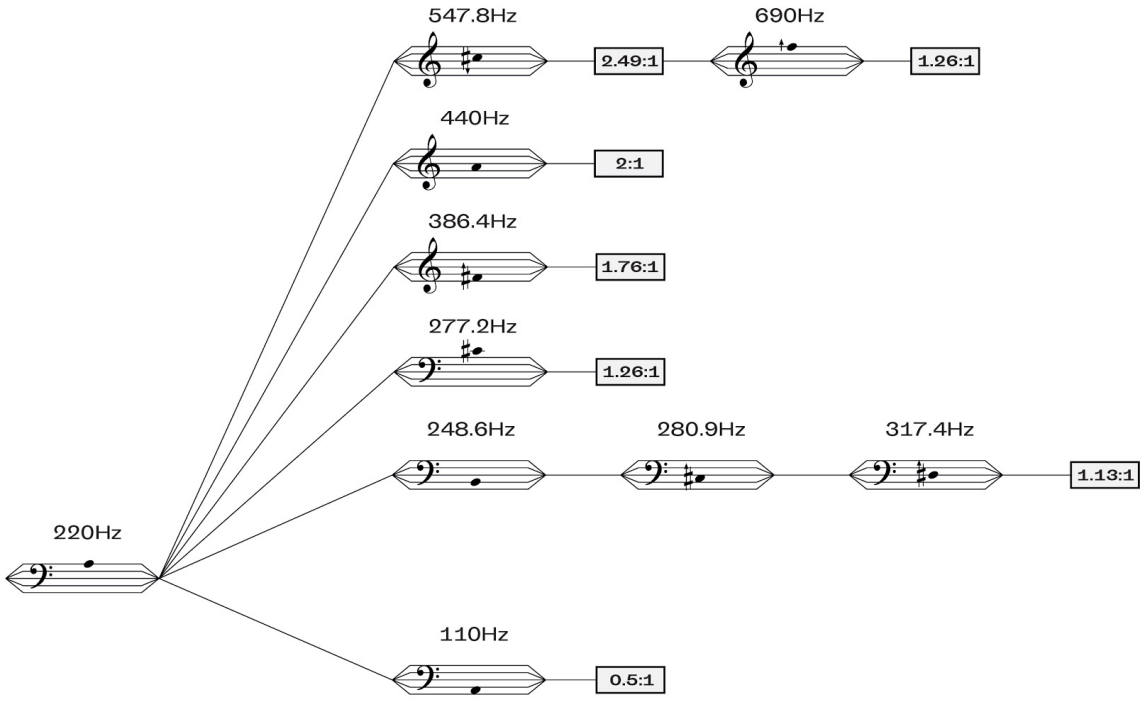


Figure 3.5: *Copper House Music* pitch network.

The last sheet of fragments is for the use of participants who wish to “score” their listening experience. These fragments are performed silently, and detail paths for movement around the space, places to pause, and some suggestions for directional awareness. The shape of the fragments comes from a map of the area surrounding Modern Art Oxford, in order that a sense of the wider urban environment is interpolated into this site-specific score (see Figure 3.6). Participants who wish to listen cut out these fragments and affix them to their base sheet.

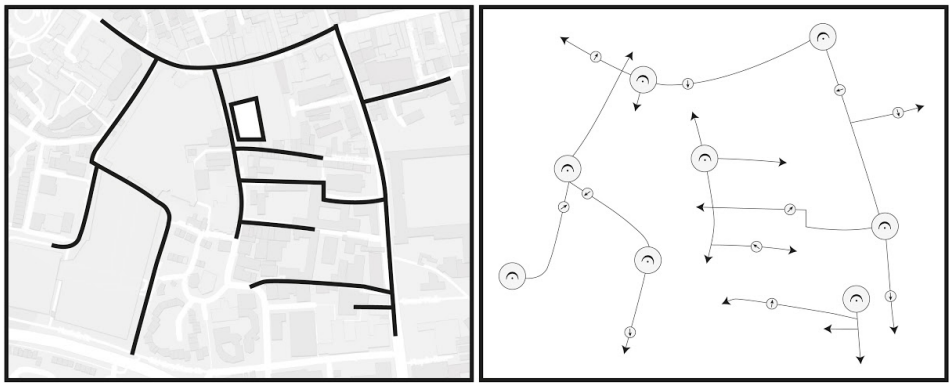


Figure 3.6: Map of surrounding area (left), fragments for listening (right).

Accordingly, both performers and listeners can create a bespoke score that prescribes their personal sonic and choreographic action in the space, simply by filling their base sheet with paper fragments (see Figure 3.7). At the premiere on 31 October, willing participants were invited to make their own listening scores in Modern Art Oxford’s café space, before moving up to the Piper Gallery in their own time to hear the installed performers and singers, who had already produced their own scores for performance.

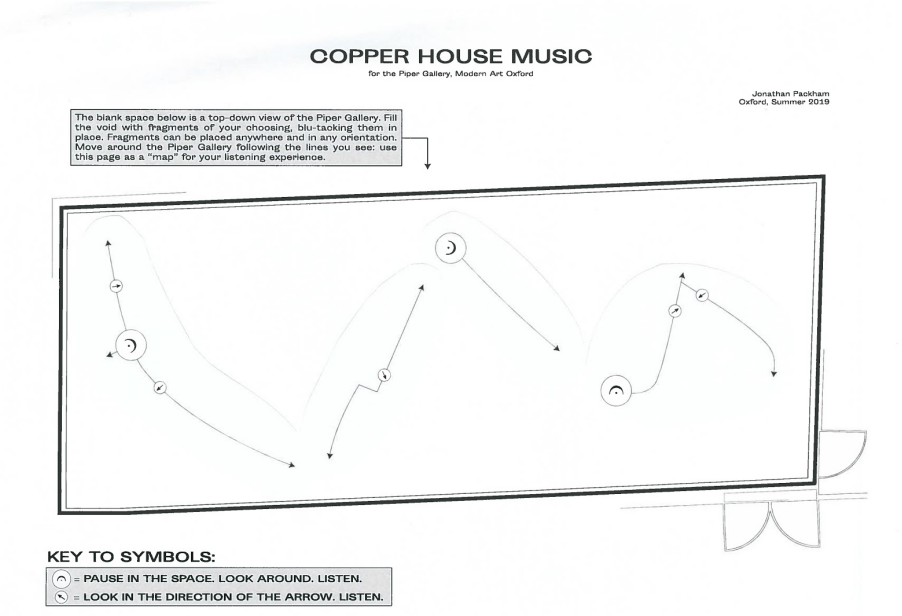


Figure 3.7: User-created listening score for *Copper House Music*.

In addition to these scored instrumental or participatory elements, there is also an optional electronic element consisting of long, individual sine tones that are diffused using a set of loudspeakers in the centre of the room. These sine tones oscillate at the frequencies in the pitch network, and, like the “connecting tissue” of the reverb discussed in Sections 0.0.4 and 1.1.5, serve to ground all of the performer-generated sound within a consistent ambient soundscape. The placement of the speakers that diffuse these electronic sounds—in the centre of the space pointing outwards—also links to wider concerns surrounding participation. Indeed, the array serves to establish the space of performance from the inside-out, rather than defining its limits using a more conventional ringed speaker arrangement. As sine tones are notoriously difficult to place spatially from a perceptual standpoint, it is of less importance that the speakers appear in a perfect ring. To my mind, articulating the space in this way seeks to destabilise any sense of being “inside” or “outside” the work. This approach

emphasises the subjectivity of individuated listening scores—any kind of movement through the space is acceptable, and any and all individual listening positions are encouraged. The emphasis on a personalised experience latent in the piece's scoring is reflected in its realisation, generating a further concrete link between the spatiality of the score and the spatiality of performance.

3.1.3 Discussion

My aim for *Copper House Music* is twofold. Firstly, I seek to engage directly with the architectural identity of the Piper Gallery by demonstrating a more meaningful relationship between the two-dimensional, geometric space of the score and the sensorial space of performance. Through references to the curatorial, visual, architectural and cartographical identity of the Piper Gallery space, both the performance and the score through which the work is activated and realised can be said to be "site-specific".

Secondly, I want to illustrate that static geometric representation cannot account for the totality of our spatial experience. In *Copper House Music*, a listener's sense of the space is affected by their individual actions as well as those of their fellow participants. These actions are prescribed through the process of personal score creation. Accordingly, the static geometric architecture of the "base sheet" is subjected to and transformed by each participant's dynamic presence. Processes of listening, sensing, and socialising are central to the way we establish our presence in the room—and the score acts as a platform for encouraging these activities.

It is also worth mentioning a link between this piece and the work in the critical writing element of this project, namely the concept of “disalienating strategies” as introduced in Chapter 5.4. I consider *Copper House Music*’s listening score a disalienating device. As described above, these listening scores provide a method of orientation, showing audience members how they might move about the space and interact with the installed performance in a basic way. Before each performance, I explain how to create and read the listening scores. Whilst some familiarity with experimental music is evidently helpful in such a situation, the scores do not lean heavily on conventional musical notation and as such are perhaps more accessible than a more traditionally notated score. Accordingly, the listening scores function as a disalienating device in their capacity as a kind of “way in” to the piece for those new to experimental sonic artworks presented in an installation context. The score shows you how you might move around the space, inviting you to take your bearings and orientate yourself. Moreover, the listening scores also help to break down hierarchies of proficiency implicit in the distinction between audience and performers. The performers for the piece also work from scores of a similar appearance, and these were visible to the audience in the space. At a glance, it was not always immediately clear who was performing and who was partaking in a process of active listening, destabilising potentially alienating disjunctures between the categories of “performer" and “audience member”. *Copper House Music*’s listening scores are a disalienating device, both spatially—as they operate like topological maps of the performance space—but also socially—as they are a visual indicator of participation and belonging, seeking to engineer a kind of temporary musical micro-sociality amongst performers and listeners.

Another link between this composition and *Scoring Space in the Open Work* exists in the notion of “journey form” as it relates to the video documentation of this piece. Rather than present an extensive recording of the audio element of the work, I instead offer a first-person account of the piece as it might be experienced in situ. Like the journey form’s “excess of information, which forces the viewer to enter into a process and construct his or her own… path”, so too does this recording represent a personal snapshot of an excess of sonic material (Bourriaud 2009: 116). By choosing this format for *Copper House Music*’s documentation, I aim to emphasise the open, situated, and individuated nature of this piece in realisation. It is a recording experienced in first-person, rather than one that is abstracted from the place of performance.

Ultimately, *Copper House Music* is a participatory piece. As architect Lawrence Halpin writes: “it is through [scores] that we can involve ourselves creatively in ‘doing’... the score is the mechanism that allows us all to become involved, to make our presence felt” (Halprin 2014: 46). The performances at Modern Art Oxford in October and November 2019 allowed performers and audience alike to score their spatial experience and affirm their agential human presence in the Piper Gallery. Informal conversations with those who attended on the 31 October suggested that they felt present and connected in the warm, meditative atmosphere of the gallery on that chilly Thursday evening, and were pleased that they could bring home their own score as a personal reminder of that presence.

4. BREKEKEKEX

for Classical Guitar and Live Electronics
2019

Relevant Files:

BREKEKEKEX | 2D Reduction of Video Score (.mp4)
BREKEKEKEX | Audio Recording (.wav)
BREKEKEKEX | Max MSP & Jitter Patch (.zip)
BREKEKEKEX | Performance Directions (.pdf)
BREKEKEKEX | Video Recording (.mp4)

4.1 Preface

4.1.1 Introduction and Background

BREKEKEKEX is a composition for solo classical guitar and live electronics. Like my earlier piece *SECRET ANIMALS*, it employs a virtual reality (VR) video score created for playback using the Oculus Rift Head-Mounted Display (HMD). The piece explores the interface between physical and virtual realities in the context of classical guitar performance. It borrows material from John Dowland's *Frog Galliard*—the Aristophanic title is a nod to the subtle ribbiting in the live electronics part.[22]

This work was composed in collaboration with David Cotter, who is currently undertaking a DPhil in Music at Sidney Sussex College, University of Cambridge. It was premiered on 26 February 2019 as part of the *EXPO* series for experimental music, appearing alongside performances by a variety of local sound artists, composers and DJs. *BREKEKEKEX*—like many of my pieces using a virtual reality headset score—is bipartite, consisting primarily of a video score and a Max/MSP & Jitter patch.

4.1.2 Max/MSP & Jitter Patch

The Max/MSP & Jitter patch for *BREKEKEKEX* utilises Graham Wakefield's Worldmaking Package to facilitate score playback via the virtual reality headset. The patch processes two principal inputs: the stream of live numerical data

[22] Please note: I would suggest reading the material submitted for *SECRET ANIMALS* before continuing further with this preface, as many of the ideas originating in that piece are developed in *BREKEKEKEX*.

provided by the Oculus Rift's *Constellation* head tracking system, and an audio signal from the classical guitar. The signal from the guitar is processed through a ring modulator. Like in *SECRET ANIMALS*, one of the sinusoidal oscillators is controlled by a scaled number input from the headset's live tracking. This processed output is then directed through an instance of *IRCAMverb* with a fairly long decay time (5.86s) (see Figure 4.1). A clean input from the guitar is also processed through the same reverb unit, and the total mix is spatialised in stereo using two speakers either side of the performer in the concert space.

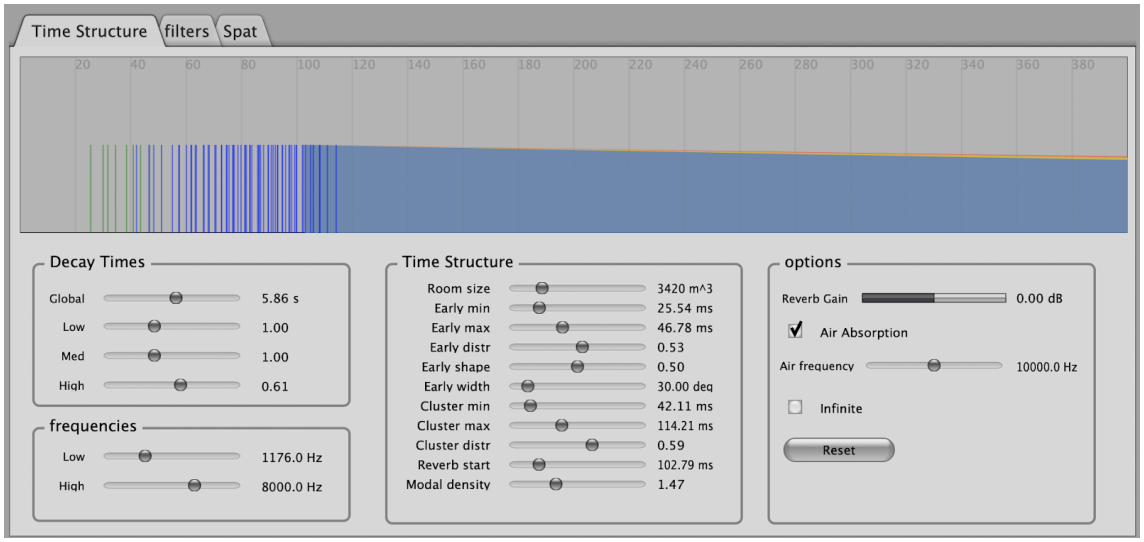


Figure 4.1: IRCAMverb preset for *BREKEKEKEX*.

Though the live guitar input is not processed extensively, there are a number of other audio streams that contribute to *BREKEKEKEX*'s electronic element. One consistent presence in performance is a sustained, occasionally "ribbiting" pitch. This ambient drone is produced by processing pre-recorded samples of the guitar's open strings through a "chucker~" object in Max/MSP. The Chucker chops a sample into a number of equal sections (in this instance, sixteen), and then plays them back in a continually changing order. This creates a shifting

timbral backdrop that retains continuity of pitch. The Chucker operates independently of the classical guitarist throughout the performance.

These pre-recorded samples of the guitar's open strings are also used as part of the patch's "virtual guitar". The head tracking system allows the performer to "pluck" virtual strings around them by leaning their head forward, backwards, left, or right. Moving your head in a specific direction activates samples of the guitar's open strings, transposed down two octaves (-2400 cents) and processed through *IRCAMverb*. This can be observed in the image below, which shows David Cotter "plucking" the string to his right in the middle of a performance by leaning to that side.

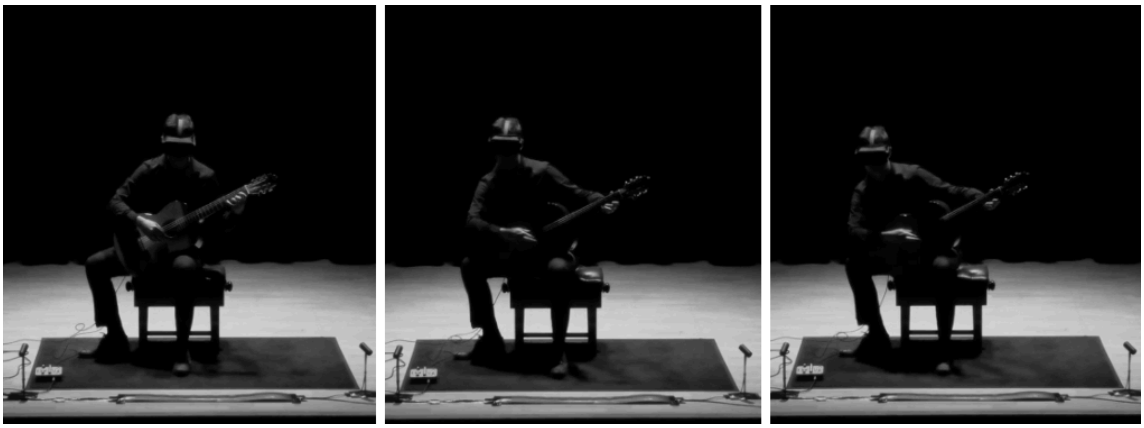


Figure 4.2: David Cotter plucking the virtual guitar during performance.

To ensure harmonic continuity across the live and pre-recorded elements of the piece, both the classical guitar and the pre-recorded samples use the same scordatura: D (1 tone down), A, D ¼ Sharp (¼ sharp up), G, B ¼ Sharp (¼ sharp up), E ¼ Sharp (¼ sharp up). This scordatura also helps to obfuscate the piece's explicitly borrowed material, as will become clearer later on in this preface. A simplified patch diagram for *BREKEKEKEX* appears below and will hopefully clarify its holistic structure.

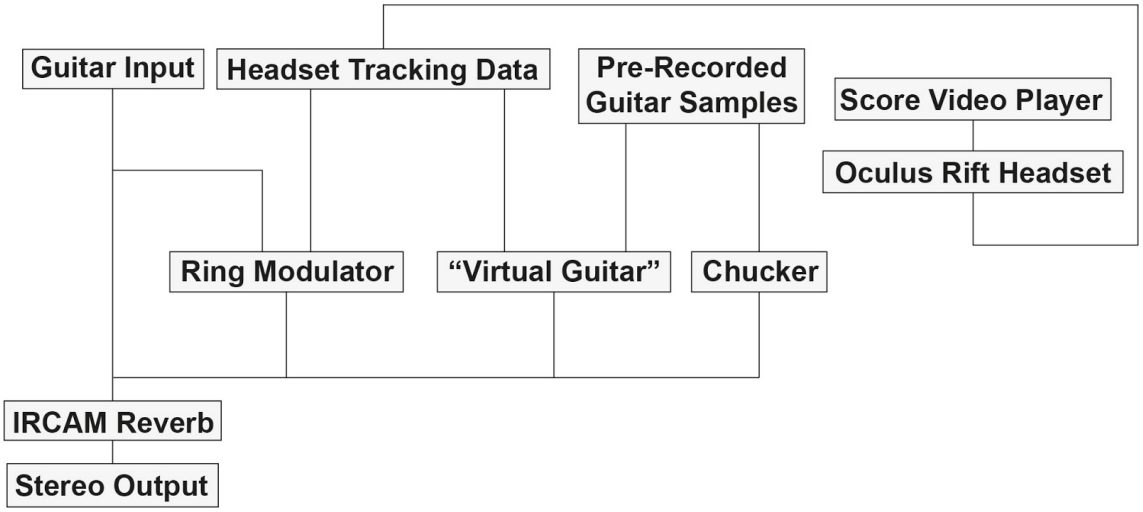


Figure 4.3: David Cotter plucking the virtual guitar during performance.

4.1.3 Video Score

As Figure 1.3 illustrates, the Max/MSP & Jitter patch also hosts the score video player, which outputs directly to the VR headset. Like in *SECRET ANIMALS*, head movement is tracked live, which means the performer can “look around” the virtual score space in real time. Musical material is presented to the performer in a 180° panoramic field. The score uses three large tableaux to display musical fragments. These are not all visible in a single glance (see Figure 4.4).

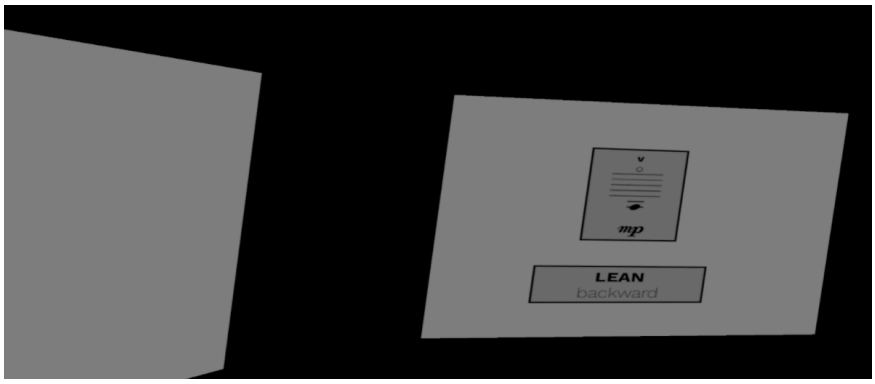


Figure 4.4: Screencap from *BREKEKEKEX* Score (as viewed in HMD).

Material appears in one of three different forms. Many fragments of material are fully notated without graphic elements; detailing specific harmonics, chords, and melodic lines for the performer to play. Some fragments use a small amount of graphic notation—namely, to detail the contour of a pitch bend at the nut—and some fragments use only textual instructions (see Figure 4.5). Within a textual instruction, the top line refers to a type of sound or technique, the middle line concerns its tessitura, and the bottom line indicates a dynamic level.[23] This style of notation is broadly analogous to that employed in *SECRET ANIMALS*.

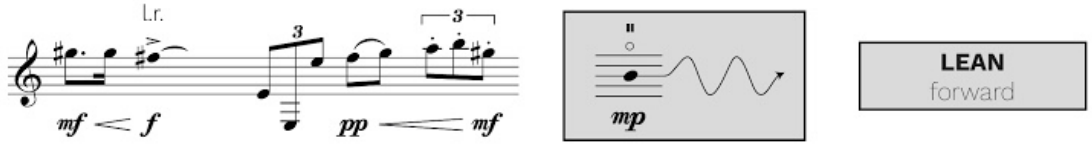


Figure 4.5: Fully notated material (left), harmonic with pitch bend (middle), and textual instructions (right) — all from the score for *BREKEKEKEX*.

In *BREKEKEKEX*, it is possible to divide the content of the piece into (a) fully notated material and (b) more open, improvisational material. Much of the fully notated material is adapted or borrowed directly from the *Frog Galliard* by John Dowland. For example, several of the chords that appear are appropriated from Dowland; the same is true of a number of melodic fragments (see Figures 4.6 and 4.7):

[23] There are seven “sound types” or “techniques” that use textual instructions. They are: natural harmonics; palm muting (with low finger pressure); glissandi; freezing in position; looking in a particular direction; and adjusting position. As they require less extensive explication, a table of explanations (as per *SECRET ANIMALS*) is not included in this preface—but it can be found in the attached Performance Directions document.

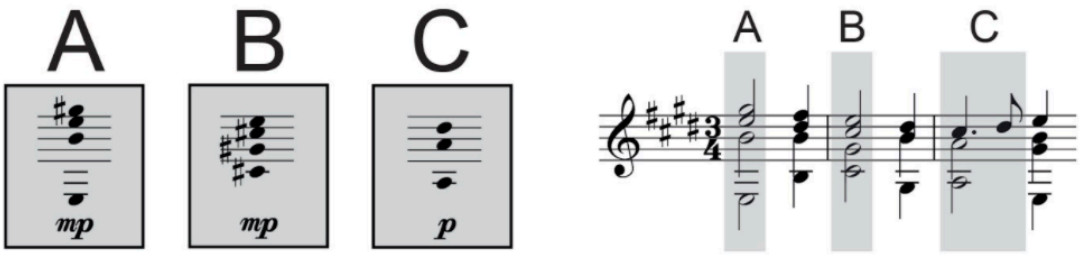


Figure 4.6: Chords borrowed from *Frog Galliard* (left), and Dowland's original (right).

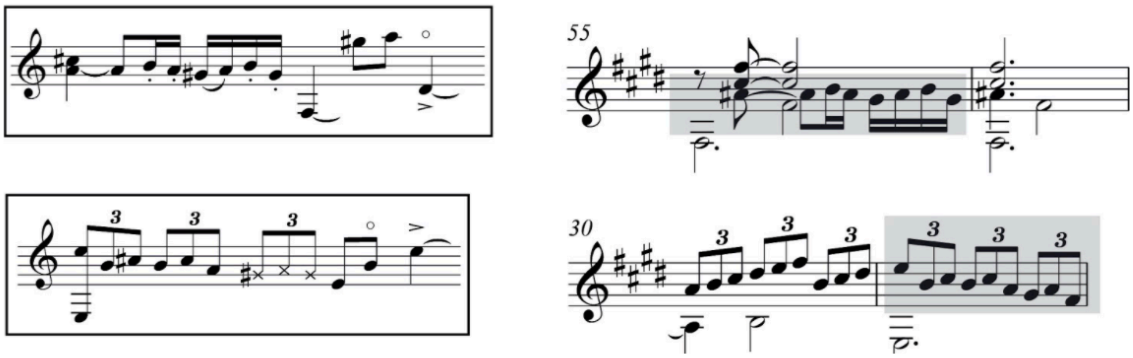


Figure 4.7: Melodies borrowed from *Frog Galliard* (left), and Dowland's original (right).

4.1.4 Discussion

BREKEKEKEX develops a number of ideas incipient in *SECRET ANIMALS*, engaging again with the notion of the VR headset score as a physically explorable virtual environment. To my mind, this piece more adeptly employs virtual reality technology to musical ends. In particular, the addition of a "virtual guitar" begins to interrogate the interface(s) between performer and instrument, and performer and technology. Interestingly, the heavy use of borrowed material is somewhat unusual in my practice: this was perhaps influenced by my close collaborator David Cotter.

By way of conclusion, it is interesting to briefly discuss my working relationship with David Cotter, the classical guitarist who premiered this composition. During

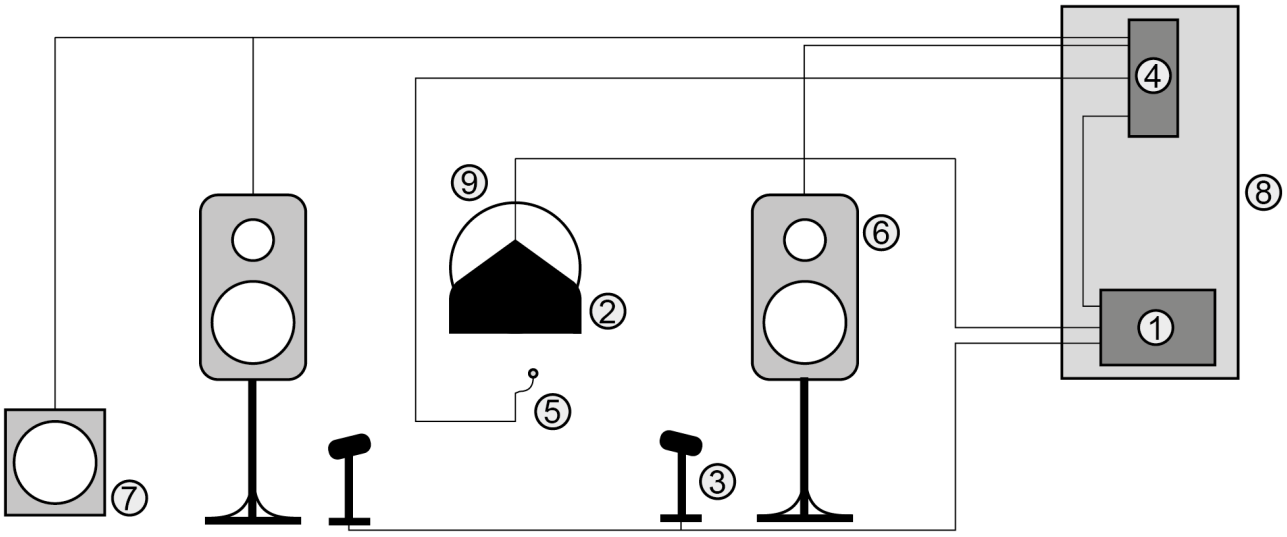
the process of writing and rehearsing, we found ourselves continually adopting each others' roles in a way that destabilised our more familiar identities as "composer" or "performer". Karen A. Franck suggests that "virtual worlds offer immense opportunities for testing and blurring boundaries" (Franck 1995). In an immediate sense, the "virtual world" of the headset score is a malleable environment in which biological restrictions, the laws of physics and—in the case of multi-user experiences—even codes of social conduct are subject to change. This pliable platform might be just the springboard for an increased flexibility in both the user's identity and their sense of being in the real world. Accordingly, this malleable virtual space is a good metaphor for understanding the flexible identity formations which were present during our collaboration. Rather than set up new or different boundaries between composer and performer, our understanding of the roles was couched in processes of connecting, merging and hybridising, encouraging an "endless array of possibilities to be imagined and created" rather than individual roles fenced off with terminology (Ibid.). Like Franck, we privileged the creation of "ways of being and relating" that "are true alternatives to those current in the physical world and in our present culture" (Ibid.; Cotter and Packham 2019).

4.2 Technical Specification

A performance of *BREKEKEKEX* will require the following technical equipment:

- Oculus-ready PC (NVIDIA GTX 970 / AMD 290 equivalent or greater, 8GB+ RAM, Compatible HDMI 1.3 video output, 3x USB 3.0 ports plus 1x USB 2.0 port, Windows 7 SP1 64-bit or newer) with Max 8 installed, plus monitor, mouse and keyboard.
- Oculus Rift CV1 HMD
- 2x Oculus Rift Sensors
- Audio Interface (RME Fireface UC if available)
- 2x 10m Male XLR to Female XLR Lead
- 3x 15m XLR to Jack Lead
- 2x Speakers (Genelec 8050b if available)
- 2x Speaker Stands
- Subwoofer (Genelec 7040a if available)
- Stool
- Large, sturdy desk

The stage should be set up according to the diagram on the following page. Alternative arrangements are most likely acceptable, but please contact the composer to confirm technical details in any case.



1. PC
2. Oculus Rift CV1 HMD
3. Oculus Rift Sensors
4. Audio Interface
5. DPA Mic
6. Speakers
7. Subwoofer
8. Desk
9. Stool

4.3 Score and Patch Information

As will be clear from the video recording, preface, and performance indications, the score for *BREKEKEKEX* is viewed in a virtual reality headset. For logistical purposes, I have submitted a 2D reduction of this score that can be viewed without an Oculus-ready PC or Oculus Rift HMD. It is thus necessary to explain the differences between the score as viewed by the performer and the score as submitted here. The principal difference between the HMD score and the 2D score concerns what is visible in a single glance. To a performer wearing the headset, the score appears as three tableaux that extend beyond their field of vision. Accordingly, it is necessary to look left, right, up or down in order to see and engage with all of the score's content. Conversely, in the 2D score, these three tableaux are flattened into a single horizontal image that does not require the same head movement. I hope that this will make the holistic appraisal of the score an easier process.

The .ZIP file attached comprises the Max/MSP & Jitter patch required for a performance of *BREKEKEKEX*. Please run the patch in Max 7 if possible. In the absence of an Oculus Rift HMD and Oculus-ready PC (see Technical Specification for more details), the patch can still be perused, but the score player will not operate and you may be met with a number of error messages.

If you are in possession of the requisite equipment, please download Graham Wakefield's Worldmaking Package (https://github.com/worldmaking/Max_Worldmaking_Package) on your machine before running the patch.

5. DER TINTENFISCH

for Ensemble
2020

Relevant Files:
DER TINTENFISCH | Full Score and Parts (.pdf)
DER TINTENFISCH | Stereo Audio Recording (.wav)

5.1 Preface

5.1.1 Introduction and Background

DER TINTENFISCH is a composition for snare drum, up to 24 string players, flute, oboe, and offstage brass with electronics. The piece was composed for Ensemble ISIS, who premiered the piece on 31 January 2019 at the JdP Music Building. *DER TINTENFISCH* is bipartite, consisting of a fixed electronic audio track and a number of individual parts which together comprise the score.

This work is a somewhat ritualistic celebration of Paul, an octopus who was catapulted into stardom after correctly predicting the results of football matches during UEFA Euro 2008 and—most famously—the 2010 FIFA World Cup. Paul was born in Weymouth, England and was moved to a tank at a Sea Life Centre in Oberhausen, Germany. During Euro 2008, Paul correctly predicted the outcome of four of Germany's six matches, and in the 2010 World Cup he did so for all eight of Germany's matches. During divinations, Paul was presented with two clear boxes—each marked with a country's flag—containing either a mussel or an oyster. The box that Paul opened first represented his prediction for the game in question. This was not, however, without controversy. When Paul correctly predicted that Germany would lose their semi-final against eventual champions Spain, he received an influx of death threats in the form of recipes for cooking and eating octopus. Upon hearing about the existence of these culinary threats, Spanish Prime Minister José Luis Rodríguez Zapatero offered Paul a team of bodyguards and Industry Minister Miguel Sebastian called for Paul to be given asylum in Spain. As Paul's keeper Oliver Walenciak

said at the time: “there are always people who want to eat our octopus but he is not shy and we are here to protect him as well… he will survive” (Hyde 2010). Paul died on 26 October 2010 at the age of two-and-a-half.

5.1.2 Fixed Electronics

The electroacoustic element of the composition comprises both a fixed electronics part—diffused across a spatialised array—and the monitoring of up to two live microphone inputs. The live microphone inputs are broadly optional, though it is extremely likely that the snare drummer’s voice will need amplification and, depending on the performance space, the drum may also need to be amplified. The fixed electronic element consists of a number of whispered and spoken vocal utterances, processed lightly using a spectral filter as well as reverb. These vocal utterances are diffused across a ring of speakers, aiming—in combination with the spatialisation of performers detailed in the score—to produce a rich sonic-spatial performance situation. The text for these utterances is drawn from football commentary during the 2010 FIFA World Cup, and especially the highlights of Germany’s matches.

5.1.3 Score

The number eight is significant throughout the composition, in tribute to its namesake. Most fundamentally, the piece is structured in eight sections, which are coordinated using individual stopwatches for each player (Table 5.1).

Section	Timestamp
1	0:10
2	1:10
3	2:10
4	3:10
5	4:00
6	4:30
7	6:15
8	7:15
End	8:00

Table 5.1: Structure table for *DER TINTENFISCH* with timestamps.

There are two structurally important sections in the piece. The first is section five, in which the snare drum player—placed in the centre of the performance space and symbolising the oracle himself—speaks. The second, is section eight, when we hear a disembodied voice speaking through the speaker array as well as frenzied whispering (both in the fixed electronics and by the offstage brass ensemble). All of these vocal utterances are longer than the quick, sharp shouts processed using a spectral filter and reverb that appear throughout the piece in the fixed electronics part. The text spoken by the snare drum player is a quote attributed (via Diogenes Laertius) to Alcmaeon of Croton, a discipline of Pythagoras:

> Of things invisible, as of mortal things, only the gods have certain knowledge; but to us, as men, only inference from evidence is possible. (O'Grady 2017: 17)

This text is a reminder of Paul the Octopus' somewhat supernatural role as a conduit for divine knowledge of the future. The second text spoken in *DER TINTENFISCH* is taken from a more familiar source: Homer's Odyssey. In Book XI, the blind prophet Tiresias says the following to Odysseus:

> And at last your own death will steal upon you
> A gentle, painless death, far from the sea it comes
> To take you down, borne down with the years in ripe old age
> With all your people there in blessed peace around you.
> All that I have told you will come true. (XI: 134-138)[24]

The text accompanies a crucial moment in the piece: the point at which the snare drum player—symbolising Paul—stops playing and shuts their eyes. This is the moment of Paul's death. Simultaneously, we hear a whispered phrase repeated in a frenzied and intense manner from every direction. The text for this maniacal whispering is taken from Agamemnon, the first play in Aeschylus' *Oresteia*:

> Now shall mine oracle no more look forth
> Out of a dim veil like new-wedded bride

[24] Translation by Will (2005).

But put on a brightness as a wind that blows

Towards the sun's uprising 'gainst the light. (1178-1180)[25]

These classical texts help imbue a sense of ritual into the work, whilst referencing directly the notion of divination as explored in literature. The snare drum part also explores this idea of divination, as they represent Paul the Octopus—the oracle—in a performance of *DER TINTENFISCH*.

The snare drummer's part is unique, and uses a semi-graphic score inspired by moon charts, another form of telling the future. The image of the octopus in the centre is a reminder of the inspiration for the work (Figure 5.1).

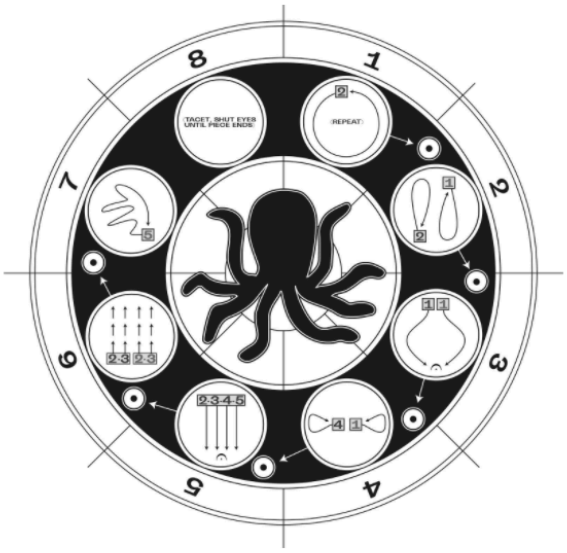


Figure 5.1: Snare Drum score for *DER TINTENFISCH*.

The snare drum player moves clockwise around their score, interspersing the rubbing of the snare drum with fingernails with some louder fragments performed using a stick. Much of the score is notated graphically, using a circle and arrows (Figure 5.2) to represent the surface of the drum. These hand

[25] Translation by Trevelyan (1922).

movements are intended to imitate the practice of dactylomancy, which is a form of divination popular during antiquity which involved the use of finger movements or rings. Fingernails were particularly important to this practice, hence the use of the fingernail in the snare drummer's part. As detailed in the score, numbers indicate which fingernail to use, and colours describe which hand(s) to use.

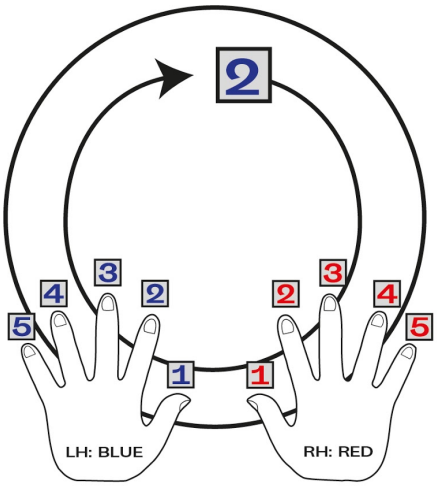


Figure 5.2: Snare Drum finger movement notation.

Unlike the graphically notated snare drum part, the string parts are reasonably conventionally notated. The instructions for each section comprise a list of pitches from which players can choose. Performers are instructed to play long, sustained tones at varying bow pressures and dynamics (Figure 5.3).

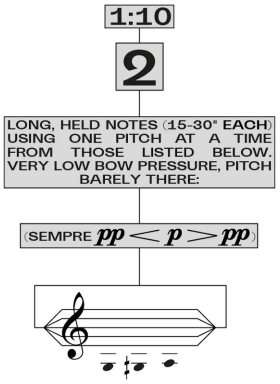


Figure 5.3: String part example.

The scale from which all the pitch content in *DER TINTENFISCH* derives is fittingly octatonic. The scale I use contains an oblique reference to the piece's namesake, Paul the Octopus. First, I numbered each of the letters of the alphabet (see Table 5.2).

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

Table 5.2: Alphabetic numbering system.

Using this system I produced a numerical series relating to Paul the Octopus's name, as illustrated by Table 5.3. Rather than use all the numbers assembled through this system, I included only eight, as my intention was to employ an octatonic scale. Though one might argue this compromise undermines the system behind the pitch content of the piece, to my mind this decision is representative of my general compositional approach—creating generative rulesets and systems, only to break them as desired. The eight numbers selected are highlighted in Table 5.4.

P	A	U	L	T	H	E	O	C	T	O	P	U	S
16	1	21	12	20	8	5	15	3	20	15	16	21	19

Table 5.3: Alphanumerical system in *DER TINTENFISCH*.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

Table 5.4: Alphanumerical system in *DER TINTENFISCH*.

Simultaneously, I used a numbering system for the twenty-four quarter-tone pitches in an octave (Figure 5.4).
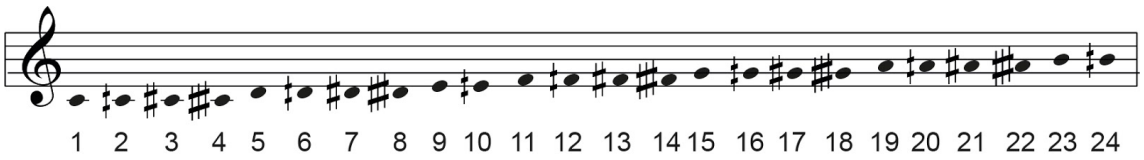


Figure 5.4: Numbering system for quarter-tone pitches.

The numbers produced in Table 5.4 are then mapped onto this system, creating an octatonic scale (Figure 5.5). This scale provides all of the pitch content present in the string parts in *DER TINTENFISCH*, forming a consistent yet oblique reference to the inspiration for the piece.
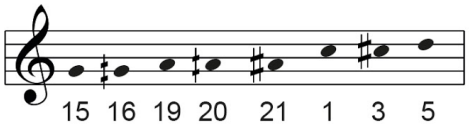


Figure 5.5: Octatonic scale for *DER TINTENFISCH*.

The flute and oboe parts work similarly to the strings, albeit employing small decision trees to produce variability in their shimmering timbral trill material.

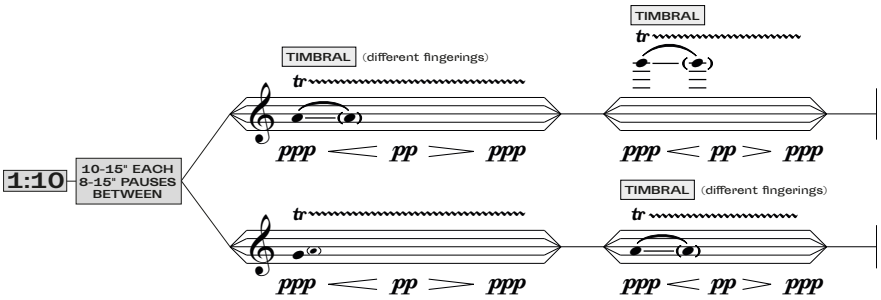


Figure 5.6: Flute fragments in *DER TINTENFISCH*.

The offstage brass ensemble parts are also very simple, comprising just a few gestures performed from a separate room or a balcony. Their sonic intrusion—featuring a performance of the Ghanaian national anthem—aims to briefly disrupt the ritualised, meditative atmosphere of the piece. Ghana was one of the teams Germany played in the 2010 tournament, and the unsettling, almost

raucous recital of its national anthem from another room leaves in its wake a renewed sense of calm, the placid string texture underneath mostly unaffected by the intrusion.

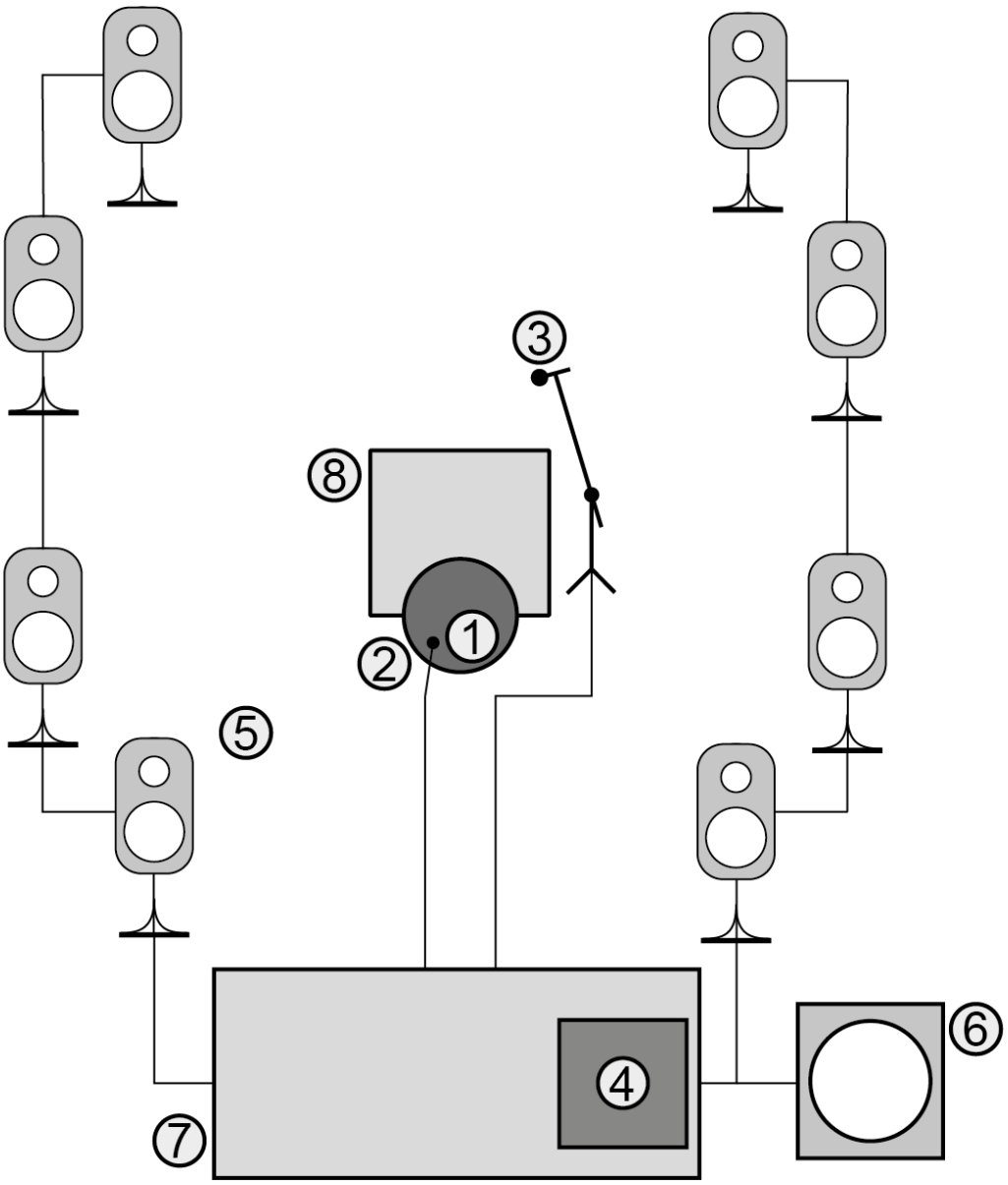
Ultimately, the piece combines fixed and live electronics with live acoustic instruments, attempting to produce a richly symbolic and highly ritualistic performance situation. The piece is a celebration of Paul the Octopus's mysterious existence, replete with classical quotations that point backwards to those oracles who came before him.

5.2 Technical Specification

The piece can be diffused through a variety of speaker arrays, but at least four speakers (quadraphonic) should be used if possible. An ideal performance of the piece would use the following equipment:

- Audio Interface (RME Fireface UFX II if available)
- DPA CORE 4099 Drum Microphone (if necessary)
- Shure SM58 Vocal Microphone
- 1x Microphone Stand
- 8x Combi Leads (XLR to Jack + Power)
- 4x 15m Male XLR to Female XLR Lead
- 8x Speakers (Genelec 8020d if available)
- 8x Speaker Stands
- Subwoofer (Genelec 7040a if available)
- Large wooden box or crate that can comfortably support one person and a snare drum
- Large, sturdy desk

The diagram on the following page details how an octophonic setup should be arranged for a performance. Alternative arrangements are most likely acceptable, but please contact the composer to confirm technical details in any case.



1. Snare Drum
2. DPA Drum Microphone (if necessary)
3. Vocal Microphone
4. Audio Interface
5. Speakers
6. Subwoofer
7. Desk
8. Box or Crate

6. DELICIOUS

for voice, bass flute, strings and electronics
2020

Relevant Files:
DELICIOUS | Audio Recording (.wav)
DELICIOUS | Full Score and Parts (.pdf)

6.1 Preface

6.1.1 Introduction and Background

DELICIOUS is a composition for voice, bass flute, strings and electronics. It was composed for Explore Ensemble, who recorded a studio version of the piece due to performance delays caused by the COVID-19 pandemic. The piece combines pre-recorded electronics with live instrumental and vocal processing, and builds on scoring techniques I have developed over the last four years.

Generically speaking, the work falls somewhere between the open-ended installation of *Copper House Music* and a more conventional concert work, and employs scores that may be used flexibly to encourage a kind of group improvisation. This approach lends the work an ambient quality that one might more readily associate with the Deep Listening practices of Pauline Oliveros, or with the semi-scored, new-age work of Hiroshi Yoshimura. However, the work is quite clearly defined in durational terms, and each performer's score details a great deal of explicitly notated material.

6.1.2 Pre-Recorded and Live Electronics

The piece's pre-recorded elements are organised into two layers. The first layer consists of a single processed synthesiser, a texture which continues for the entire length of the composition. This synthesiser is processed using EQ so that the harmonic resonances of the sound are revealed slowly, moving from a low, muddy texture towards sparkling highs. This more clearly pitched element is accompanied by a second, more noisy complement, which is made up of three

different sonic layers. The first layer is a heavily processed field recording of a river, which has been filtered to ensure it remains a background texture rather than an object of sonic focus. The second layer was produced using a Max/MSP patch of my own creation, chaining together different spectral processes in order to create a fidgeting texture that contrasts the more continuous field recording. The third layer is spectrally processed white noise, which is another more continuous element. Individually, these noisy elements are somewhat unremarkable, but in combination they provide a more sonically complex and texturally rich accompaniment to the synthesiser layer. Occasionally, reverberant piano fragments are also faintly audible. This instrumental part is built into the pre-recorded electronic element—rather than performed live—and constitute ghostly echoes or memories of the vocal and bass flute lines that wander across the ambient backdrop.

The live electronic processing of instruments and voice is reasonably simple. The voice—both sung and spoken—is processed using autotune, reverb, pitch shift and panned delay, so that resonances and echoes of the material appear hard left and right, often pitched up or down. This vocal processing is not dissimilar to that of *THROWN (ACROSS)*, and one might readily link these pieces in that I appear in both of them as a performer, as well as the composer. The bass flute is processed using a similar reverb to the voice, and in a live setting would be tailored specifically to the space of performance. Similarly, some reverb has been applied to the strings in the attached recording, but in a live performance this might be more subtle.

6.1.3 Score

The score for *DELICIOUS* is organised into individual parts that mostly operate independently. The vocal score (Figure 6.1) is the most indeterminate of the instrumental parts, and serves largely as a provocation for improvisation, rather than insisting upon any specific musical material. The part consists primarily of individual pitches, fragments of text, and circled symbols that represent modifiers to these signs. The performer—myself in this instance—should fill each of the empty grey circles with symbols of their own choosing, each representing a way of modifying the sound they are currently making. These might include arrows or equals signs—showing a pitch, timbral, or dynamic shift (or stasis)—but the performer is free to invent symbols of their choosing with any sonic implications. As the vocal part is always performed by me, these inserted symbols operate as a way of structuring improvisation, whilst also ensuring the score is changeable across different realisations of the piece.

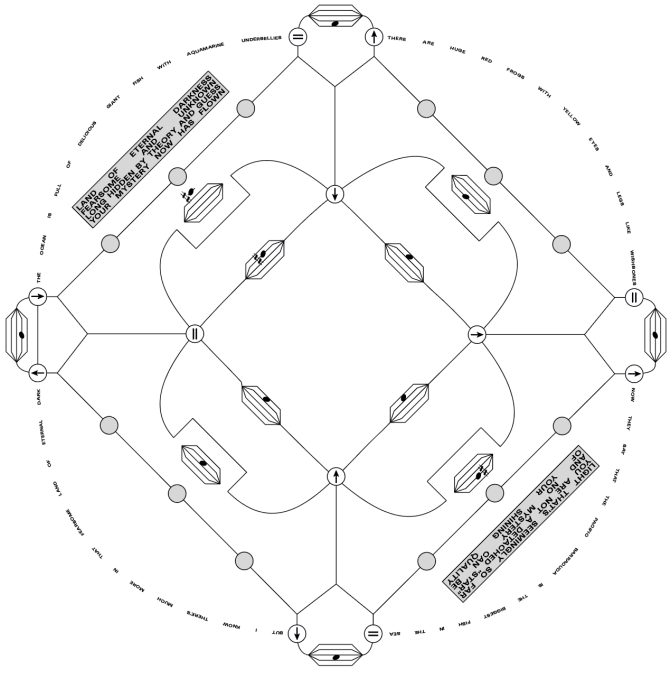


Figure 6.1: Vocal score page.

The text on this score page may be used freely, and appears spoken in the recording presented for the purposes of this portfolio. The circular text was generated by OpenAI's GPT-2 language system, which produced this text based on an initial prompt. The boxed text is taken from F. Amadeo Giannini's *World Beyond The Poles*, a 1959 book proclaiming to be the "first and only description of the realistic Universe" (Giannini 1959). It suggests that not only is the Earth totally flat, but that its land surface in fact continues to connect it directly with the moon and other planets. Through a series of increasingly obfuscatory texts, poems, and diagrams, Giannini's contends that were explorers to continue beyond the North or South Pole, they would find a land area connecting the Earth to the rest of the universe, the celestial appearance of which is simply an optical illusion. It is through these curious texts that the piece finds its—admittedly, very broad—environmental theme.

The bass flute part is organised across two separate sheets. It consists of a page of individual and paired fragments which can be played in any order, and a second sheet consisting of longer gestures involving light pitch bends. The first score page employs graphic elements, utilising a design not dissimilar to a world map, echoing the ecological and planetary subject matter of the piece.



Figure 6.2: First score page for bass flute.

This page of fragments is supplemented by a secondary sheet, which is employed each time the flautist encounters a large asterisk. The second sheet contains material that is similar in its timbral and melodic quality to the first page, but also includes tiny notated pitch shifts up or down. This is a technique I originally used in *TOUCHING DISTANCE* (2018) and *SLOWLY SHRINKING WORLDS* (2020), two pieces that do not appear in this portfolio. These more extended gestures draw attention to the bass flute in the reasonably dense texture that prevails throughout *DELICIOUS*, whilst the pitch shifts momentarily breaks the reasonably consonant quality of much of the bass flute part.

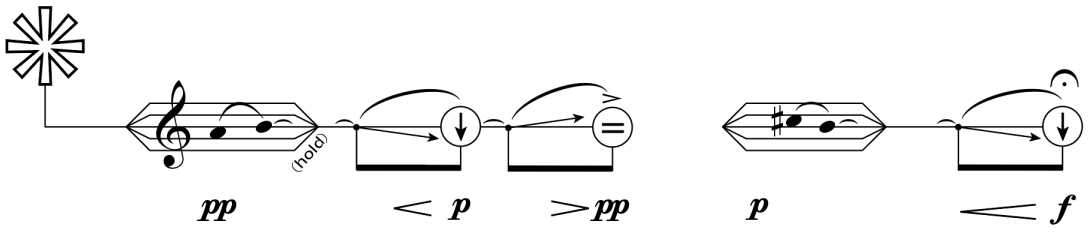


Figure 6.3: Longer bass flute gesture as seen on second score page.

The string parts also build on a scoring technique I have used previously—this time in *untitled (ANIMA)* (2018), a collaboration with Michelle Chin, and in *DER TINTENFISCH* (2020). In order to create a consistent, even texture whilst retaining subtle and constant variation I produced a number of decision tree structures that contain the pitched material for the string players (see Figure 6.4). Each performer performs their page repeatedly for the duration of the piece, but takes different routes through the material each time. This creates a constantly shifting but reasonably homogenous—albeit sparse—texture. The placement of fermatas as part of this process also creates variable changes in layering.

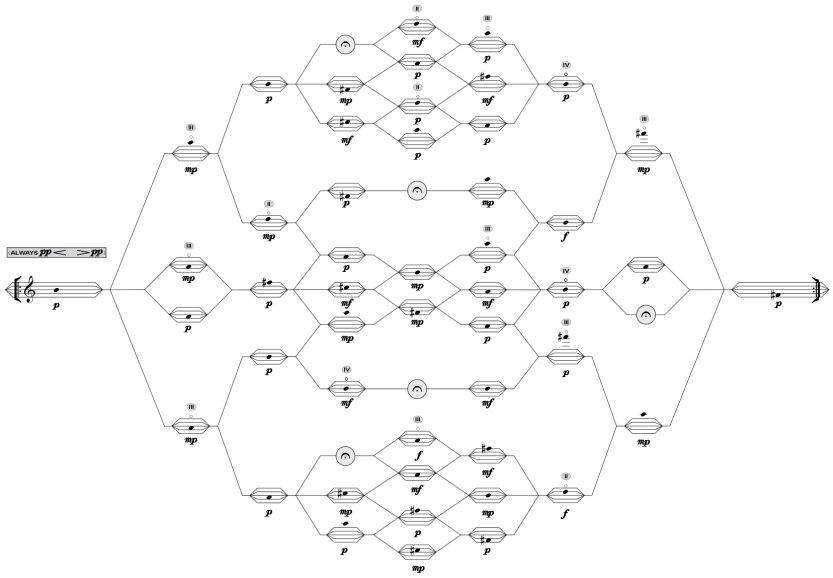


Figure 6.4: String part decision tree structure.

One can readily see the concept of an open “journey form” in this approach to scoring (Bourriaud 2009: 114, see also Section 3.2 in *Scoring Space in the Open Work*). The string parts present more material than it is possible to play in a single cycle through the page, and selecting a route through the dense network of pitches represents a kind of “composition by journey” (Ibid.:114). This

sense of the individuated journey also links to the personalised performance practice that energises the vocal element of the work. Indeed, the purpose of the indeterminate or performer-led elements of these scores more generally is to create a performance situation in which listening and liveness remain central. The curation of a timbral and harmonic sound world is important to my compositional idiom, but so is a sense of intra-performative interactivity. A lot of this piece was conceived of and written during the COVID-19 pandemic, which has brought into sharp relief for me the importance of live performance in defining and shaping the identity of my compositional work. Indeed, many of the pieces in this portfolio have been revised to varying degrees based on live performances. There needs to be something “at stake” in the realisation of the work, and this risk energises the music. In *DELICIOUS*, this sense of risk is generated through these indeterminate elements.

6.1.4 Discussion

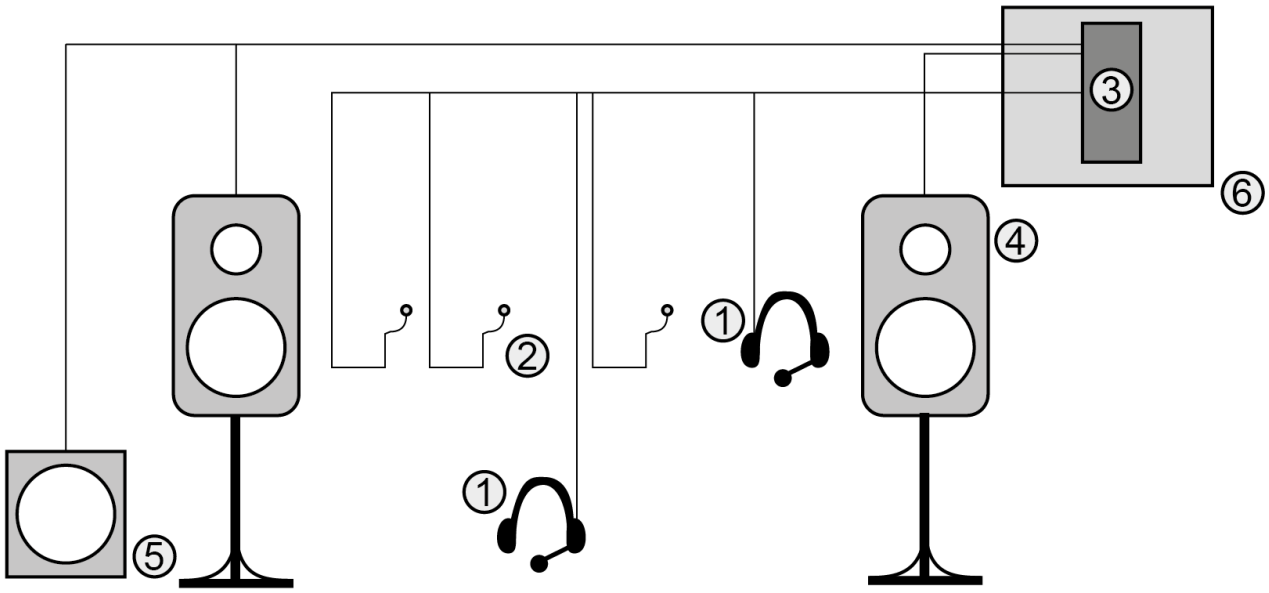
This piece represents a shift towards a more studio-based practice, emphasised by the multi-track recording rather than presenting a live realisation of the composition. Whilst this was no doubt influenced by the circumstances—most pertinently, the COVID-19 pandemic—I can also recognise a shift in my approach away from the realisation of scores, and towards a more collaborative process in which performers record material I have scored, only for me to then use this material as compositional building blocks within a DAW environment. Whilst the scores allow for a spontaneous, improvisational live realisation of *DELICIOUS*, the carefully constructed and sequenced multi-track provides an interesting—but ultimately more predictable and reliable—counterpoint.

6.2 Technical Specification

A performance of *DELICIOUS* will require the following technical equipment:

- Audio Interface (RME Fireface UC if available)
- 2x DPA 4066 Omni Headset Microphone
- 2x DPA 4099 Instrument Microphone with VCO4099 Adapter for Violin, Viola
- DPA 4099 Instrument Microphone with CC4099 Adapter for Cello
- 7x 10m Male XLR to Female XLR Lead
- 3x 15m XLR to Jack Lead
- 2x Speakers (Genelec 8050b if available)
- 2x Speaker Stands
- Subwoofer (Genelec 7040a if available)
- Stool
- Large, sturdy desk

The stage should be set up according to the diagram on the following page. Alternative arrangements are most likely acceptable—including a spatialised ring instead of a stereo pair if the space allows—but please contact the composer to confirm technical details in any case.



1. Headset Microphones (Vocal and Bass Flute)
2. DPA Instrument Microphones
3. Audio Interface
4. Speakers
5. Subwoofer
6. Desk

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Recordings, Performances and Conference Presentations

SECRET ANIMALS

Recordings

- JdP Music Building | 15/05/18. Deni Teo (Cello), Nicholas Moroz (Live Electronics)

Performances

- *Rendezvous II: 'Translation'* | JdP Music Building | 16/05/18. Deni Teo (Cello), Nicholas Moroz (Live Electronics)
- *Future Music + Festival* | RNCM Concert Hall | 13/06/19. Deni Teo (Cello), Jonathan Packham (Live Electronics)
- EXPO x Explore Ensemble: Augmented Instruments | JdP Music Building | 19/07/19. Deni Teo (Cello), Nicholas Moroz (Live Electronics)
- *Explore Ensemble: Augmented Instruments* | Leeds University School of Music 20/07/19. Deni Teo (Cello), Nicholas Moroz (Live Electronics)

THROWN (ACROSS)

Recordings

- Stereo Reduction | Produced at the Faculty of Music, Oxford University | 10/10/19. Jonathan Packham (Voice), Jonathan Packham (Live Electronics)
- Multichannel Recording | Produced at the Faculty of Music, Oxford University | 10/12/19. Jonathan Packham (Voice), Jonathan Packham (Live Electronics)
- Ambisonic Recording | Produced at the Faculty of Music, Oxford University | 15/12/19. Jonathan Packham (Voice), Jonathan Packham (Live Electronics)

Performances

- *The Art of Noises II* | Modern Art Oxford, Oxford | 29/11/18. Jonathan Packham (Voice), Nicholas Moroz (Live Electronics)
- *Composers' Concert* | JdP Music Building, Oxford | 01/02/19. Jonathan Packham (Voice), Matthew Collins (Live Electronics)

Copper House Music

Recordings

- Recorded at Modern Art Oxford, OX1 1BP | 31/10/19. Matthew Buchan (Voice), Matthew Collins (Synthesiser), Nicholas Moroz (Guitar), Gascia Ouzounian (Violin), Jonathan Packham (Voice), Daniel Riley (Trumpet), Anna Thomas (Voice).

Performances

- *The Art of Noises IV* | Modern Art Oxford, OX1 1BP | 31/10/19. Matthew Buchan (Voice), Matthew Collins (Synthesiser), Nicholas Moroz (Guitar), Gascia Ouzounian (Violin), Jonathan Packham (Voice), Daniel Riley (Trumpet), Anna Thomas (Voice).
- *MAO Social* | Modern Art Oxford, OX1 1BP | 21/11/19. Erika Vega (Violin), Nicholas Moroz (Guitar), Jonathan Packham (Voice).

BREKEKEKEX

Recordings

- Recorded at the JdP Music Building | 25/02/19. David Cotter (Classical Guitar), Jonathan Packham (Live Electronics)

Performances

- *EXPO 2*: *Space* | JdP Music Building | 26/02/19. David Cotter (Classical Guitar), Jonathan Packham (Live Electronics)
- *The Classical Musician in the 21st Century* | Cambridge University Music Faculty | 23/05/19. David Cotter (Classical Guitar), Jonathan Packham (Live Electronics)

Conference Presentations

- *"Old Frogs, New Tricks: Technology and Identity in a New Collaborative Work"*. Lecture-Recital by David Cotter & Jonathan Packham. RMA Study Day: *The Classical Musician in the 21st Century* | 23/05/19. Cambridge University Music Faculty.
- *"New Work for Classical Guitar & Live Electronics with Dynamic VR Score"*. Lecture-Recital by David Cotter (with additional writing by Jonathan Packham). *International Guitar Research Centre Conference* | 14/07/19. Hong Kong Academy for Performing Arts.

DER TINTENFISCH

Recordings

- Recorded at the JdP Music Building, Oxford University | 31/01/19. Ensemble ISIS.

Performances

- *Composers' Concert* | JdP Music Building | 31/01/19. Ensemble ISIS, John Traill (Conductor).

DELICIOUS

Recordings

- Recorded at the Faculty of Music, Oxford University | November 2020. Jonathan Packham (Voice, Piano, Electronics), Taylor Maclennan (Flute), David Lopez (Violin), Morag Robertson (Viola), Deni Teo (Cello).