



## **Composing Contrapuntal Worlds: Developing an Aesthetics and Practice of Counterpoint in the 21st Century**

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**Composing Contrapuntal Worlds:  
Developing an Aesthetics and Practice of Counterpoint in the 21<sup>st</sup> Century**

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## Abstract

This doctoral project centres on the composition of a series of works for different instrumentations that attempt to answer the question: "What could be an artistically satisfying aesthetics and method of composing music based on rethinking counterpoint beyond its historical forms?" This dissertation functions as a supplement to these compositions. It outlines the rationale and methodology of the project, before detailing the aesthetics of counterpoint that have been developed across the course of this research project. The core chapters then chart the development of my compositional approach by showing how each work relates to four core research themes: 1. Relation of parts—how the compositional logic structures relations between simultaneous parts; 2. Form—how the form of a work relates to its contrapuntal logic; 3. Scope of world—how individual parts are structured and to what extent the contrapuntal logic involves a homogeneous or heterogeneous aesthetic; and 4. Compositional process—how the contrapuntal logic influences the compositional process itself.

'Counterpoint' is a central term in the history of Western art music. It has often been a key framework for musical innovation, though today it is more associated with historical musical studies. While 'polyphony' is still discussed in the context of new music, this dissertation argues that the idea of 'counterpoint' can be of use to composition today beyond the replication of earlier styles. This is because counterpoint can be understood as concerning a compositional logic, one that structures relations between simultaneous parts, while 'polyphony' normally represents one particular texture-type that can emerge from a contrapuntal logic. Unlike previous theories, the aesthetics of counterpoint developed here is not one of a 'point-against-point' regulation of consonance-dissonance relationships, nor of predominantly linear constructions. Instead, counterpoint is a 'polymorphic' construction, in which the degree of parametric identity and difference of multiple simultaneous musical objects is structured across time. This conception is underpinned by a conception of music, derived from Richard Barrett and Adam Harper, as 'space', and in particular, the idea of a musical composition as a 'world', inspired by Alain Badiou's theory in *Logics of Worlds* (2009). In this conception,

musical space is made up of parametric ‘dimensions’, each of which is a continuum from maximal to minimal values. These parameters are not limited to the four associated with integral serialism (pitch, duration, timbre, and intensity), but extend to any compositionally controllable property of sound or performance. The goal of counterpoint considered as ‘world determination’, then, is the exploration of a particular music space (a compositional ‘world’) in order to deliver intense experiences of this space and the objects it gives rise to, as well as of what difference itself is.

This project shows the development toward this idea of counterpoint, beginning with two ‘false starts’ in the form of two different trios: *Trio for Trumpet, Guitar and Percussion* (2013) and *Quite Early Morning, no. 2* (2014), included as appendices. After these works, there is a relatively clear trajectory from a linear conception of counterpoint to a ‘polymorphic’ counterpoint based on identity relations. The first work of the folio, *a new day in the desert* (2014), is a quintet for bass flute, clarinet, violin, cello and piano. This work is based on a ‘polyvalent’ approach where lines are structured according to the semi-intuitive concept of ‘character’, and long-range temporal tendencies and relations between lines are largely the (unanticipated) result of independent processes. *Si el clima fuera un banco* (2015), a work for solo piano and audio playback, essentially continues this approach to counterpoint though with greater clarity of musical extremes and with fruitful experiments in methods of distributing parts in time and in registral space. The following work in the folio, *Kampflieder* (2015–16), a chamber orchestra work, for the first time develops a logical approach to the construction of identities in the work and moves decisively towards a ‘group polyphony’ and ‘statistical’ composition. The solo flute work, *warped passages* (2016), and the septet *braneworlds* (2016) finally show a logical method of composing based on identity relations between musical objects within a delimited parametric space, where sections (or ‘regions’) define different sets of relations.

**Statement of Originality**

*This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.*

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Liam Flenady

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## Chapter 1: Introduction

### Project Overview

#### **Research context: My practice.**

I began this research project in February 2013, having commenced studying composition in 2006. At the time, I had already started to make a shift from a relatively unilinear, process-based compositional approach that had characterised my immediate post-undergraduate years from around 2009 to 2011 to something more complex and multifaceted. I had felt increasingly dissatisfied with works that too clearly demonstrated their basic compositional construction and left me unengaged as a listener.

By 2012, I had begun to be interested in the term ‘counterpoint’ and started composing works with polyrhythmic grids, influenced by Elliott Carter’s techniques (see ‘Historical Influences and Affinities’, p.31). My concern at the time was to ensure the independence of lines within the creation of richly interwoven polyphonic textures. For me, as for many people, counterpoint was largely associated with the 18th century technique of J.S. Bach, in particular his *The Art of Fugue*. I had grown up in a fairly working-class household in the suburbs to the south of Brisbane, Australia, a very musical household, but whose musical inclinations were toward jazz and pop music. Later, when I studied my undergraduate at Queensland Conservatorium, I majored in jazz guitar for the first two years. In the final two years, I switched to a composition major but I always felt that I was ‘behind’ in my development, or something of a compositional dilettante, since I lacked a deep familiarity with the classical tradition, but most of all because I lacked a formal training in 18th century counterpoint. I know I’m not the only student of jazz who has had this feeling of deficiency, nor, even, the only composer, as indicated by Mahler’s admission that he was “suffering from a lack of strict counterpoint” (quoted in Adorno, 1992, p. 111), and Schubert’s similar statement in the last year of his life, that “for the first time I see what I lack” and his brief attempt before his death at the study of counterpoint to ‘correct’ this (Gibbs, 2000, pp. 166–167).

Counterpoint came to signify something crucial about the Western classical tradition, something that I wasn't trained in. However, I felt that despite, or perhaps because of this lack of training, I had glimpsed something of the 'essence' of counterpoint, outside of its technical dimension. Initially, a large motivation was the fact that I believed that counterpoint (whatever its precise meaning) was lacking in most contemporary composition, and, since it represented some essential aspect of Western music, much contemporary music had 'lost its way'. My mission, therefore, was largely that of a restorer.

Despite this conservative tendency, there was also an ideological motivation based on my political convictions as a left-wing activist. The political argument for counterpoint was double: firstly, counterpoint could be seen to be a representation of utopian social relations, a harmonious, free and equal interaction of elements; secondly, counterpoint could be a vehicle for the 'dereification' of music (see section on 'Quite Early Morning, no. 2' in Chapter 3). The latter is a Marxist concept that refers to the way in which the commodity form obscures the social relations that constitute it (Burris, 1988, p. 23). I use the term in the broader sense given to it by Adorno, where it is equated with a totalising 'identitarian' conception of the object: "all reification is a forgetting: objects become purely thing-like the moment they are retained for us without the continued presence of their other aspects: when something of them has been forgotten" (Adorno & Benjamin, 1999, p. 321). In my understanding of counterpoint, this meant that a 'dereified' musical object was one in which its complex and contradictory elements were foregrounded, rather than allowing the listener to perceive a single, totally unified object.

This mix of a radical ideological justification and an essentially culturally conservative one may seem strange, but it is in fact part of a particular logic common to many Western Marxists (Adorno in particular) who see only decline in cultural development under late capitalism, dominated as it is by processes of commodification, alienation, and reification. At the outset, this research made a series of assumptions based on this ideological background: contemporary music had succumbed to tendencies of reification, the best vehicle for dereifying music was counterpoint, and therefore we need a return to the use of counterpoint in contemporary art music. By mid-2014, this had led to a highly intuitive, linear

approach to polyphonic writing that, while not sonically uninteresting, lacked a clear direction forward and felt expressively constrained, and which, because of its conservative orientation, in fact failed to produce a ‘dereifying’ aural experience.

A large part of the process of the PhD was jettisoning these simple assumptions, casting off the backward-looking cultural politics, and finding what remained, for me, of the idea of counterpoint. Decisive in this was my move to Europe with my partner Hannah (first to Cologne, and then Brussels) from early 2014 to early 2016, and in particular the year of monthly lessons I had privately with Richard Barrett from 2015 to 2016.

Lessons with Richard Barrett were crucial in helping cement a different basis for thinking about counterpoint. Alongside a host of important specific thoughts about composition, Richards’s lessons fundamentally challenged my emphasis on tradition and traditional categories such as ‘tension-and-release’, ‘expectation-disruption’, as well as philosophical categories of negation, such as ‘dereification’. As I wrote after one critical lesson (blog post (BP) June 21, 2015), one of Richard’s central arguments to me was that, rather than bemoaning what has been lost in the movement away from traditional categories of Western art music, or trying to find ‘equivalents’ to them within updated materials, we should be embracing the possibilities inherent in the new. If this means that the old criteria for judgement of a piece’s success need to be discarded, then that is a small price to pay for a more liberated imagination.

All of these experiences paved the way for my current conception of counterpoint as ‘world determination’, an experimental approach to the exploration of musical works conceived of as ‘worlds’, their ‘scope’ or degree of heterogeneity and the relations of identity and difference that can be constructed between simultaneous sound parts within them.

Another decisive factor in this development was my close collaboration with my ensemble Kupka’s Piano.<sup>1</sup> This has allowed me to explore and experiment with new approaches to notation and composition with the ability to integrate feedback from performers, make alterations to the score, and hear it performed at a high level.

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<sup>1</sup> See Appendix 2 for an overview of Kupka’s Piano and my role in the group.

This extends in particular to the two solo works I composed for Kupka's musicians Alex Raineri and Hannah Reardon-Smith. This engagement allowed the project to have a fairly coherent iterative structure of composition, workshop and performance, and reflection. Beyond this, my other activities with the group, including programming, rehearsal assistance, and performance, have had an impact on my compositional approach that is hard to quantify. They allowed me to get to know quite intimately the properties of the sounds of the instruments of the group, their technical aspects, how complex chamber music is coordinated in an ensemble, as well as the compositional techniques of a variety of different composers.

These experiences combined allowed me to abandon the feeling that I was 'deficient' with regard to the classical tradition, from which the initial desire for studying 'counterpoint' had sprung. It was replaced instead with a freer and more confident practice and one that seems more relevant to the 21st century, or at least to myself as a subject of the 21st century.

### **Research questions and structure of dissertation.**

As this timeline and the above narrative account implies, the nature of the project's research questions themselves were examined and changed over the course of the research. In my confirmation paper at the end of 2013, I outlined my fundamental research question as the following: "How can I develop an artistically satisfying approach to contrapuntal composition using 21st century musical materials?"

In retrospect, this strikes me as a strange formulation, and it assumes a number of things I no longer believe are true: firstly, that there is a neat separation between 'counterpoint' on the one hand and 'materials' on the other; secondly, that there is such a thing as a unified set of '21st century materials' rather than a diverse range of practices that have different implications for composition; and finally, that there exists a relatively stable idea of 'contrapuntal composition' that could be, in a sense, 'updated' by being filled by these new materials. These issues will be discussed further in the second and third chapters of this dissertation, but the essential change in perspective was from an idea of *updating* counterpoint via new

materials, to *rethinking* counterpoint according to a new logic, hopefully seeing 'form' and 'material' as essentially the same.

Thus, the central research question shifted, and can now be phrased as such: "What could be an artistically satisfying aesthetics and method of composing music based on rethinking counterpoint beyond its historical forms?"

From the vantage point of the present, the central concerns of the research project, which can be formulated as research sub-questions, are as follows:

- *Aesthetics*: What is 'counterpoint' and how might it be relevant today when abstracted from its historical forms?
- *Relation of parts*: How can parts in a contrapuntal structure be both differentiated and unified?
- *Form*: What global formal structures could be suitable for creating coherent contrapuntal compositions? How can global form influence counterpoint?
- *Scope of world*: How should individual parts be structured in order to facilitate a contrapuntal logic, and how much overall homogeneity or heterogeneity of structures in a work is desirable?
- *Compositional process*: What compositional processes emerge from the practical attempts to answer these questions in musical works?

In attempting to answer these questions, the structure of the dissertation is as follows: Chapter 2 treats the question of aesthetics, providing a rationale for my focus on counterpoint, examining the context of my contrapuntal compositional practice, and delineating the terms 'counterpoint' and 'polyphony'. It outlines the historical contrapuntal approaches that I was influenced by or identified an affinity with across the course of the research. The chapter then examines two major modern theories of counterpoint that have been of particular significance to my research, namely that of T. W. Adorno from the 1950s and 60s, and that of Claus-Steffen Mahnkopf in recent times. This chapter ends with an exposition of my own theoretical framework for my contrapuntal practice as it stands at the end of this project.

Chapter 3 provides an overview of the two 'false starts' to the research process. It briefly describes the compositional approaches taken in the first two

significant works composed during the research, *Trio for trumpet, guitar and percussion* (Flenady, 2013; hereinafter *Trio*) and *Quite Early Morning, no. 2* (Flenady, 2014a; hereinafter *QEM2*), their theoretical underpinnings and my critical responses to them at the time. In doing so, it attempts to clarify the starting point of the research process represented by the works in the folio, from *a new day in the desert* (Flenady, 2014b; hereinafter *desert*) to *braneworlds* (Flenady, 2016c).

With this established, Chapters 4–9 outline the elements of the contrapuntal thinking behind each of the works in the folio. The aim is to support the compositions themselves by showing how the compositional approach of each work responded to observations made from previous works as well as theoretical developments. Each chapter groups compositional elements, though not necessarily in the same order, according to the four remaining sub-questions above: *relation of parts*, *form*, *scope of world*, and *compositional process*. As is perhaps inevitable in a compositional approach that tries to do away with sharp distinctions between material and form, and between counterpoint and what is counterpointed, the research questions often overlap to a large degree when it comes to the practice itself. Thus, issues that touch upon form are often discussed under *relation of parts*, issues that significantly impact on relations of parts are sometimes discussed under *scope of the world*, and so on. The core questions nonetheless remain conceptually distinct.

My concluding chapter identifies some key trajectories of the research and outlines six core principles of the counterpoint that I practice. The Epilogue reflects on the projects I am undertaking in the immediate future and the role I feel this contrapuntal perspective will play in shaping these compositions.

### **Makeup of the folio.**

The folio comprises two works for small chamber group (quintet and septet), one work for large ensemble (15 musicians), one work for piano with electronics, and one for solo flute. In total, the works of the folio have a duration of approximately 64 minutes.

In addition to these, there were several works that I composed, or began composing, during the course of the research. In general, these are not included

because I do not feel they are of a sufficient compositional standard or would not contribute anything significant to the arguments made in the dissertation. Where relevant, these are referred to in the text. The early works *Trio* and *QEM2* are included as Appendix 6 and 7,<sup>1</sup> respectively, and discussed in Chapter 3. I discuss the incomplete *Mirror Motets* in a short ‘Interlude’, due to their significance in relation to the development of my compositional techniques. The works in the folio are outlined below. The beginning of each chapter gives a summary of the context and basic concerns of each work.

#### Work 1: *a new day in the desert*

Composition period	September–December 2014
Duration	Approx. 7'
Rehearsal and workshop period	March–April 2016
First performance	Kupka’s Piano, April 19, 2016, Judith Wright Centre, Brisbane
Recording in submission	First performance
Relevant blog posts	<a href="https://usageandcontinuation.com/category/music/my-works/desert/">https://usageandcontinuation.com/category/music/my-works/desert/</a>

#### Work 2: *Si el clima fuera un banco*

Composition period	January–May 2015
Duration	Approx. 18'45"
Rehearsal and workshop period	January 2015; May 2015; April–May 2016
First performance	Alex Raineri, June 19, 2015, Judith Wright Centre, Brisbane
Recording in submission	First performance
Relevant blog posts	<a href="https://usageandcontinuation.com/category/music/my-works/si-el-clima/">https://usageandcontinuation.com/category/music/my-works/si-el-clima/</a>

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<sup>1</sup> Recordings of these Appendices can be found at: [usageandcontinuation.com/works/](https://usageandcontinuation.com/works/)

*Work 3: Kampflieder*

Composition period	August 2015–December 2015
Duration	Approx. 12'
Rehearsal and workshop period	March 2016
First performance	Melbourne Metropolitan Sinfonietta, Elliott Gyger (cond.), March 18, 2016, Melba Hall, University of Melbourne.
Recording in submission	First performance
Relevant blog posts	<a href="https://usageandcontinuation.com/category/music/my-works/kampflieder/">https://usageandcontinuation.com/category/music/my-works/kampflieder/</a>

*Work 4: warped passages*

Composition period	January–May 2016; October 2016; January–February 2017
Duration	Approx. 11'
Rehearsal and workshop period	February 2016; October 2016; January–February 2017
First performance	Hannah Reardon-Smith, January 17, 2017, Melbourne Arts Centre (partial performance).
Recording in submission	Workshop recording, 11 February, 2017, Queensland Conservatorium by Hannah Reardon-Smith.
Relevant blog posts	<a href="https://usageandcontinuation.com/category/music/my-works/warped-passages/">https://usageandcontinuation.com/category/music/my-works/warped-passages/</a>

**Work 5: *braneworlds***

Composition period	May–September 2016
Duration	15'
Rehearsal and workshop period	September–October 2016; December 2016
First performance	Kupka's Piano, October 7, 2017, Judith Wright Centre, Brisbane.
Recording in submission	Rough mix of studio recording for Kupka's Piano's debut album for release in late 2017.
Relevant blog posts	<a href="https://usageandcontinuation.com/category/music/my-works/braneworlds/">https://usageandcontinuation.com/category/music/my-works/braneworlds/</a>

## **Methodology**

As an artistic research project, the compositional process is the primary means by which I investigate the above research questions, and the compositions (in the primary form of scores, but also performances and recordings) represent the primary research outcomes and the main vehicle through which new knowledge is both created and disseminated. The project can be characterised as ‘research *in and through* artistic practice’, as distinguished from research *on* or *for* artistic practice, although there is no hard and fast distinction between the three approaches in practice (see Borgdorff, 2012, pp. 146–147).

### **Research process.**

The core of the research methodology in this project is Hans-Jörg Rheinberger’s concept of the ‘experimental system’. Borgdorff (2012) describes it thus:

Experiments are not merely methodological vehicles to test (confirm or reject) knowledge that has already been theoretically grounded or hypothetically postulated, as classical philosophy of science would have it. Experiments are the actual generators of that knowledge – knowledge of which we previously had no knowledge at all. (p. 189)

Therefore, experimental systems are, at least in part, *generators* of non-prefigurable knowledge, entering the world as “unknowns” (Schwab, 2015, p. 120). These systems comprise ‘technical objects’ and ‘epistemic things’. For Borgdorff (2012), the latter are the “things we *want to know*” (p. 190)—in the context of this study, these are the works themselves. The former are the various “objects *through which we can know*” (p. 190)—in this context, the various ‘precompositional’ technical and theoretical constructions that give birth to particular works. Of course, the separation between the two is context-dependent: epistemic things can become technical objects as they become “conceptually stable” in relation to a practice (Schwab, 2015, p. 122).

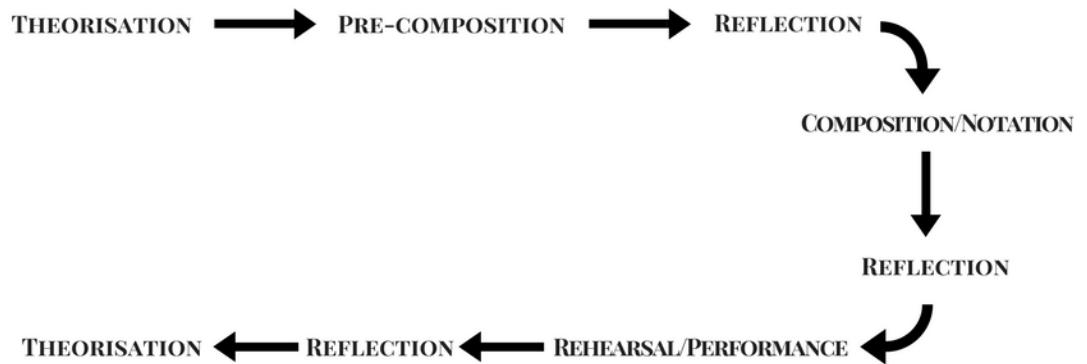
A key characteristic of the experimental system conceived in this way is that they must be open enough “to produce what we do not yet know” (Schwab, 2015, p. 122).

An experimental system, as deployed in my own research, does three things: tests for correlations between conscious intention and outcome of the experiment, tests for non-correlations, in which expectations were disappointed, and allows space for the emergence of unexpected results. These dimensions either reveal an element completely not considered, or reveal an unconscious assumption that could not have been made transparent to conscious but through practice and experience.

This research involved an iterative process of practice, reflection, and theorisation. Practice involves the construction of ‘experimental systems’ in the form of compositional plans, their execution in compositions, and their rehearsal and performance processes. Reflection primarily took place through writing blog posts (cited as ‘BP’ throughout this dissertation) outlining what my thoughts were about a piece at the relevant stage of the process, evaluating results, and drawing implications for further work. Theorisation involved reading aesthetic, practical, and broader philosophical texts, listening to recordings and studying scores from the literature, and consciously attempting to formulate broader frameworks and perspectives about counterpoint, sometimes through blog posts, sometimes through conference papers or articles (Flenady 2015a, 2015b, 2016a, 2017b).

Within this, the role of my blog usageandcontinuation.com has been invaluable. It has allowed for a relatively organic and consistent reflective practice to accompany the composition process itself, even when updates were sporadic. This resulted in 131 posts across the course of the research relating to my compositional practice or the development of my concept of counterpoint with an average length between 800 and 1000 words. Each work in the folio has at least four posts specifically dealing with issues of its composition or realisation. As stated above, my ensemble Kupka’s Piano has also played a major role in the research methodology, providing consistent feedback in the form of rehearsals, workshops, discussions, performances, and recordings. Figure 1.1 shows a simplified model of the research process for each work.

*Figure 1.1: The research process*



Coessens et al. (2009) have argued that artistic research oscillates between ‘goal-oriented’ structure and rigour on the one hand, and openness and creativity on the other, since it is situated between scientific practices and artistic practices (pp. 56–57). As this dialectic of structure and openness suggests, therefore, the various stages of my research process were far more entangled. This deviates from the above model due to the nature of creative processes, but allowed me to develop not only a clearer concept of counterpoint in my practice, but also a stronger understanding of ‘experimentation’ in my compositional process. Metaphorically, these stages regularly overlapped and created a polyphonic discourse of their own. This can be seen in the Project Timeline and the Makeup of the Folio: some works, such as *desert*, were not performed until well after the period of composition, during which time other works had been composed and performed. This meant that various stages of reflection and feedback were delayed, and potential insights from one work were not integrated into following works. Consequently, ideas were often developed in one piece and dropped in the next, only to re-emerge in modified form in a later work; however, this does not negate the essentially chronological and iterative dimension of the folio, and so the works are examined in a chronological narrative.

The third element to the research, ‘engagement’, involves all the elements of my artistic practice that extend beyond the direct work on the project: attending concerts, festivals, conferences, seminars and academies, taking lessons with

various composers and musicians, attending political demonstrations and forums, visiting art galleries or watching films, and having discussions with performers and composers from around the world.

Each of these elements—theorisation, practice, reflection, and engagement—are present in my ordinary practice as a composer. However, Borgdorff (2010) outlines a number of criteria by which artistic practice can be considered research, of which the following are of particular relevance to this study: 1) Intent—artistic research must be undertaken “*for the purpose of* broadening and deepening our knowledge and understanding of the discipline” (p. 54); 2) Originality—artistic research must make “original contributions” to knowledge, not just original contributions to art practice itself (p. 55); 3) Context—artistic research must consider its “embeddedness and situatedness in history, culture..., as well as the discourse on art,” in addition to the research context itself (pp. 56–57); 4) Documentation/dissemination—both the research process and research findings must be documented and disseminated in ways suitable to both the requirements of the academic and artistic communities (pp. 57–58).

### **Epistemology.**

With this in mind, the question arises of what exactly the knowledge produced by artworks is.

Numerous philosophers have put forward the view that art articulates a non-discursive, pre-reflective and experiential knowledge that is resistant (or inaccessible) to propositional knowledge, from the German Romantics such as Schelling and Schlegel, through to phenomenologists such as Heidegger, and deconstructionists such as Derrida (Bowie, 2003). As Borgdorff notes, this pre-conceptual knowledge goes well beyond simple bodily technical knowledge, extending to art’s ability “to impart and evoke fundamental ideas and perspectives that disclose the world for us” (p. 172). Supplementing a scientific rationality, which knows things through the mediation of concepts, the knowledge presented in art relates to “the fact that our natural relationship with things we encounter is more intimate than we can know” (p. 171).

Borgdorff (2012) notes that artistic research may contain two fundamental perspectives about the role of the knowledge created in artistic practice. Firstly, a constructivist perspective suggests that art fundamentally constitutes and adds to the reality that we experience: “Only in and through art do we see what landscapes, soundworlds, histories, emotions, relations, interests, or movements really are or could be” (p. 172). Secondly, there is a hermeneutic perspective arguing that art’s function is to reveal or disclose aspects of the world and ourselves as we experience them. He defines these as the “world-constituting” and “world-revealing” powers of art, and suggests that this dual-nature of art invites us to a form of “unfinished reflection” (pp. 172–173). Artistic research is then simply the “deliberate articulation of such unfinished thinking” (p. 173).

In the context of this research project, my artistic work both constitutes experiential worlds that could not be experienced without them, while also revealing aspects (on a pre-reflective level) about simultaneity, contrast, and difference more broadly, that are inaccessible—because essentially experiential—to propositional knowledge.

How is this non-discursive form of knowledge accessed? This is one of the fundamental challenges of artistic research as a discipline. According to Marcel Cobussen (2007), a non-discursive form of knowledge is in part bound up in the art-object itself, and irreducible from it. As such, the art object is the best medium for its dissemination:

knowledge can articulate itself outside of discursive practices, outside spoken and written language, and ... this kind of knowledge cannot be generated otherwise than in or through the production of art. The art work is not a practical aid which rushes in to help the discursively presented conclusions; it is itself the statement and the conclusion. (p. 19)

What this means is that the folio of works is the primary bearer of the new knowledge generated in this research project. The role of this dissertation is to outline the ‘experimental systems’ that I elaborated in creating the works in the folio. In doing so, I outline the correlations and disjunctions between the experimental systems and what they produced (the works as physical and sonic

events and artifacts), as well as the conclusions and impulses that I drew from the results at each stage in the research process. The conclusions presented at the end of the dissertation attempt to make an overarching assessment of the results of the research period from the standpoint of the present, with the view to further artistic creation.

Ultimately, there is a set of three intersecting perspectives from which the works in the folio can be viewed, with increasing levels of semantic instability, each giving access to a different aspect of the knowledge created in the research project. Firstly, the dissertation provides a context in which the experimental systems of the different works can be compared and the conclusions drawn from them can be assessed, in the context of contemporary composition more broadly. Next, the folio itself provides a context for the understanding of the works in relation to each other, how each work ‘thinks’ each other and gives rise to commonalities of experience and technical concerns. And finally, each work can be experienced as an individual ‘epistemic thing’ with a high degree of polysemy, whose role is not to “shed light on artistic practice,” but, as Borgdorff suggests, to “invite us to think” (p. 72).

## Chapter 2: Aesthetics of a New Counterpoint

This chapter establishes the aesthetics of my current contrapuntal practice. It begins with clarifying three basic aspects of this theory, namely: the contemporary relevance of the study and practice of counterpoint, the status of contrapuntal practices beyond Western art music, and the distinction between polyphony and counterpoint. It then proceeds to outline important composers in the history of Western art music that have been influential in the development of the compositional approaches taken in this research, before critiquing two key theories of modern counterpoint. Finally, it provides an exposition of the aesthetics of counterpoint as ‘world determination’.

### Why Counterpoint?

The various practices of counterpoint throughout history have been bound up with myriad aesthetic and ideological valorisations. While the music of J.S. Bach was seen in parts of German society around 1900 as a redemptive or restorative force against decadence (Frisch, 2005, p. 139), his counterpoint was in the 18th century associated with political autocracy, hermetic practices of alchemy and scientific rationality alike (Yearsley, 2002).

In the Middle Ages, organum, a set of rules of tone combination, was derived from neoplatonic theories of *Musica* as an abstract study of harmonics that “mirrored the essential harmony of the cosmos,” while modifying them to suit contemporary polyphonic practices (Taruskin, 2005, p. 70; Tenney, 1988, pp. 17–18). On a political level, Taruskin (2005) has pointed out that the proportions within Ars Nova such as those of Johannes Ciconia motets hint at their ideological role in symbolically representing a “harmoniously integrated society of free individuals”, that is the image of the city-state or republic, via the the *discordia concours*, or ‘harmonious discord’ (p. 277). In Goethe’s ears four centuries later, the counterpoint of the classical string quartet was that of a “four rational people conversing”, and as such a model of enlightenment values (Bashford, 2003, p. 4).

For Hindemith, counterpoint should be practiced for the moral benefit it bestows upon the individual subject, as a listener, performer or composer, since it involved a balance of mind and body, social harmony, and purposive mental effort

(Chapin, 2006). From another angle, Claus Steffen Mahnkopf's (2002a) more recent suggestion that complex counterpoint forces the listener into a critical self-reflection on the listening act itself, is also tacitly an argument for counterpoint as a kind of moral experience raising them to a higher moral level than that of immediate sensuous enjoyment (p. 43).

Counterpoint for composers like Mahler and Ives was part of an attempt at 'realism', an imitation of life itself, both in its 'outer' and 'inner' dimensions, aiming at expansiveness, inclusiveness, as well as contradictions and chaos (Adorno, 1992, p. 112; Perry, 1974, pp. 60–64).

Equally, counterpoint has been criticised throughout history, usually with a variant of the same argument: that it obscures the clarity of the ideas being transmitted, whether that be the intelligibility of the words as at the Council of Trent in the 16th Century (Grout and Palisca, 2001, pp. 234–235), or the beautiful simplicity of nature to which musical form should aspire, as argued by Enlightenment thinkers such as Rousseau and Matheson and proponents of the *style galant* such as Quantz (Currie, 2012, pp. 42–43; Hertz and Brown). This debate—whether counterpoint is somehow a revelation (whether divine or rational) or an obscuration (an arcane foolery, or a Wizard-of-Oz-like facade)—was played out multiple times throughout the 20th century. Its most recent instance was perhaps the long-running debate over 'new complexity', even if the concept of counterpoint or polyphony was mentioned less than the notational and rhythmic aspects of this musical approach (Toop, 1993 and 2013).

In the 20th century, counterpoint was often taken up as a metaphor for social and political forms of human organisation. Mikhail Bakhtin saw in Dostoevsky's novels an image of a polyphony as a radical, liberal ideal for society in which "a plurality of independent and unmerged voices and consciousnesses" of equal standing "are combined ... into the unity of a given event, while at the same time retaining their unmergedness" (Bakhtin, 1973, p. 4). Bakhtin's notion has been taken up in disciplines ranging from childhood learning (Aro, 2009), to trauma studies (Müller, 2012), to organizational studies, pointing to the benefits of the "diversity and interdependence" of a 'polyphonic' approach to modern workplaces (Belova et al., 2008, p. 496).

Theodor W. Adorno saw modern counterpoint as a metaphor for a liberated human community, one where the individual subject was sovereign (unlike medieval and renaissance counterpoint), but in which difference was not subordinated to identity. This, nonetheless, remained a utopia, since Adorno (1999) was at pains to show that such a community is absent in reality, suggesting that “the contemporary evolution of the contrapuntal spirit offers us the paradox of a multivoiced music without a community” (pp. 126–127). Similarly, though more optimistically, Edward Said repeatedly spoke of polyphony as a model for a postmodern form of human emancipation, conceived of as the preservation of differences (Telmissany and Schwartz, 2010). For Said, counterpoint provided a method both for comparative literature, and also for thinking about society more generally. In discussion with Daniel Barenboim, Said outlines this vision for art and society:

It seems to me that the basic humanistic mission today, whether in music, literature, or any of the arts or the humanities has to do with the preservation of difference without, at the same time, sinking into the desire to dominate. (Barenboim and Said, 2002, p. 154)

Counterpoint is often seen to represent one of the most abstract and hermetic tendencies in Western composition. Yet, as Yearsley (2002) suggests about Bach, “no mere abstraction would have inspired such intense and diverse reactions” (p. xiii). The above reflections show that Yearsley’s statement can be seen to apply to counterpoint as a whole. Moreover, according to composer and theorist Claus-Steffen Mahnkopf (2002a), it also “represents one, if not *the* constant in western music since the period of St. Martial [in the 20<sup>th</sup> century] (at the latest)” (p. 38). As such, the pursuit of counterpoint in the 21st century is no mere academic pursuit, but maintains some form of relationship—metaphorical or more practical—with our understanding of socio-political life and Western history in general.

### **Counterpoint Beyond Western Art Music**

The idea that counterpoint is fundamental to Western music was often coupled with a belief in counterpoint as a project of reason in music. This theme of a ‘rational’ system of music making has been articulated by many of the key theorists

of counterpoint from very early in its history, including De Vitry in the 14th Century (De Vitry and Plantinga, 1961), Tinctoris in the 15th (Sachs and Dahlhaus, §6), Zarlino in the 16th (Zarlino, 1976), all the way up to Adorno's (1999) 20th century identification of counterpoint with an 'analytic function' in music (p. 130). Max Weber (2001) argued that this rationality was specific to the West; that while different kinds of polyphony can be found around the world, nonetheless, "only in the Occident" could you find a "rational" and "harmonic" counterpoint (pp. xxix-xxx).

Counterpoint, including elaborate codified systems of relations between voices, is not, however, unique to the West, despite Western hegemony over its theorisation. Outside of the West, there have been and remain many rich polyphonic musical practices, with their own logics, rules, and techniques for the simultaneous combination of voices, within varying degrees of composed and improvisatory frameworks. Polyphonic practices abound in Mediterranean (Bithell, §2) and Russian and Eastern European (Zemtsovsky, §3) folk practices, including canonic practices and pieces composed of multiple simultaneous songs. Certain African cultures also feature richly polyphonic vocal and instrumental folk practices, such as Nguni vocal music, in which staggered entry of voices and choral ostinatos provide polyphonic linear independence, and music of the Aka pygmies with their four different functional melodic types from which each singer in the texture can choose (Cooke, §4). Much traditional music of the Central African Republic is based on complex interrelated ostinatos, featuring imitative procedures, hockets, and melodic and rhythmic counterpoint (Arom, 1991, pp. 39–43). Further east, Perlman (2004) notes that gamelan practices of Java show a multipart music that, while often referred to as 'heterophony' by Western scholars, is more defined by its practitioners by social concepts of individuality and accord of parts, as well spatial metaphors of distance, proximity, and dis/similarity of motion (pp. 61–62).

Within the West itself, while classical music may have a monopoly over contrapuntal theory, the same cannot be said for polyphony as a practice. Notably, various styles of jazz, from early Dixieland to the Bill Evans trio, to Ornette Coleman's free jazz, and Miles Davis's 'fusion' music in the late 60s and early 70s, all demonstrate sophisticated approaches to simultaneous melodic and rhythmic

playing, with varying degrees of harmonic and rhythmic coordination of the various parts. While popular music from the 1950s to today is generally characterised by monodic textures, there are numerous artists and styles that feature elaborate countermelodies and multi-layered grooves. Examples include: The Beach Boys' vocal and instrumental polyphony in *Pet Sounds*; much of Radiohead's output (in particular, 'Paranoid Android', 'Nude'); the counterpoint of the guitar and vocal parts in The Smiths ('This Charming Man', 'Still Ill'); Björk's multi-layered textures ('Crystalline', 'Wanderlust', 'Pagan Poetry'); Kate Bush's overt melodic polyphony ('The Sensual World', 'Rocket's Tail'); Kendrick Lamar's sophisticated hip-hop textures in *To Pimp a Butterfly*; and collage DJs such as The Avalanches ('Electricity') and DJ Shadow ('Building Steam with a Grain of Salt'). A full survey of these practices, their logics of construction and of performance, identifying commonalities and divergences across practices, is outside of the scope of this project.

This research situates my compositional practice in relation to the tradition of Western art music. While I have begun to turn a critical eye on the motivation for my identification with this tradition, it essentially remains the context of the work of this folio, and I nonetheless retain a core conviction regarding rational musical construction, invention and, of course, counterpoint itself.

### **On the Distinction Between Counterpoint and Polyphony**

For centuries, there have existed two terms for the designation of music with simultaneous independently moving parts: counterpoint and polyphony. In the *New Grove* entry on polyphony, Frobenius suggests that the two terms are "practically synonymous" for the majority of Western music history and scholarship (Frobenius, §7). However, he also points out that there have been various efforts to distinguish the two. A common practice is to refer to multi-part medieval and renaissance music, which pre-dates *seconda prattica* and the advent of tonal harmony, as 'polyphony', and to refer to multipart baroque music, with its synthesis of harmonic motion and linear independence, as 'counterpoint' (Sanchez-Behar, 2008, pp. 14–15). This might explain the preference of the term 'polyphony' over 'counterpoint' in composers of the post-war generation, whose multipart atonal music often sought inspiration from earlier polyphony (Brindle, 1987, pp. 139–140), a general tendency

that seems to continue today. Conversely, Carl Dahlhaus has argued that a distinction based on harmony was untenable, since music before 1600 certainly had methods of ‘regulating’ the “joining together of simultaneities,” which Dahlhaus suggests is the essence of harmony (Sachs and Dahlhaus, §12).

Adorno (1999) argued that the distinction relates to the question of hierarchy: polyphony, belonging to an era of “pre-bourgeois collectivity,” arranged its parts with “more or less equal importance,” while counterpoint, assuming the historical ideology of the ‘sovereign subject’, “is the procedure that adds to one or more principal voices one or more independent voices that are secondary in comparison, and on a graduated scale” (p. 126). While this distinction is perhaps of historical use, its philosophical commitment to thematic music renders it unhelpful in understanding post-1945 musical construction.

Perhaps the most common distinction takes counterpoint to represent a particular set of rules, or a system or method, that can be theorised and taught, with polyphony instead understood as the ‘style’, or sonic result of such rules (Sachs and Dahlhaus §12). Palisca gives one of the most obvious examples of this idea, whereby polyphony describes, in a general sense, “a musical texture in which several parts are sounded together but which may not be the result of any rational method” (as cited in Sanchez-Behar, 2008, p. 15). Counterpoint, then, is the ‘technique’ of combining lines such that there is relative independence between the parts, but that this relative independence is governed by some rational system that also provides the basis for their unity. This idea that counterpoint represents ‘reason’ in music has a long heritage as mentioned above, and was perhaps best demonstrated in Tinctoris’s treatise *Liber de arte contrapuncti* from 1477, in which he describes counterpoint as “restrained and thought-out [*rationabilis*] polyphonic composition created by setting one sound against another,” as distinct from polyphonic textures created by improvisation (Sachs and Dahlhaus, §6).

In this thesis, I likewise choose to maintain a distinction between the two terms. Counterpoint, as I use the term in this dissertation, is the logic of interrelation of elements in a texture according to their relative identity or difference. The first half of the term, *counter*, highlights the essentially *relational* and *oppositional* aspect of this idea of musical construction. The second half of the term, *point*, may seem

somewhat anachronistic, since my theory of counterpoint is not one of ‘voice-leading’ or ‘dissonance treatment’ between separable musical ‘points’ or notes. Nonetheless, points can also be conceived in a broader sense of the ‘point’ (or ‘region’) of the multidimensional musical space created by the work that defines an object relative to that space (see section on My Perspective). Polyphony, then, is one possible texture type (as opposed to homophony or heterophony) to emerge from this logic.

While any musical work or performance can be viewed in terms of the identity relations between simultaneously sounding musical elements, my creative work experimentally constructs systems where this contrapuntal dimension is the central compositional logic. Therefore, throughout this dissertation, counterpoint will be referred to more often than polyphony, and will specifically signify this idea of identity relations.

### **Historical Influences and Affinities**

This section aims to sketch out how I contextualise my practice with regard to major developments and figures within the history of Western art music. Its purpose is not to provide a comprehensive overview of the history of counterpoint, but to identify a number of different composers and styles that, across the course of the research, exerted a particular influence, particularly with regard to the development of the idea of ‘polymorphic counterpoint’.

#### **Carter, Grisey, and medieval motets.**

Early in the research, the figure of Elliott Carter played a large role in shaping my idea of and approach to counterpoint. Although the general trajectory of the research was *away* from a Carter-inspired approach, he helped define the starting point, and a number of his techniques still exist in my music, if in a transformed way. Carter’s music showed me that a linear style can exist that is neither motivic/thematic nor 12-tone in its basic conception and still remain coherent and engaging for the listener. The free-flowing, improvisatory nature of his melodic lines combined with a rigorous precompositional approach to structuring rhythm and pitch provided a coherent framework for my early attempts at a contrapuntal style.

In retrospect, his linear style sounds both historically dated and too unique to the composer to be the basis of an approach to counterpoint in the 21<sup>st</sup> century; its angularity, its pitch material, its general density, all give it a post-war aesthetic sensibility. Nonetheless, there are two more abstract principles that can be derived from Carter for the purposes of thinking about possible approaches to counterpoint in the 21<sup>st</sup> century: his polyrhythmic grids and his approach to constructing linear ‘characters’.

As David Schiff (1998) shows in his study on Carter, the composer’s music is often fundamentally based on an abstract polyrhythmic grid, often of long-range temporal proportions of which different parts take up different temporal layers (pp. 44–47). While he is famous for his monumental works such as his string quartets, *Concerto for Orchestra* (1969), and *Triple Duo* (1982), Carter’s smaller, later works such as *90+* (1994) and *esprit rude/esprit doux I* and *II* (1985 and 1994) gave me a distilled and easily-graspable idea of his approach to rhythmic and intervallic construction. In these works, each line is assigned a different subdivision of the basic beat and grouping of this subdivision, such that each moves at a different, but proportionally related, basic tempo (Schiff, 1998, p. 140). The result is a sense of temporal independence between lines enclosed in a framework of defined interaction. Within a different aesthetic, this idea is also present in the music of Gérard Grisey. In particular, the opening movement of *Quatre Chants pour Franchir le Seuil* is based on a long-range pulse cycles that evolve at different tempos (subdivisions of the basic pulse), and only coincide every 125 beats (Sullivan, 2008, p. 126). Klaas Coulembier (2016) has argued that Carter’s music can be called “multi-temporal,” since it involves the “combination of two or more different periodicities in a structural polyrhythm,” and sometimes the “combination of different simultaneous processes, the superposition and/or interruption of characters or the asynchronicity of formal divisions” (p. 355). This macro-multi-temporal approach was influential in my formal structuring of *Si el clima fuera un banco* (Flenady, 2015c; hereinafter *Si el clima*), which is built of multiple simultaneous processes and asynchronicity of formal divisions.

This ‘multi-temporal’ approach is prefigured in medieval motet styles. In the Petronian Motet, for example, the triplum, or highest voice, “had a lively, free,

speechlike rhythm," while the middle, motetus voice was characterised by a slower, more stately rhythmic pace, and the low, tenor voice had slow, uniform rhythm, that usually defined the basic metric duration (Grout and Palisca, 2001, p. 89). Similarly, the 14<sup>th</sup> Century Ars Nova and Ars Subtilior styles, featured stratified textures according to registral position and rhythmic density, especially between the tenor and the upper voices (Sanders, §3). However, as pointed out by Newes (1977), once this stratification is established, it is often undermined by local-level imitative structures, usually in the form of short motivic exchange. This interaction of stratification and imitation had an influence on the conception of counterpoint behind the unfinished *Mirror Motets* and, to a lesser extent, *Kampflieder* (Flenady, 2016b).

The renaissance polyphonic style offered another approach to multi-temporal composition in the form of the 'mensuration canons' of Ockeghem, in works such as *Missa Prolationum*. This technique was fundamental to the construction of *Kampflieder* but was discarded in *braneworlds* since it tended to create structures I felt to be much too uncontrollable.

In addition to the construction of proportional temporal relations, Carter's counterpoint is, as Larson Powell (2002) has pointed out "not only one of lines, but also, and even predominantly, one of *character*" (p. 12). Character emerges in Carter's approach by the association of a rhythmic structure (in a field of proportionally-related tempos), a set of intervals or pitches (or a number of related sets), and timbre or colour (the instrument or set of instruments in that character) (p. 12); character can also have a bearing on other elements, such as the type of articulation predominant in a line (staccato or legato, etc), the register, and the width of the leaps in the lines. Schiff (1998) describes this aspect as "stratification"—a term I have used throughout my research—which he defines as "division of the musical texture into separate layers with contrasting harmonies, tone-colors, rhythms and expressive characteristics" (p. 46). As pointed out by Powell, however, Carter's characters can be very restrictive and rigid, limiting the possibilities for their exploration (p. 14)—a quality prominent in *Trio*.

### **Mahler, Ives, Finnissy, and Ars Subtilior.**

This counterpoint of characters is also prominent in the music of Gustav Mahler and Charles Ives. The former has been influential in two aspects: firstly, the stratified, character-driven nature of his contrapuntal writing, including orchestration seriously entering into the contrapuntal design, and secondly, the 'world-encompassing' approach of his forms. Regarding the latter, Mahler's famous remarks to Natalie Bauer-Lechner while walking through a carnival in Kreuzberg had a strong impact on my aesthetics:

Do you hear that? That is polyphony and that is where I have got it from ... Exactly like that, coming from quite different sides, this is how the themes must be completely distinct in their rhythmic and melodic character (anything else is merely something written in many parts, disguised homophony); it requires that the artist should organize it and unify it into a congruous and harmonious whole. (quoted in Adorno, 1992, p. 112)

In terms of Mahler's own music, therefore, I see my approach having affinities both with the stratified and chaotic textures of the second and third movements of Mahler's 5th Symphony (1902), and with the use of offstage brass in Symphonies 2 (1894) and 8 (1907) and the use of cowbells in Symphony 6 (1904). For Adorno, as for me, these two aspects—counterpoint and world—are directly related: "By polyphony [Mahler] obviously means the tendency toward chaotic, unorganized sound, the unregulated, fortuitous simultaneity of the "world," the echo of which his music, through its artistic organization, seeks to become" (1992, p. 112). However, it is Ives's temporal, registral, spatial, referential, and material stratification of musical parts that more profoundly puts both of these concepts of 'character' and 'world' in the foreground. Ives's counterpoint has been characterised as a "polyphony of groups" where individual parts are no longer single lines, but larger-scale structures with their own harmony and internal polyphony (Reti, 1962, pp. 172–173). In fact, this approach goes beyond the concept of 'character' towards what I term 'polymorphic counterpoint' after the theories of Claus-Steffen Mahnkopf (see below 'Major Modern Theories of Counterpoint'). Works such as *Three Places in New England* and the *Fourth Symphony* are key reference points for *Kampflieder* and

*braneworlds*, with their mass superimposed structures that split the listener's perspective and expose them to a vast and often incongruent 'world'.

Stratification and 'world-encompassing' composition are also present in the work of Michael Finnissy. Two key elements of his composing continue to play a role in my approach. First is his ability to construct lines within a very small registral compass but with a high degree of interest (through variations of subdivision, density, grace notes, trills, and mode alterations). While these are often located in very close registral proximity to produce a complex but unified texture (as in the beginning of *Keroiylu*), they can also be deployed at registral distance (as at the end of *Keroiylu* and in *Australian Sea Shanties, Set 2*), allowing for clear polyphonic textures that nonetheless have a high degree of complexity. Finnissy's lines are often also long-range and continuous, rather than short-range and gestural, which was another important influence. The other aspect is his capacity—most obviously in *The History of Photography in Sound*—for the integration of numerous referential elements without lapsing into a simple postmodern pastiche or irony, but rather to create experientially rich spaces for the imagination of musical co-habitation.

This latter approach, as with quotation in Ives, is prefigured by a number of motets and *cantus firmus* masses from the 14<sup>th</sup> century. As pointed out by Hoban (2004), these are early representatives of what he calls 'form polyphony', or, in other words, 'polymorphic counterpoint', since they combine in the one composition two (or more) layers of not just of different languages, but also different cultural and historical reference, such as borrowed folk melodies. He notes that, at the time, these may well have been heard as distinct within the composite work itself (p. 86).

### **Ferneyhough and parametric 'decoupling'.**

The music of Brian Ferneyhough has exerted a small but important influence on my works and thinking of counterpoint. His approach to the construction of metric and subdivision processes, and their interrelation, as outlined in his article 'Il Tempo della Figura' (1993), had a significant influence on the temporal construction of *desert* in particular and my accompanying conference paper 'The Ideology of Polyphonic Time' (Flenady, 2015b; see Appendix 4), but has played an ongoing role in my compositional approach. This method allowed the development

of a suppler framework for the temporal relations between lines than the polyrhythmic grids of *Trio*. Ferneyhough's more general concept of the figure, as a gestural manifestation of a variety of (potentially conflicting) parametric processes or 'lines of force' that lie, in a sense, under the surface and give individual gestures a past and future in the work (Fitch, 2013, p. 342–346), had an influence on *desert*, and left a lingering influence on the other works in the folio, but was largely abandoned in *braneworlds*.

Ferneyhough's single-instrument polyphony, most clearly demonstrated in his flute work *Unity Capsule*, and since then elaborated upon by composers such as Aaron Cassidy, Frank Cox, Klaus K. Hübler, showed the extent to which a single line can be disaggregated into multiple parametric strands, each with different temporal structures and different staves. This technique, sometimes known as 'parametric decoupling' (Castro Maragas, 2016), often involves conflicting interactions between parameters and tends to generate relatively unstable and aleatoric resultant sonorities, but with relatively controlled gestalt shapes (Cassidy, 2008). This clear dissociation and comprehensive structuration of different parameters, along with the Ars Nova practice of isorhythms, influenced the construction of complex linear processes in works such as *desert* and *Si le clima*, despite their notation on single staves. The technique of writing multiple parametric processes on different staves is used in a relatively limited way in *warped passages* (Flenady, 2017a). In general, however, this research focusses more on perceptible counterpoint, not the 'virtual' counterpoint of parameters within a single musical part, since, ultimately, this latter has a different purpose than that of constructing and defining relations between sonic objects.

### **Stockhausen and Barrett.**

While many of Stockhausen's works, such as *Zeitmasze* (1956), *Gruppen* (1957) and *Mantra* (1970), feature complex polyphonic textures, ironically, it was his less polyphonic works, such as *Stimmung* (1968) and *Momente* (1962), that most influenced the research. These works very clearly define the nature and range of a set of core parameters, which provides a coherent method for generating both the close relation and sharp differentiation of elements in a work. At the same time,

Stockhausen's concept of the 'group' allowed for the rethinking of contrapuntal parts as 'identities', supplanting the earlier concept of 'characters'. Importantly, both Richard Toop's (2005, pp. 3–4) and Richard Barrett's (2012b) interpretation of Stockhausen's overall approach as a method of musical 'exploration' has been deeply influential. Additionally, as with Mahler, the breadth of much of Stockhausen's work also informed the idea of the 'scope of the world'.

Richard Barrett has played a fundamental role in the research. In addition to my lessons across the course of 2015, much of Barrett's music and writings directly influenced some of the compositions of the folio. A significant influence on *Kampflieder*, Barrett's orchestral work *Vanity* (1994)—along with the composer's own sketch analysis of it (1996)—demonstrates a clear logic to the construction of the identities of orchestral groups. In this work, the orchestra is divided into six unconventional groups that share a number of defined characteristics and developmental processes, but also pursue their own structures semi-independently. Barrett's solo flute work *vale* (2011) was also a major influence on *warped passages*. In the former work, the pitch structure of the work derives almost entirely from the stipulation that each melodic movement must be made only by the movement of one finger, thus subordinating the melodic construction to a physical logic. The "radically idiomatic" (Barrett, 2002) approach that this represents is also discussed in Barrett's interview with cellist Arne Deforce (2015) about the work *life-form* for cello and electronics (2012a). This helped the formation of the concept of 'liberated space', where a contrapuntal logic should emerge from an alternative way of conceiving of a given musical object, such as an instrument or style. Finally, Barrett's approach to block-like formal sections that are related durationally by a series of proportions in works such as *life-form* and *world-line* (2014), influenced the formal construction and compositional process of both *warped passages* and *braneworlds*.

### **Major Modern Theories of Counterpoint: Adorno and Mahnkopf**

This section will discuss the two major theories of counterpoint by Theodor W. Adorno (in the 1950s) and Claus Steffen Mahnkopf (in the 1990s–2000s). While there are numerous other theories of the role of counterpoint in new music, these

two stand out in their scope, depth, and rigour, and have thus given me the longest, richest engagement across the course of my doctoral study.

### **Adorno and counterpoint as critique.**

Throughout his philosophical career, Adorno referred to counterpoint and the importance it held for him in his critical philosophy of music. In his famous *Philosophy of New Music*, Adorno (1973) declares that, with the advent of the 12-tone method, counterpoint “has attained primacy in composition” (p. 90), since it allows the composer “to design several voices simultaneously and to organize them into a unity without reliance upon harmonic logic” (p. 91). It is, however, in the 1957 article ‘The function of counterpoint in New Music’ that we find his most sustained attention to the subject. In this article, Adorno argues that counterpoint as such should be seen as the paradigm for an entire musical aesthetics:

A valid musical aesthetics would have to show how the spiritual substance of a work of art—what traditional philosophy called the artistic idea—is constituted in the life of its components, in the way in which they continually modify each other, forming ever new constellations. It may seem astonishing to offer up counterpoint as a paradigm for this, with its simultaneous spinning out and fitting together of relatively autonomous voices. (p. 124)

This is an “astonishing” proposition because, for Adorno, new music since Schoenberg has been progressing “objectively in the direction of total organization, integral unity” (p. 124). However, Adorno’s contention is that modern music is equally defined by the full realisation of the contrapuntal principle. Adorno charts four lines of historical musical development that led to this situation of emancipated counterpoint. Firstly, Adorno argues that harmonies become increasingly polyphonic in themselves, insofar as “Every sonority seemed to be laden with energy, to point beyond itself, and every one of the distinct individual notes contained within it required an independent “melodic” continuation of its own” (p. 127). Secondly, timbre and orchestration tended to increasingly play the role of enhancing polyphony, with less and less room for mere ‘fill-in’ parts (p. 129). Thirdly, bass lines played less and less of their traditional role of outlining root

motion, and took on increasingly complex motion, in order to maintain an ‘equilibrium’ of complexity between parts (p. 128). Finally, the growing emphasis on economy of motivic material and its dissemination throughout all the parts leads to a kind of “full plasticity” (p. 130) that requires a rigorous counterpoint. All these elements contribute to the ultimate ‘function of counterpoint in new music’, which is that of a critical rationality:

All counterpoint also has an analytic function, the dissection of the complex into distinct parts, the articulation of simultaneous events in accordance with the relative weight of its components and according to similarity and contrast. (p. 130)

In other words, counterpoint has a *critical* or *demystifying* role, designed to shatter the illusion of the unity of a sonority and open it up to its necessary development. The end goal of this critical rationality is essentially that of a ‘negative dialectic’, which brings parts into relation without subordinating or reducing any of them to the exigencies of the whole:

While all the elements interpenetrate, they also remain distinct, and the unity comes into being only though the function each of them has and by virtue of which it influences the others. It is not an immediate unity, but a unity of opposites. (p. 129)

Adorno’s pessimistic view of the development of society into a rationalised whole, outlined in *Dialectic of Enlightenment* (1944), written with Max Horkheimer, as well as *Philosophy of New Music* (1949), and other texts, leads him to believe that counterpoint was heading towards an impasse. According to this view, by its very emphasis on opposition, counterpoint increasingly reduces itself to a hocket of interlocking parts (the problem of rhythmic monotony in early serialist works), and thereby obliterates the very independence of lines. Similarly, the absence of any other principle of construction to the series means that the work tends towards non-differentiation, cancelling out counterpoint itself (Adorno, 1973, p. 95).

Despite his pessimism, Adorno (1997) nonetheless affirms the same principles of non-totalising relations between part and whole 15 years later in his major work *Aesthetic Theory*:

The philosophical construction of the unequivocal primacy of the whole over the part is as alien to art as it is epistemologically untenable. In important works, details never merge tracelessly into the totality. (p. 384)

In this sense, “every authentic work is the result of centripetal and centrifugal forces” (Adorno, 1997, p. 384). While Adorno does not explicitly name counterpoint here, the parallels are evident. Thus, regardless of his mistaken historical perspective, the underlying idea of counterpoint as a negative, or non-synthesising, dialectic, remains a part of Adorno’s perspective from at least *Philosophy of Modern Music to Aesthetic Theory*.

I still find many points of agreement with this perspective, in particular the emphasis on the irreducible independence of parts, and the emphasis on the play of ‘similarity and contrast’. However, Adorno’s perspective remains deeply embedded in the paradigm of late-Romanticism: it still is inherently based on the articulation of thematism and counterpoint, and its emphasis on concepts of development and tension are, in my view, unnecessary constraints on new ways of conceiving of counterpoint.

A deeper problem with Adorno’s thought is its emphasis on *critique*. While he also recognised the importance of construction, in the final analysis, as a ‘negative dialectics’ the goal of Adorno’s philosophy is the retrieval of particularity from its domination by universality, or of the object from its domination by the concept (O’Connor, 2004, p. 45)—this is particularly clear in his late essays such as ‘Vers Une Musique Informelle’ (1998). In contrapuntal terms, the goal is to avoid the totalisation of the whole over the part.

My work *QEM2* (see Chapter 3) was in a close dialogue with the idea that the form of the music (in my context, counterpoint) should emerge ‘from the materials themselves’, rather than being ‘imposed’ upon them. I took this to mean that counterpoint had to emerge somehow ‘intuitively’ and only ever as a marginal and unstable phenomenon. One major problem with this is that driving an absolute wedge between ‘material’ and ‘form’—and privileging only the former term—leads to an inability to see the relationship between the technical and the aesthetic dimensions of a work. Since the goal was a naïve spontaneity of the materials, I was

not able to articulate what an aesthetics of counterpoint would, in fact, look like, because counterpoint is itself at least partly a ‘formal’ concern. This was something I was criticised for by an examiner in my confirmation seminar. The central problem was the assumption that there exist such things as ‘materials in themselves’ that can be accessed purely by intuition. This may have been more justifiable at the start of the 20th century, when there was still a semblance of a ‘common practice’ of Western art music. However, at the start of the 21st century, where art music is no longer directly responding to the sounds of the Western classical tradition and its assumptions, the need for a conscious formal selection and control of materials is paramount.

My reading of this aspect of Adorno’s theory helped justify two basic tendencies in my earlier music. First is traditionalism: assuming as universal a number of compositional principles that are in fact particular to late-Romantic composition (the phrase, development, tension). Second is conservatism: attempting to marry compositional practice to the philosophical project of “negativity” can act as a barrier to musical invention, which often requires taking ideas to their extremes, rather than consistently mediating them. In terms of counterpoint, that meant aiming for a kind of ‘Goldilocks counterpoint’, where the parts are never too independent, never too dependent, since I spurned the ‘rational’ organisation of the parts of a work. Ironically, this latter led partly to lack of compositional clarity that Adorno would not have agreed to:

Authentic works that defy the exigency of clarity all the same posit it implicitly in order to negate it; essential to these works is not an absence of clarity but rather negated clarity. Otherwise they would be simply amateurish. (p. 376)

This highlights the tension in Adorno’s philosophy between negation and determination. Despite his emphasis in ‘Vers Une Musique Informelle’ on intuition, Adorno’s (1997) aesthetics more generally argued for a confrontation of the expressive and the constructive (p. 55). My one-sided negation of construction gave theoretical justification for my compositional decision to attempt a counterpoint based primarily on intuitive methods, but did not necessarily represent a rigorous Adornian approach to musical composition.

### **Mahnkopf and counterpoint as difference.**

Claus Steffen-Mahnkopf is perhaps the key theorist and composer today attempting to define a theory of counterpoint (he prefers the term ‘polyphony’) that takes stock of both musical and philosophical innovations of the 20<sup>th</sup> century. This relates to his concept of ‘the second modernity’ that he develops in his substantial theoretical output. In this view, a new Modernism began to be developed from the 1980s, one that does not ignore postmodernism, but works to overcome its *aporiae* from within a commitment to modernist values (Mahnkopf, 2008). Like Adorno, Mahnkopf wishes to found a complete theory of modern counterpoint upon a theory of negation or difference, or, in his terms ‘musical deconstruction’ (Mahnkopf, 2004). Unlike Adorno however, Mahnkopf is a composer, and so his reflections have more direct practical application.

For Mahnkopf (2002a), drawing upon Derridean philosophy, polyphony is the “deliberate manifestation of differences as differences” (p. 39). The foundation of Mahnkopf’s Derridean perspective lies in the passage from *Writing and Difference* quoted at the beginning of the composer’s article:

[I]n the absence of a center or origin, everything becomes discourse  
 ... that is to say, a system in which the central signified, the original or  
 transcendental signified, is never absolutely present outside a system  
 of differences. (quoted in Mahnkopf, 2004, p. 38)

Derrida’s conception of difference argues “the impossibility of naming a ‘first’ or ‘central’ term of any sort,” thus suggesting that any claim to an essential or unitary ‘presence’ existing prior to difference is a fiction (necessary as it may be), and no discourse can ever fully expel this constitutive difference (Cutrofello, 1998).

While this has complicated ramifications for music, Mahnkopf (2002a) translates it in the following way. Polyphonic musical discourse is an essentially ‘dissociated’ one (p. 39), in which simultaneous parts are *a priori* independent, in a radical sense, rather than ultimately synthesisable in a unity of part and whole (as in traditional, harmonic-thematic counterpoint). It also means that there cannot be an *a priori* principle part, such as a *cantus firmus*, for whom the other parts derive their subordinate function, since difference would then be regulated by a primary unity. Equally important is the idea that individual parts themselves also cannot be

seen to replace the function of this lost sense of meaning. For Mahnkopf (2002a), polyphony should primarily be understood neither as a horizontal perspective, in which parts are sufficient in themselves, nor as a vertical one, in which parts add up to a coherent whole. Instead, polyphony is a *diagonal* relationship, in which both dimensions are present and which forces the attention of the listener to constantly jump back and forth between individual parts and the (fictional, but nonetheless functional) whole polyphonic discourse. As such, the unity of the two perspectives remains forever ‘deferred’ (p. 41).

This idea is closely related to that of ‘apperceptive overload’, which Mahnkopf sees as an essential part of a modern theory of polyphony. In the most extreme example of polyphonic music today, which Mahnkopf (2002a) calls ‘complexism’, the listener becomes aware of an “abundance of relationships” that their perceptive-cognitive capacities are unable to fully synthesise. This creates a feeling of absence for the listener, that they are always missing something, which then forces them into yet another oscillation, no longer just between part and whole, but now between “auto- and hetero-observation” or between the music itself and a reflection on the listening process itself (p. 43). This splitting of the subject is not found, as far as Mahnkopf is concerned, in the non-polyphonic tradition of impressionism or spectralism (p. 45). As in Ferneyhough’s theoretical aesthetics, the fact that the work has a constitutive lack forces the listener into an essentially dialogic or creative role; the listener enters “into a conversation with the listener *as if it were another subject*” (Ferneyhough, 1993, p. 19), meaning that the work can be interpreted in myriad ways while remaining ultimately opaque (Fitch, 2013, p. 350).

The complexity of the polyphonic discourse is not simply a result of the quantitative accumulation of simultaneous elements, but also “the heightening of the complexity of work-immanent correspondences” (Mahnkopf, 2002a, p. 44). This requirement, for Mahnkopf, pushes the musical discourse to extend “the principle of integral construction, the individualization of even supposedly secondary aspects, to all areas of the sound-object” (p. 44). Essentially, this means that potentially any sonic or performative parameter can contribute to the construction of an identity of a polyphonic voice and of its relation, or non-relation, to other

voices in the overall texture. In fact, Mahnkopf (2002b) goes so far as to redefine the parameters as “identity-kernels” (p.48).

Whereas in the tonal era, the basic logic was a contradiction between harmony and melody, polyphony in our times is “the compositional contouring of the differences between significant musical parameters, as well as their complexion” (Mahnkopf, 2002a, p. 45). In this sense, polyphony is not, or no longer, about simple ‘note-against-note’ relationships, but, instead

those between “forms,” i.e., rhythmic and syntactical units (lines, parts of lines, morphemes, “figures,” “gestures” etc.). Polyphonic relationships therefore emerge between units already internally connected, not between separate, pointillistically positioned elements. (Mahnkopf, 2002a, p. 40)

This point is decisive for the practical ramifications of the theory. It means that polyphony today requires a degree of ‘polymorphy’: a degree of differentiation between the ‘shape’ or ‘character’ of the individual parts within the overall discourse. In this sense, the polyphonic theory of Mahnkopf responds to and subsumes the developments of ‘group’, ‘statistical’, or ‘textural’ composition that emerged from post-war serialist experimentation, and in many ways came to undermine an emphasis on counterpoint (Griffiths, 2010, pp. 80–86, 101–104, 146–147). It also situates Mahnkopf’s theory in proximity to figures such as Mahler and Ives, with their emphasis on character, heterogeneity of materials, and group polyphony.

Mahnkopf extends this idea to logical extremes. If polyphony is based on a polymorphy of units that are “already internally connected,” why should this not extend to the possibility of a work where each line has its own distinct temporal and developmental process, or a work with multiple basic conceptual starting points, or even the simultaneous performance of multiple, precomposed and internally self-sufficient works? Mahnkopf names these possibilities, respectively, ‘polyvectorality,’ the ‘polyconcept,’ and the ‘polywork’ and he explores these possibilities in his article, and also through his own composition.

I will come back to the concept of ‘polyvectorality’ in particular throughout this dissertation. Mahnkopf (2002a) notes that the concept is an “uncomfortable”

one, since it carries the risk, due to the independent construction of each structure, “that the tectonic structure will lack precisely the “binding” and “responsible” qualities aimed for (especially through the lack of an “overall” harmonic system)” (p. 52). He notes, however that such a highly stratified approach is not incompatible with “the universal polyphonic requisite of intra-discursive control,” since one can always find ways of regulating layers to avoid any major “disturbances” (pp. 52–53).

For Mahnkopf, even though the unity of a polyphonic work is only ever an ‘ideal’ unity, and not one that pre-exists the listening experience, there must remain nonetheless “a relative *material* homogeneity” and not “contain *too high* a level of dissociation” of its materials. This is because, according to Mahnkopf (2002a), without a degree of similarity in the materials, the “diagonal force-fields would lose their energy,” which is to say that for difference to be felt as *difference*, it needs to have some elements of similarity (p. 46).

Mahnkopf (2002a) does not claim to have reached a complete theory of counterpoint that takes into account the twin problem of “the complete destruction” of traditional harmonic and contrapuntal norms and “the burden—still historically present—of the serialist tendency towards the leveling-out of all material” (p. 52), to which I would add a third historical reality: the development of group-based or mass-based composition in the post-serialist era. Instead he suggests that “the question of polyphony today,” following from this twin problem, is

how can equivalents for these norms—at the level of current methods for organizing musical discursivity—be found, and in particular: how can polyphony (as an ultimately polymorphic phenomenon) be hierarchically (re)organized? (p. 52)

While I disagree with the idea that we need to find ‘equivalents’ to previous approaches, it is to this project of attempting to develop a new logic for polyphonic construction that I wish to contribute in this dissertation—however personal the actual compositional applications may be.

## **Aesthetics of Counterpoint as ‘World Determination’.**

### **Against deconstruction.**

I feel a greater degree of affinity with Mahnkopf’s Derridean perspective than that of Adorno, partly since Mahnkopf is writing as a composer with an eye towards construction, and thus does not get caught in the same degree of philosophical abstraction as Adorno, and partly since Mahnkopf is writing about contemporary concerns. Mahnkopf’s ideas of polymorphy and polyvectorality are particularly pertinent to the aesthetics of counterpoint developed here, as is his definition of polyphony as a controlling of difference between parameters. However, there are several areas of difference between my perspective and that of Mahnkopf, specifically regarding his concept of ‘musical deconstruction’, an idea closely entwined with his theory of polyphony.

Principally, the disagreement with Mahnkopf concerns the negation of identity and can be summarised by the fact that Mahnkopf’s aesthetics are heavily influenced by Derrida, whereas mine are more closely aligned to the philosopher Alain Badiou. Whereas the negation (however necessarily incomplete) of identity is the *goal* of deconstruction (Cutrofello, 1998), for Badiou negation of a regime of identity (a ‘state-of-the-situation’ or a ‘logic of appearing’ that fixes the otherwise purely multiplicitous ‘being-*qua*-being’) is what *begins* a constructive truth process (Badiou, 2006; Badiou, 2009). In music, this means that, in the first case, the compositional method is aimed at *producing* a deconstruction of material identities in order to dereify the discourse and liberate experience. As Mahnkopf states: “Musical non-identity ... takes identity as its point of departure, subsequently rendering it non-identical” (Mahnkopf, 2004, p. 44). In the latter case, the compositional *starting point* should already be somehow ‘subtracted’ from the dominant systems of musical identity, and thus the goal is to explore and expand a possible liberated world by way of constructing a vast new set of relations between elements.

This raises the next point of difference. While Mahnkopf (2004) claims that his project of musical deconstruction “is not a style” and “not dependent on a particular material” (p. 47), he nonetheless attempts, in his writings and his

compositions, to outline a set of prescriptive approaches to various parameters that would be worthy of being called ‘deconstructive’, for instance: “The demand for non-identity is the strongest argument for microtonality”; “The rhythmic language must be made more flexible ... by interlocking tuplets and additive rhythms”; “homophonic color-mixtures are no longer an option”; “the higher [a texture’s] density, the more identical and semantic its “context” can be; the thinner can clearer a texture is, the more non-identical and pre-expressive these should be” (pp. 45–46).

Instead, my perspective is that counterpoint does not need to establish any such *a priori* rules for what is and is not allowed in a work. The criteria are, firstly, that the work is logically *integrated*, meaning that any musical element can be—at least theoretically—turned into any other musical element, and secondly, that the set of material resources explored sit, to some extent, outside dominant paradigms of musical identity (otherwise known as ‘style’). Outside of these presuppositions, there should be no limits on possible contrapuntal imagination. (See the “Definition and principles of a new counterpoint” in the Conclusion for a more thorough outline of these ideas).

This indicates one further difference. Mahnkopf situates musical deconstruction very firmly in the tradition of Western art music, particularly in its modernist interpretation, and thus has a particular compositional context and set of parameters to which he is responding. In my idea of counterpoint, compositional context is potentially far more open, and counterpoint is a perspective and set of experimental means to find ‘liberated’ spaces within these various contexts. In this sense I agree with Adam Harper (2010) when he argues for an “*n-dimensional modernism*” in which “there can be no one absolute foundation for music. And there can be no prior assumptions, no prior techniques and conventions – no restrictions whatsoever” (p. 5).

This is perhaps influenced by differences of age and geography. Mahnkopf is a German professor, raised in the art music tradition, growing up in the aftermath of the decline of European modernism’s cultural hegemony; I was born in a working-class family in Australia, raised with pop and jazz, and grew up in a culture in which European modernism mattered very little, not even as a paradigm to negate.

### **Affirmationism.**

My disagreement with Mahnkopf's theory is also one of the affective stance of the composer (and the music). Whereas Mahnkopf (2004), in a very Adornian way, argues that the expressive domain of deconstructive music should be "modest, contemplative, doubt-filled, rather than embodying pathos and grand emotions that are at any rate no longer credible" (p. 46), I am influenced to a far greater degree by the idea of 'affirmationism' as outlined by Alain Badiou in his 'Third Sketch of a Manifesto of Affirmationist Art' (2006) where he argues that:

Our power of resistance and invention requires that we renounce the delights of the margin, of obliqueness, of infinite deconstruction, of the fragment, of the exhibition trembling with mortality [*tremblante à la mortalité*], of finitude and of the body. We should, and therefore we can, proclaim the existence in art of something that, for the poor century now under way, no longer exists: the monumental construction, the project, the creative force of the weak, the overthrow of established powers. (p. 133, translation modified)

As overblown as this statement may seem, and while Badiou's affirmationism runs the risk of a too-hasty rejection of critical art, its central idea neatly provides a different basis for thinking counterpoint other than that of deconstruction.

### **Music space and the thinkability of a 'world'.**

The starting point of this different orientation is conceiving music not in temporal, but in spatial terms. This derives from the post-war serialist attempt to abandon the previous logic of thematic development, and to replace it instead with a one of exploring the possible constructions arising from a set of parameters (Grant 2002, p. 158).

While initially the goal of this early serialism was to base musical construction on the four presumed primary parameters of pitch, duration, timbre, and intensity, the concept of the musical parameter has since undergone a transformation. On the one hand, these earlier parameters are not entirely fundamental in any case, since ultimately all parameters can theoretically be reduced to structures of simply amplitude and time (Harper 2011, p. 78). On the

other hand, these original four can today be seen as fairly “pedestrian” options compared with more imaginative ways of understanding and constructing sounds, such as according to density, tension, or distance (Rutherford-Johnson 2011, p. 6). As such, the term ‘parameter’ is taken here to mean any property of music that can be varied by increasing or decreasing its value.

Richard Barrett (2012b) has argued that the core of Stockhausen’s serialist thinking conceives of parameters in a similarly broader, less essentialist sense, and conceptualises them as spatial dimensions of a work. He identifies three central components to this idea:

- (a) identifying the parameters which are to be the focus of a composition, the “dimensions” in which it will exist;
- (b) assigning minimum and maximum values to these parameters and in doing so establishing a “space” with those dimensions;
- (c) making musically-significant movements across those parametric dimensions, or to put it another way, making a journey of discovery through the space they create.

It’s not a question of relating everything to a “series” but of relating everything to everything else.

This idea that music can be conceived of as space has also been elaborated by Adam Harper (2011), who proposes the concept of ‘music space’ as “a notional phase space that can constitute all possible art objects ... that relate primarily to the production of sound” (p. 81). This space is effectively infinitely variable, since any aspect of the production or reception of sound can be considered a parameter or ‘dimension’ (Harper prefers the term ‘variable’). According to this idea, a musical work constitutes a subset or region of this vast space, where certain parameters are more fixed than others according to both their ranges and their ‘quantisation’, or, how far the extremes of the parameter extend, and how movement along this dimension is divided or structured (for instance, a scale played on the piano will both limit the potential pitch range as well as make discrete what is in reality a frequency continuum) (pp. 36–41).

This spatial vision of composition, whereby musical objects are moved closer together and farther apart according to different ‘dimensions’ or parameters, closely resembles the phenomenology in Badiou’s work *Logics of Worlds* (2009). Its status in this research is that of a useful fiction or ideal: The contrapuntal composer operates ‘as if’ each of their works were ‘worlds’ possessing *sui generis* logics that establish the identities of their objects, rather than accepting heteronomous logics (pp. 109–114). The goal therefore is not to try to systematically engage with Badiou’s philosophical project, including concepts of the event, trace and the subject, as well as the more complex theorisations of objective phenomenology. Where Badiou does speak of music, it is largely as a didactic tool for the explanation of the dynamics of truth procedures that take place from work to work (2009, pp. 79–90). As such, the use of the concept of ‘world’ is, from a strictly Badiouian standpoint, misapplied; however, the primary purpose of the engagement with Badiou was a stimulation of compositional practice. Moreover, Badiou (2009) himself at numerous points presents artistic works, such as the opera *Ariadne and Bluebeard* by Maeterlinck and Dukas and the painting *The Bathing Pool* by Hubert Robert, as demonstrations of principles of the construction of a world (pp. 115–140; pp. 204–259). As such, it is entirely possible to act ‘as if’ a musical work were a world for the purposes of establishing its relations. Importantly, as is evident from my paper at the IRCAM study day in 2016 (see Appendix 5), Badiou’s theory is compositionally stimulating not solely for its logical construction, but also simply for the word ‘world’ itself, which links Badiou’s logic to Mahler’s idea of a symphony and to the external world and ecology, three concepts that are otherwise logically distinct.

Badiou (2009) defines a ‘world’ as “a local site for the identification of beings” (p. 113), a logically closed system of relations between objects:

The logic of appearing necessarily regulates degrees of difference, of a being with respect to itself and of the same with respect to others. These degrees bear witness to the marking of a multiple-being by its coming-into-situation in a world. (pp. 117–118)

A world therefore is an ordering of elements according to their degree of self-identity and of identity-to-others, for which there is always a *minimum* and a

*maximum* position of identity or difference (pp. 138–140). Some elements will have a self-identity approaching a minimal value and will effectively ‘inexist’ in the world; others will have a practically maximal self-identity. Similarly, in terms of identity-to-others, two elements may resemble each other minimally (practically no relation) or maximally (practically complete similarity) by way of their degree of belonging to common ‘phenomenal components’ (p. 213), which effectively translates to the concept of parameters in our context. A world is populated by objects representing these extremes of self-identity and identity-to-others as well as those showing only intermediate values.

For Badiou (2009), the “thinkability of a being” is the result of an “operation which justifies thought in passing from [a given] being to the one whose identity needs to be established” (p. 113). Thus, according to Badiou, the identity of each being in a world is the result to the relationships established within that world, and not an abstract fact that exists beyond the world in question. The identity of a being in a world is only ‘stabilised’ by the entire field of relations between objects of a given world (p. 113). This is another way of making the dialectical point that only through relationships of difference to others is a being’s identity established, or ‘determined’ to use Hegelian terminology (Horstmann, 1998). The sum of all these local operations I call ‘world determination’—the ‘thinking’ (not to be confused with conscious conceptual thought) through material relations between musical objects of the region of music space (or world) in question.

### **Self-identity.**

In the 1950s, Stockhausen (1989) developed the theory of ‘group composition’, which provides a clear way of conceptualising the degree of self-identity of a musical object. A group is defined as a number of notes that can be distinguished by having at least one characteristic in common:

A group with only one characteristic in common would have a fairly weak group character. It could be the timbre, it could be the dynamic: let’s say for example you have a group of eight notes which are all different in duration, pitch and timbre, but they are all soft. That common characteristic makes them a group. Naturally, if all the

characteristics are in common, if all of the notes are loud, high, played with trumpets, all periodic, all in the same tempo, and all accented, then the group is extremely strong, because the individual character of the eight elements is lost. (p. 40)

Initially this idea was limited to the simple building of small passages of music, as was the case with Stockhausen's early *Klavierstücke*, for instance. As Stockhausen's (1989) compositional thought progressed, however, the idea changed and expanded into the concept of 'Momentform', which allows a much broader handling of self-identity, across much longer durations:

When certain characteristics *remain constant for a while* – in musical terms, when sounds occupy a particular region, a certain register, or stay within a particular dynamic, or maintain a certain average speed – then a moment is going on: these constant characteristics determine the moment. It may be a limited number of chords in the harmonic field, of intervals between pitches in the melody domain, a limitation of durations in the rhythmic structure, or of timbres in the instrumental realisation. (p. 63; emphasis added)

Stockhausen's argument is in essence that the self-identity of a region of a musical work is established by the stability of parameters shared by the sub-elements of this region. The greater the number of stable parameters, the greater the self-identity. Conversely, the less stable parameters, the weaker the self-identity of the object in question. Which parameters and which degree of stability is sufficient for perception are separate questions, and eminently practical ones: it is up to the composer to find the structures that are meaningful for perception. Self-identity could thus be said to be a 'composite parameter' in the work—the result of a number of parametric determinations—that can itself be structured by the composer throughout the work, as was the case in *Kampflieder* (see Chapter 7).

### **Identity-to-others.**

In *Boulez on Music Today*, Boulez (1972) demonstrates how, through step-by-step variation of different parameters, a heterophony can be produced from a monody, and polyphony from a heterophony, and the reverse (p. 120). Boulez's

technical language—the parameters he controls and the operations on those that he allows himself—does not, in my view, involve sufficient ‘polymorphy’ to produce a genuinely contrapuntal musical space. Nonetheless, his theory demonstrates that through progressive manipulation of the different aspects of the identity of objects, a composer can move from pure self-identity, to different degrees of identity *between* objects arranged in vertical simultaneity. Within an understanding of a musical work as a world, identity-to-others is multidimensional: for example, two objects can be very similar to each other in terms of register (occupying the same frequency bandwidth), while they can be very dissimilar in terms of harmony (one being microtonal and atonal, while the other being based on a tonal chord sequence). Moreover, as Harper (2010) argues, ‘music space’ can be conceived of as a “*continuous space or continuum formed by all musical objects*” (p. 62). In principle, this means that any musical object can become any other musical object, by way of ‘moving’ along different musical dimensions or variables, potentially producing a full identity between simultaneous sounding objects.

### **Polymorphic counterpoint.**

This dissertation thus defends an expanded conception of counterpoint, where musical ‘objects’ and not simply ‘lines’ are simultaneously presented. This relates to developments in polyphonic thinking in the 20<sup>th</sup> Century. As quoted above, Claus-Steffen Mahnkopf (2002) has argued, the “essential polyphonic relationships” of today are “those between “forms”” with pre-established internal connections, rather than simple ‘note-against-note’ relationships (p. 40). In this view of contemporary counterpoint, therefore, the ‘polymorphy’, or differentiation of ‘shape’ or identity, of the elements is of a far greater importance than in previous polyphonic approaches (p. 40–41). This idea of a fundamentally polymorphic counterpoint is not entirely new, of course. As Rudolph Reti wrote in the late 1950s, whereas the polyphony of the Second Viennese School as much as Stravinsky (however different) had a generally linear, classical logic,

Ives for the first time in history establishes, or at least tries to establish, in quite a number of his compositions *a polyphony of groups*. A polyphony in which the elements are not lines but full musical

entities which carry within themselves their harmonic and contrapuntal life. (1962, pp. 172–173)

As in Mahnkopf's conception, the core musical elements of this kind of counterpoint are “not lines but full musical entities” that have their own internal structures (p. 173).

### **Parts as constitutive difference.**

While these simultaneously presented entities are formed from a ‘continuum’, in a theory of counterpoint, the full identity of musical objects must be limited by the concept of the ‘part’—generally understood as an instrumentalist, or group of instrumentalists that remain constantly associated throughout an entire composition. This contrasts with Boulez (1972), who suggested that “parts’ or ‘voices’ no longer exist, strictly speaking: the organisms are to be analysed as distributed structures” (p. 119), as well as both Aaron Cassidy (2002) and Wolfram Schurig (2002), the latter arguing that “discursive layers [bundles of parametric processes] should behave like voices” (p. 277). Against these thinkers, the concept of ‘parts’ remains of critical importance for a contrapuntal logic, since without a constitutive difference internal to a work, *relations* of maximum identity as such do not exist, but only the presence of a single entity. Parts play this role of constitutive difference because parameters like timbre and spatial position will remain different from part to part regardless of identity relations in other compositional parameters. As such, since parts give relations of identity meaning; it is their ineradicable difference that allows for identity to be measured in the first place. The asymptotic goal of total identity between simultaneously sounding objects cannot be reached in a work without destroying the very logic of identity and difference that seems to imply the possibility of this full identity. This idea is articulated in Ernesto Laclau and Chantal Mouffe's *Hegemony and Socialist Strategy* (2001):

A relation of equivalence [in the sense of similarity] is not a relation of identity [in the sense of total identity] among objects. Equivalence is never tautological, as the substitutability it establishes among certain objects is only valid for determinate positions within a given structural context. (p. 63)

In the context of my theory of counterpoint, this means that the degree of identity between musical objects (“equivalence” or “substitutability” in Laclau and Mouffe’s terminology) can indeed become maximal, but that maximal value is only what the given context (or composition) takes to be so and is not an absolute measure. In much traditional musical composition, melodic and rhythmic unison is conceived of as “equivalent” (maximally identical in the work), but this unity gains its meaning from the differences of timbre and spatial position embedded in the instruments.

The reason for identifying parts with performers or groups of spatially proximal performers is that it lends the constitutive difference a sense of necessity in the composition. Theoretically, a different way of creating this constitutive difference could be devised; however, I believe that conscious strategies would need to be developed to create parts that appear different in a way that does not appear contrived and unnecessary.

### **Liberated worlds.**

How does a composer choose the dimensions with which they wish to structure identity and difference? As articulated above, the approach of this kind of counterpoint is not to deconstruct already given identities. It is not a matter of starting with ‘the world’ and moving towards freedom by way of critique. Instead, the aim is to *begin* from a point of exteriority to the dominant forms of music, in particular, stylistic norms. The world in question must be already ‘free’, or as I have called it ‘liberated’. The goal of a composition, after intuiting a liberated space, is to explore and extend it. What this means is that the structuring principles, the parameters, and ultimately the counterpoint should *emerge* from this liberated world as logical consequences of its foundational principles. This starting point could be a rethinking of the instruments involved, a novel distribution of instruments in space, a new angle on traditional techniques that takes them beyond their original bounds, and so on.

With a liberated world declared, the specific goal of counterpoint is twofold: firstly, it is to ‘think’ this world, foregrounding for experience a vast range of

possible determinations of the identities able to be produced in it; secondly, it is to give as thorough possible experiences of determination itself, that is of *difference*.

### **Counterpoint as intensity of determinations.**

As Barrett (1998) has pointed out, “spatial view of musical relationships” positions itself as “outside time” (p. 17). As such, relations of identity and difference between musical objects in a space are not, logically speaking, affected by their position in the work (something that the concept of ‘open’ or ‘mobile’ form implies). Likewise, Badiou (2009) notes that a world is logically closed and that “no time is implied in the transcendental indexing of being-there” (p. 202). However, placement in time in the work—what is generally called musical ‘form’—appears to have a profound effect on the strength *for perception* of these relations. As such, this theory of counterpoint holds that it is not the relations of identity between two objects themselves that are directly manipulated by formal placement but the degree of presence for perception of these relations of identity: The closer two musical objects are presented within the form of a work, the more perceptually intense their similarity and difference will be; the further apart these two objects, the less perceptually intense this comparison will be. The most extreme case of formal proximity is that of simultaneity, or counterpoint. This is to say that while any work is ‘thinkable’ in that the relations between its elements can be experienced or analysed, the goal of counterpoint is to foreground the relations of difference and similarity and, in a sense, *demonstrate* the thinkability of a given world. This thinkability therefore also includes the possibility of ‘apperceptive overload’, of ‘too muchness’, that Mahnkopf discusses, but seen as one possible approach to ‘thinking’ the material, one extreme of polyphonic layering, but by no means the essence of contrapuntal aesthetics.

### **Counterpoint as experience of difference in the present.**

As noted above, simultaneity, as the maximal degree of proximity in time, renders the logical determinations of different objects particularly perceptually intense. Yet, in addition to giving intense experiences of ‘world determination’, what simultaneity of different musical objects presents is an *experience of difference itself*.

In his book *A Union of Diversities*, Larry Starr (1992) points to the specific nature of the vertical layering (as opposed to horizontal juxtaposition) of stylistically heterogeneous groups in the works of Charles Ives:

Such layering of stylistically independent musics has profound implications, and arguably requires an even greater adjustment on the listener's part than Ives's utilization of varying styles in sequence. When the styles are presented side by side, they can be seen as analogous in certain ways to thematic areas in more traditional compositions. When styles are super-imposed no such analogy is possible; what we have then is perhaps a kind of counterpoint, though the relationship to any traditional notion of counterpoint seems strained indeed. Those Ives pieces that layer independent styles seem designed not to point toward any conventional resolution or balancing of the separate elements. These works speak with particular forcefulness to life's irresolutions and incongruities, to those coexisting aspects of existence that do not interact with—sometimes, do not even acknowledge—one another. (pp. 115–116)

Changing between radically different musical identities throughout a piece may give it a 'rhapsodic' or even jarring quality, but this remains more easily assimilated into previous modes of listening, as established in Romantic tone poems, for example. Vertical stratification, on the other hand compels the listener (whether consciously or not) to try to make sense, in the present, of the fact that these two divergent phenomena nonetheless belong to the same space of musical presentation.

For example, while a folk song emerging from a more atonal musical composition may have a startling effect, this could be seen as part of a development of the material, however sudden. The superimposition of folk material and more atonal material, however, as in numerous works by Charles Ives, gives an experience of difference without transcendence, without the possibility that this difference is simply the product of development of the same.

This may seem to return to Mahnkopf's notion of polyphony as presenting 'difference as difference'. This shows an ongoing tension in my perspective on

counterpoint: between, on the one hand, counterpoint as the means to explore 'liberated' musical space, and, on the other hand, liberated space as the means to explore counterpoint, or difference, itself. Yet these two could be seen as mutually reinforcing: the space has to be contrapuntally explored in order to be properly extended and 'thought', and the counterpoint has to take place within a 'liberated' territory in order to not be a mere (re)combination of elements of the musical world as we know it. As such, the definition of the kind of counterpoint that I currently practice is as follows: *Counterpoint is the exploration of a musical work conceived of as a 'world' via the structuring of identities and differences of simultaneously sounding musical objects in order to deliver intense experiences of both what these objects are, and also intense experiences of what difference itself is.* Obviously not all differences or possible regions of music space will be equally sonically interesting. The role of the composer is to seek out and be sensitive to the possible spaces and combinations that will be effective on an aural, experiential level.

### Chapter 3: Two False Starts

My doctoral study began with what I consider to be two compositional ‘false starts’ before reaching a more stable starting point in the form of *a new day in the desert* (‘desert’). I rejected the approach of these two early works almost immediately after their first performance, in both cases giving rise to a drastic change of compositional approach. The first of these, *Trio for Trumpet, Guitar, and Percussion (Trio)*, I rejected at the time for being too ‘formalistic’ and ‘lifeless’, not having enough timbral and gestural variety and not giving enough space to the development of local-level materials. The second, *Quite Early Morning, no. 2* (‘QEM2’), I rejected for almost precisely the opposite reasons: for being too ‘intuitive’ and ‘gestural’, lacking a contrapuntal framework and not being able to have longer-range linear independence. These are not included in my portfolio submission, but are included as Appendix 6 and 7.

Both compositions were mis-steps along the path to the development of my contrapuntal approach, and both reactions were, to an extent, what I now perceive to be misdiagnoses of the problems—particularly in the case of the response to *Trio*. From the vantage point of the present, however, it can be seen that both attempts and my reactions against them helped inform the central concerns of the works in the folio, from *desert* to *braneworlds*. The false start of *Trio* showed that the contrapuntal logic would have to go beyond my emphasis on pitch and rhythm and classically balanced phrases and forms, and incorporate a greater number of parameters and a greater degree of complexity; nonetheless, it laid some groundwork for future structural approaches. The false start of *QEM2* showed that counterpoint could not be attained primarily by intuitive means, but would need to have a strong precompositional component to ensure the independence of parts and to structure relations across time; nonetheless, it helped develop my ability to translate my sonic imagination into notation, as well as my confidence in writing more idiomatically for instruments.

#### ***Trio for Trumpet, Guitar, and Percussion***

The *Trio* (see Appendix 6) was written in the first months of 2013 for workshop and performance by German group Ensemble Ascolta as part of the ‘Dian

Red Kechil' composers' residency at the Yong Siew Toh Conservatory of Music in Singapore in May of that year. The work has an approximate duration of 10 minutes, and is scored for trumpet in C, classical guitar, and vibraphone and various non-pitched percussion. The *Trio* is heavily influenced by the music of Elliott Carter, particularly his *esprit rude/esprit doux* in which each instrument is located on different fundamental polyrhythmic layer.

### **Core elements.**

The central aspect to the contrapuntal logic of *Trio* was the precompositional construction of a polyrhythmic grid. Three different subdivisions of the basic beat were created for each section of the work. Each of these subdivisions was then grouped into rhythmic units such that the three lines would only coincide after a certain number of beats: for instance, a layering of every fourth quintuplet in one line, every third semiquaver in another, and every fifth triplet in another would mean the three lines will coincide after 60 beats. This long-range periodicity defines a section, with each section beginning at the next point of coincidence. Each instrument of the trio was assigned to a different line of the grid, guaranteeing a high degree of rhythmic independence, despite all conforming to the same metre and tempo.

Alongside this grid, a loose framework of 'harmonic fields' was constructed, which defined a small number of dominant pitches, usually three spaced across the range of the ensemble, for specified durations, normally from two to four bars, though sometimes more or less. However, exact pitch choice, including melodic contour, was extremely intuitive. Figure 3.1 shows the precompositional grid for bars 29 to 40, demonstrating the polyrhythmic structure and assigned instruments, harmonic fields, and other basic characteristics.

Figure 3.1: Precompositional grid for Trio (bars 29–40)



Once these elements were established, the global form was determined by assigning texture types to different sections of the work. These ranged from unison, through different varieties of heterophony or monody, to different types of polyphony. These were defined very vaguely, often simply writing the term 'heterophony' on that section of the precompositional grid along with a number of other characteristics that would apply to that section: fast or slow, loud or soft, developmental or static, etc. Each instrument was usually given a basic character in advance—'lyrical', 'brutal', etc.—along with a rough indication of register. Texture types were conceived of as allegorical figures of social relations. In particular, unison was seen to represent a form of precarious (or even impossible) unity of people that could only be fleetingly achieved after considerable contrapuntal development. This idea was heavily influenced by the works of composer François Nicolas, with whom I studied privately in Paris in 2012, in particular, his *Trio Transfiguration* (1997), in which the different instrumental parts slowly tend towards unison. This creates, according to Nicolas (1997), "a new collective musical body invented by the work, a

body in which each instrument is no longer simply a member, a body that thus achieves through bitter struggle the glory of the Impersonal."

Within this pre-established framework, linear development was quite intuitive. The rhythmic grid was adhered to fairly strictly, but the exact detail of the rhythm was left to intuition, as shown in Figure 3.2.

Figure 3.2: Bars 46–49 from Trio

The musical score shows three staves: C Tpt., Gtr., and Vib. The C Tpt. staff begins with a dynamic of *mf*, followed by *pp*. The Gtr. staff starts with a dynamic of *mf*, followed by *pp*. The Vib. staff starts with a dynamic of *mf*, followed by *f*. The score includes markings such as 'Inexorable' and 'To Perc.' with a bracket over the Vib. staff. The music consists of complex rhythmic patterns, including sixteenth-note figures and eighth-note groups, with various rests and dynamic changes throughout the measures.

In this passage, the trumpet subdivides in semiquavers but groups these into fives, the guitar subdivides in sevens but groups these into elevens, and the percussion subdivides in sixes but groups into eight. Each part, however, ‘interprets’ this grid, including displacing or at times ignoring it.

### **Self-critique.**

After its performance in Singapore, I was disappointed with the *Trio*. I felt that, while it may be polyphonic or even contrapuntal, something about the work came across as lifeless and dull. I described the work in my confirmation seminar (somewhat melodramatically) as an ‘unmitigated disaster’. As my blog posts of the time show (BP May 18, 2013; BP May 23, 2013), my reaction was influenced by the experience of being exposed to a number of more advanced young composers studying in Europe and the United States who had integrated techniques and aesthetics of strains of contemporary music currently popular within the world of New Music, in particular, an exploration of extended techniques and unconventional sounds.

This experience intensified my feeling that my approach at the time was fundamentally too ‘lifeless’, ‘classical’, and historically outmoded. The counterpoint

was undermined by restricting the range of possible relations between parts in favour of a general ‘balance’ of elements. As I wrote at the time:

This is represented in the balance of register that I write in (low, middle, high), the balance of the length of phrases, the balance of the rhythmic distribution of lines, the balance in the harmonic world (to the point of greyness). (BP May 23, 2016)

At this stage, the idea of counterpoint as an exploration of identity relations had not yet been established. As such, my critique oscillated between the problem of a weak contrapuntal logic and the problem of uninteresting sounds, without understanding how these two could be related. Thus, I struggled between two different ways of resolving the perceived problems. The first way was to greatly expand the amount that was structured in advance and explore far greater extremes of register, timbre, texture, etc. The second was to abandon, to a greater or lesser extent, the rigid precompositional approach, with its polyrhythmic grid and harmonic fields, in favour of a more intuitive approach that would allow me to find a greater fluidity of material and a greater variety and extremity of ideas.

### ***Quite Early Morning, no. 2***

Upon returning from Singapore, I began a thorough study of Adorno’s aesthetics. Reading both *Aesthetic Theory* as well as the influential article ‘Vers Une Musique Informelle’, my criticisms of my earlier approach began to be filtered through this new theoretical paradigm. In particular, Adorno’s (1998) idea of the “tendency inherent in the material” (p. 319) became an important way to conceptualise the ‘dereification’ of musical material. This idea revolved around the critique of post-war serialism’s supposed negation of the subjective dimension of musical time in favour of a static formal logic where both the subject, and, concomitantly, resistance to the society that denies it, were no longer possible (pp. 283, 310). In place of serialism’s attempt to reduce music to the fundamental building block of the pitch or parameter, Adorno argues that the fundamental element of music is the ‘gestalt’, already formed shapes or structures inherited from tradition (pp. 298–299). This led to the following methodological decisions: 1) writing local-level material guided principally by my aural imagination; and 2)

starting from the local gestures and phrases and building a global structure, rather than starting with a global form and ‘filling it in’. Thus, instead of amending or deepening the approach to counterpoint taken in *Trio*, I decided to attempt an entirely intuitive method, largely aimed at producing more interesting sounds and gestures. This also meant that I began to think that a fully-fledged contrapuntal system was not possible, or even desirable, at this moment of history, and certainly not at that point of my development. Instead, I believed my challenge, as expressed in my confirmation paper, was to attempt to draw out the contrapuntal ‘tendencies’ of the ‘materials themselves’, however impossible the full realisation of this tendency may be. This essentially meant finding fleeting moments of linear polyphony within an otherwise gestural language.

*QEM2* was the culmination of a series of short sketches for duo and trio combinations written between July 2013 and March 2014, including *Quite Early Morning, no. 1*—an early, substantially shorter, iteration of the work, much of which is absorbed by and recomposed in the second version of the piece. *QEM2* was composed from April to June 2014 in Cologne. Its approximate duration is 13 minutes and is scored for flute, percussion (vibraphone and woodblocks), and piano. An intensive rehearsal period with Kupka’s Piano was held in June–July 2014, and the premiere performance took place on July 18, 2014, at the Judith Wright Centre of Contemporary Arts in Brisbane. It was also performed live during an ‘open space’ session at Darmstadt in August of that year.

### **Core elements.**

At the core of *QEM2* is the intuitive nature of the compositional process. This involved a number of different elements: firstly, it meant composing in fragments ranging from three bars to about twenty, without reference to any pre-established global form. Once enough fragments were accumulated, these were pieced together in an engaging formal sequence, occasionally involving the composition of linking passages. Secondly, it meant often composing these fragments without any precompositional pitch or rhythmic framework, simply imagining potential gestures and then composing them. Thirdly, it meant sometimes composing each part separately from the others (often at an interval of several days so that the other

parts could be forgotten) and then placing them together in a simultaneous texture to see what gestures and potential counterpoint emerged. Figure 3.3 shows the sketch fragment that corresponds to bars 117–119 in the score, with slight alterations. Figure 3.4 corresponds to the piano part of bars 110–115 in the score, composed without reference to other parts; its relationship to the bar structure changes in the final version to accommodate the other instruments.

*Figure 3.3: Sketch fragment for QEM2*

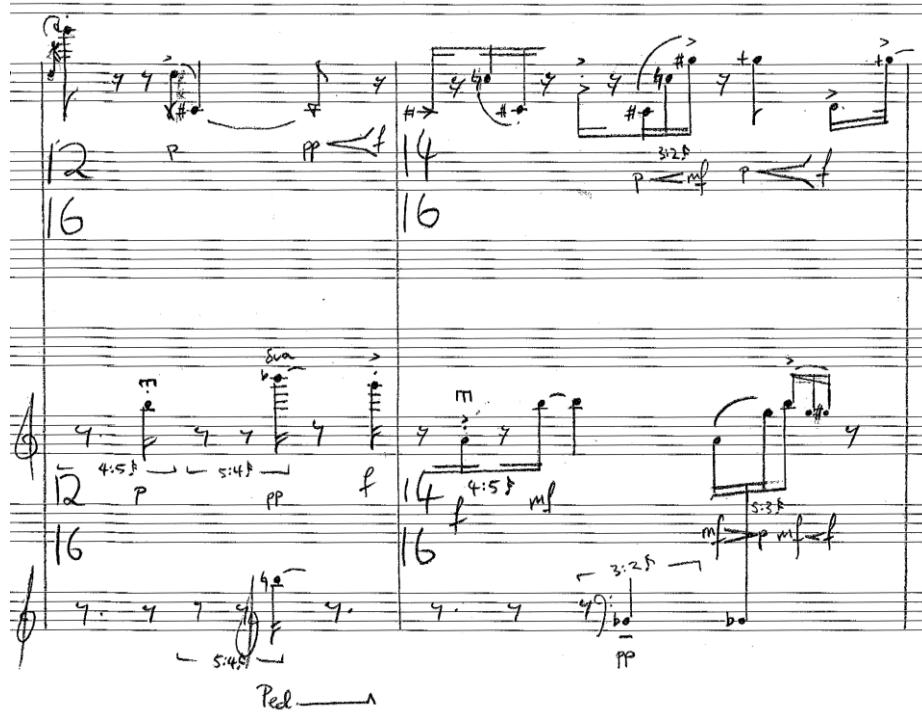


Figure 3.4: Sketch fragment from QEM2 (piano)



A number of short fragments involved a precompositional structure of the metre and subdivisions. These were influenced by Ferneyhough's article 'Il Tempo della Figura' (1993) in which he explains how contradictory processes of metric and subdivisional structures produce complex rhythmic processes. These structures led to hocket-like gestures of interlocking rhythmic divisions of the bar, as in Figure 3.5.

Figure 3.5: Bars 60–61 of QEM2



The work also attempted at an expanded timbral palette, largely through a broader use of ‘extended techniques’ than in *Trio*. This was achieved on the flute by incorporating breath tones, harmonic trills, tongue pizzicato, stopped inhalations, and rolling of the flute towards and away from the mouth. The vibraphone included ricochets on the edge of the keys, muting keys, dead-stroking, and pitch bending.

Finally, in an attempt to create more ‘alive’-sounding material, with a greater sense of movement, the work featured a greater freedom from basic subdivisions by incorporating accelerating and decelerating grace note figures, as well as exponential crescendos, as shown in Figure 3.6.

Figure 3.6: Bars 122–124 of QEM2



### Self-critique.

I became disappointed with *QEM2* shortly after composing it. As with *Trio*, my self-critique was influenced by attending an international course (this time the Darmstadt Summer Courses) and seeing my music in the context of approaches, styles, and trends currently popular outside of my somewhat isolated context in Brisbane. Firstly, the distance between *QEM2* and *Trio* was not as vast as intended: elements of my earlier rhythmic approach crept back in, albeit in a less rigid way; the melodic material largely belonged to the same post-tonal language; and the global form, despite being ‘bottom up’ instead of ‘top down’, still ended up with a similar, narrative-like progression to it.

Ironically, however, QEM2's very successes were what proved that the approach taken was on the wrong track. The intuitive compositional process meant that it did not end up exploring a wide range of texture types, and thus did not explore many facets of what the counterpoint of the work could be. The emphasis on local-level structures also tended to deny the possibility of composing lines that were capable of maintaining independent structures over durations longer than a small number of bars. Additionally, as Richard Barrett pointed out to me in our first lesson, the work lacked a way to deploy timbre and extended techniques as integral parts of a contrapuntal logic, and instead simply used them as embellishments or ornaments on an otherwise linear logic that I was attempting to efface (BP February 27, 2015).

As discussed in Chapter 2, one of the key theoretical problems with the approach of *QEM2* was that of a naive separation between 'material' and 'form'. The idea of the 'materials themselves' as a homogeneous body of historically necessary sounds with *a* tendency is itself untenable, particularly in an age of cultural pluralism and a fragmentation even within Western art music composition. Therefore, instead of '*the* tendency inherent in *the* material', *QEM2* deploys tendencies inherent in materials accessible to my intuition, which are not confronted by external forces and as such are not pushed to explore new possibilities. Ironically, as in the case of *Trio*, this led to a high degree of 'balance' in the form of the work, a lack of extremes and of exploration of the possible relations between parts.

By the end of August 2014, my theorisation of counterpoint underwent another transformation. Instead of a fragmentary counterpoint emerging from a gestural language, this new approach focussed on long-range independent linear structures, internally conflicting processes, and an exploration of parametric identity between lines as a rethinking of the idea of 'imitation' in earlier counterpoint (see BPs August 18b, 2014; September 16, 2014). This basic idea of constructing a contrapuntal logic based on parametric identity relations became the fundamental thread of the rest of the research, despite future changes in approach.

## **Chapter 4: *a new day in the desert***

## Work Overview

Shortly after arriving in Brussels in September 2014, I was asked to write a piece for a quintet of students from the Ictus Academy in Brussels. Initially I had the plan to write a cycle of works using various combinations of the “Pierrot plus percussion” arrangement (which was the instrumentation of Kupka’s Piano at the time), of which *a new day in the desert* would be a part. In the end, other projects took priority, and *desert* remains a stand-alone piece.

*a new day in the desert* represents the real starting point of the research, since each work that comes after builds on the presuppositions and techniques deployed in each preceding work, despite a number of significant shifts in later works. Following QEM2, and lessons with Brian Ferneyhough and Clemens Gadenstätter in Darmstadt (August 18b, 2014), my perspective on counterpoint changed fundamentally to what I termed ‘parametric counterpoint’ or ‘invertible parametric counterpoint’. This was defined as: “to (parametrically) define linear identities and then define their interrelations between each other, and then ... to manipulate these identity-relations across time” (BP September 16, 2014). The basic goals of this were:

1. So that each line has more integrity and a sense of direction and a feeling of weight a “non-neutrality” [sic];
2. So that form (local, regional and global) can be more clearly differentiated and articulated;
3. So that relations between lines can be defined and controlled. (BP August 18b, 2014)

*a new day in the desert* is a 6'50" work for a quintet of bass flute, clarinet, piano, violin, and cello. Although it was written for a Belgian ensemble, it was premiered by Kupka’s Piano in March 2016, as the former decided against programming it. It is a work of relatively short duration, and in its small scale, represents something of a first *étude* for this new compositional approach.

## Compositional Elements

The work explores the major research questions according to the following main themes:

- Relation of parts: Polyvalence
- Relation of parts: Hierarchy and metre
- Relation of parts: Character
- Form: Horizontal processes and vertical texture types
- Compositional process: Fixed and free parameters
- Compositional process: The clicktrack
- Scope of world: Folk materials

### **Relation of parts: Polyvalence.**

As part of the attempt to break with the short-range gestural approach of *QEM2*, one of the key aspects of *desert* was that of long-range tendencies within individual lines. By setting up longer-range processes I hoped to escape the trap of ensemble textures lapsing into synthesised gestalts, and instead produce “the independence of lines over time, their own self-development and internal contradiction, and their interrelation with each other” (March 23, 2015). As the idea of ‘internal contradiction’ suggests, the aim was not to generate uni-linear and relatively perceptually obvious processes such as those found in much spectral music (for instance Grisey’s *Partiels* or Hurel’s *Pour Luigi* or *Loops*). Instead, it was to create processes that were composite of a different number sequences whose interaction would produce, on the local level, material that was more than just a redundant expression of the teleological development. This was conceptualised as a ‘mediated’ teleology, influenced particularly by Leon Trotsky’s notion of ‘uneven and combined development’ in which global tendencies take place through interaction with local-level structures (Rosenberg, 2012, p. 572).

This was approached by summing several different numeric sequences in an excel spreadsheet. For example, in the opening section of *desert*, the sequence shown in Table 4.1 is applied to the durational structure of the bass flute line (values are in demisemiquavers). The top line (Additive) is a sequence of descending values in which each iteration descends one extra value than the last. The next line (Auxiliary addition) is a repeating, four-digit sequence of 0, 1, 2, 1. The third line (Subtractive) is a ‘wedge’-type sequence that alternates increasing and decreasing

in three-digit blocks. This latter is subtracted from the sum of the former two to find the value in the bottom row.

*Table 4.1: Addition/subtraction of demisemiquaver durations*

Additive	10	9	8	7	10	9	8	7	6	10	9	8	7	6	5	10	9	8
Aux addition	0	1	2	1	0	1	2	1	0	1	2	1	0	1	2	1	0	1
Subtractive	9	9	9	8	8	8	10	10	10	7	7	7	11	11	11	6	6	6
<b>Result</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>-2</b>	<b>-4</b>	<b>4</b>	<b>4</b>	<b>2</b>	<b>-4</b>	<b>-4</b>	<b>-4</b>	<b>5</b>	<b>3</b>	<b>3</b>

The result is a sequence that begins to expand durationally in small increments before contracting and expanding with larger values. This result is applied to a chosen starting value of nine demisemiquavers, to give the following values shown in Table 4.2.

*Table 4.2: Duration sequence in demisemiquaver durations*

<b>Addition/Subtraction</b>	1	1	1	0	2	2	0	-2	-4	4	4	2	-4	-4	-4	5	3	3	
<b>Duration</b>	9	10	11	12	12	13	16	16	15	10	14	17	20	16	12	8	13	16	19

These values give the durations of the bass flute line starting in bar 1. However, the phrase lengths were also determined independently and often one of the above values will be cut into two portions, ending one phrase and beginning the next. Figure 4.1 shows its translation into the flute part. The opening duration was adjusted to 10 instead of 9 demisemiquavers for intuitive reasons, likely to avoid rhythmic unisons in other parts.

Figure 4.1: Duration sequence realised bass flute part (bars 1–12)

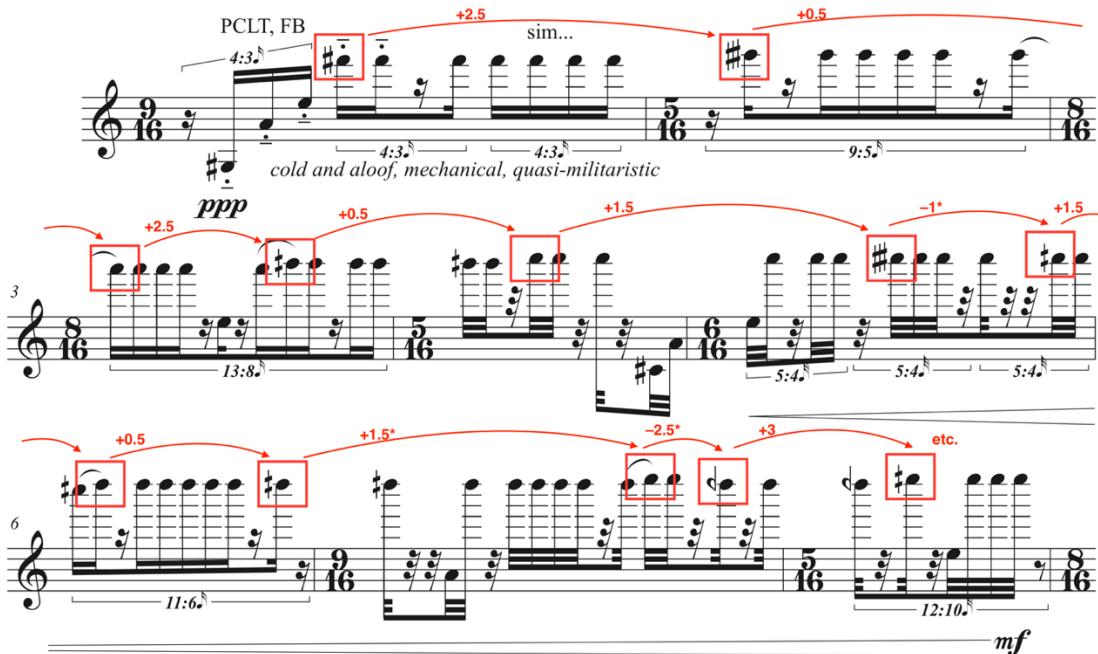
This approach was also applied to pitch structures. Table 4.3 gives the melodic motion of the central pitches of the violin part, where 1 is a semitone and 0.5 a quartertone. The top row (Ascending) is a palindromic sequence of 10 numbers that begins on 3 and then diverges, converges, and diverges again. The next row (Auxiliary addition) is a repeating sequence of three ascending values 0, 0.5, 1. The third row (Descending) is an iterative ascending sequence that adds on further value at each repetition: 0.5; 0.5, 1; 0.5, 1, 1.5; etc. This latter is subtracted from the sum of the two former to find the bottom value.

*Table 4.3: Violin melodic motion sequence (1 = semitone; 0.5 = quartertone)*

Ascending	3	0.5	2.5	1	2	1.5	2	1	2.5	0.5	3	0.5	2.5	1
Aux addition	0	0.5	1	0	0.5	1	0	0.5	1	0	0.5	1	0	0.5
Descending	0.5	0.5	1	0.5	1	1.5	0.5	1	1.5	2	0.5	1	1.5	2
<b>Result</b>	<b>2.5</b>	<b>0.5</b>	<b>2.5</b>	<b>0.5</b>	<b>1.5</b>	<b>1</b>	<b>1.5</b>	<b>0.5</b>	<b>2</b>	<b>-1.5</b>	<b>3</b>	<b>0.5</b>	<b>1</b>	<b>-0.5</b>

Since the top two sequences are repetitive and only the bottom has a linear tendency (if not a straightforward one), the result is a slowly ascending line initially, that begins to feature descending intervals the further it extends. Beginning on an F#6, Figure 4.2 shows how this interval structure appears in the part (intervals marked with an \* are where the realised line diverges from the precompositional structure, due to ad hoc decisions based on contextual factors).

Figure 4.2: Melodic contour as realised in violin part



This was a very cumbersome process, since the different numeric sequences were intuitively created in a ‘trial and error’ method to find a desirable resultant shape. In retrospect, this could have been much more quickly achieved by creating linear or statistical formulae and using software to give the results. Nonetheless, such an approach enabled the construction of longer-range trajectories in the parts, while also generating local-level figurative shape that could then be intuitively elaborated. Throughout *desert* these ‘mediated’ or ‘polyvalent’ tendencies were applied to a number of different parameters. In addition to the basic rhythm and melodic motion of the line, as demonstrated above, the parameters that these sequences were applied to included tuplets, nested tuplets (conceived as inserts or interruptions), rhythmic filtration, and occurrences of extended techniques.

One of the key reference points for this approach was Ferneyhough’s approach to constructing ‘figures’, and more generally the theory of complexity, which involves the development of numerous potentially ‘interfering’ precompositional parametric processes to create a dynamic surface structure. As Ferneyhough has suggested:

The utilization of so-called ‘parametric composition’ does not lead to a mechanized, stiffly formalized concept of form or process: quite the

opposite in fact. The theory of complex states in the natural sciences emphasizes the in principle unpredictable and unstable event-chains which are generated by the intersection and mutual interference of only a very small number of initial variables. (quoted in Fitch, 2013, p. 179)

### **Relation of parts: Hierarchy and metre.**

At this point of the research, counterpoint was conceived of as a form of ‘social relations’, as outlined in different ways by Adorno (1997) and Small (1998). As explained in my conference paper ‘The Ideology of Polyphonic Time’ (Flenady 2015b; Appendix 4), the focus was on presenting both a ‘utopian’ set of relations but also its ‘impossibility’. This translated to the creation of a rhythmic-functional ‘hierarchy’, also sometimes conceived of as a ‘division of labour’, amongst the instruments, as one of the initial compositional decisions. At the basis of this was a theorisation of the metre as a common structure to which all lines must relate—even if this was a non-relation. The centrality of the bar was inspired in part by Ferneyhough’s (1995) emphasis on it as “a space, serving to delimit the field of operations or presence of specific sound qualities, of musical processes” (p. 52). However, unlike Ferneyhough, the bar was also seen as a structure of ‘agogic properties’. As I explained in ‘The Ideology of Polyphonic Time’:

My approach, then, is a dual one. It attempts to preserve the important role of a common metre as a pre-given entity that acts as a force shaping the material within it. On the other hand, the individual lines, as alienated from this common structure, must be able to be constructed in a metrically autonomous way. (Flenady, 2015b; Appendix 4)

While this suggests that the metre was an external force on the parts, the utopian imperative implied that it should appear to emerge from the ensemble itself, and as such there should not be a conductor standing ‘outside’ of the ensemble. This meant that the cello generally articulates the basic rhythmic groupings each bar, such that, theoretically, each other part could follow the cellist in a chamber

performance. As shown in Figure 4.3, each other line was assigned an initial relationship with the metre, with varying degrees of autonomy:

- Bass flute: ‘Extra-metrically determined’—An additive sequence of demisemiquaver durations that ignores the bar structure.
- Clarinet: ‘Metrically determined’—A sequence of tuplets using unequal halves (generally ‘short–long’) of bars as denominators.
- Violin: ‘Metrically determined’—Sequence of tuplets using entire bars as denominators.
- Cello: ‘Metre outlining’—A series of groupings (of 2 or 3 semiquavers) within each metre.
- Piano line 1: ‘Extra-metrically determined’—A loose rhythmic diminution of the cello line.
- Piano line 2: ‘Metrically determined’— A sequence of tuplets using either whole bars or unequal halves of bars as denominators.

Figure 4.3: Metric relations as presented in bars 1–3

A  $\text{J} = 66$

**Bass Flute:** 'Extra-metrically determined': no relation to metre. Dynamics:  $ppp$  distant, calm lyricism;  $pp$ ;  $ppp$ .

**Clarinet in Bb:** 'Metrically determined': half- or full-bar tuplets. Dynamics:  $ppp$  brash, but self-conscious;  $pp$ ;  $pp$ ;  $ppp$ .

**Violin:** PCLT, FB. Dynamics:  $ppp$  cold and aloof, mechanical, quasi-militaristic; sim...;  $ppp$ .

**Cello:** 'Metrically determined': full-bar tuplets. Dynamics:  $ppp$  solipsistic pining, expressivo;  $p$ ;  $ppp$ .

**Piano:** 'Metre-defining': gives metric groupings. Dynamics:  $ppp$  graceful, dance-like; 'Extra-metrically determined': no relation to metre; 'Metrically determined': half- or full-bar tuplets.

The global metric construction is based on repeating sequence of three different metric progressions, each of which begins by alternating between longer and shorter bar-lengths and ends with repeated bar-lengths of four or six semiquavers. The goal of this was for the metric structure to exert an influence on the rhythmic design of each of the lines (apart from those 'extra-metrically determined') that would give them a sense of unity despite their relatively autonomous construction.

### Relations of parts: Character.

In addition to metric differentiation, each instrumental part was given a different 'character'. Inspired by Elliott Carter (particularly his *Triple Duo* and *String Quartet no. 2*) and Ferneyhough's *String Quartet no. 6*, each part was characterised

according to rhythmic construction, registral position, pitch, and extended techniques. This was not pursued in a systematic fashion, but was a partly intuitive process. Long-range polyvalent tendencies were developed to structure rhythmic characteristics (beyond the basic metric relations) and the length of phrases and rests for each part. From rehearsal marks A to I, while each line pursues a different phrase/rest structure, the overall tendency of each line is towards shorter and shorter phrases, and thus more and more ‘stretto’ phrase entrances and a more fragmentary feeling. This is another way in which the individual parts were related through a common structure. The piano part at the opening provides a clear example of a sequence of tendentially shortening phrase lengths, shown in Table 4.4.

*Table 4.4: Phrase and rest length sequence*

Phrase (semiquavers)	19	24	22	22	25	24	20	18	19	21	16	13	13	15	10	7	7	10	6
Rest (semiquavers)	2	3	4	5	6	3	4	5	6	7	4	5	6	7	8	5	6	7	8

Here the phrase lengths have been determined by a polyvalent sequence in which the values generally ascend before declining relatively consistently; these alternate with rests that follow an ascending five-digit sequence that itself increases by a value of one at each iteration. As with most other ‘fixed’ parameters, these values do not always translate exactly in the score, since ad hoc modifications were often made based contextual factors.

After this aspect was determined, the specific internal rhythmic structure for each line was determined. This took different strategies from part to part. As shown above, for the flute line, a tendentially decreasing process of addition-subtraction of semiquaver durations was created. In the case of the clarinet part, the number of notes in each half-bar arpeggio was structured. In the case of the violin line, a rhythmic ‘filtration’ process was created that removed notes in an uneven sequence to create an unpredictable rhythm.

Next, the pitch parameter was structured. Firstly, the registral positions of each line at the beginning of the work was determined: the cello starts around A3, the bass flute hovers around this register and ‘shadows’ the cello, the violin largely plays very high on the E string, and the clarinet and piano sweep across registers.

As the various registral crossovers indicate, the aim of this work was not to stratify the parts entirely, but to produce a complex, entangled musical discourse.

After the registral determination, each instrument was given a rough pitch framework:

- flute: primarily fourths and seconds (12-tone)
- clarinet: quarter-tonal ascending arpeggios and ‘stepwise’ descents
- violin: stepwise quartertonal motion
- cello: microtonal fluctuation
- piano: overlapping modal material in the right-hand and 12-tone material in the left-hand.

With these basic frameworks determined, the melodic contours were shaped according to very long-range processes of ascent/descent, as shown above in the example of the violin line. The only exception was the case of the flute, where the only aspect of contour that was precompositionally structured was that every third phrase would be placed in the 3rd register of the instrument, and note-to-note decisions were made intuitively.

The result of the layering of these contours was conceptualised as “music in complex motion” (BP October 14, 2014), where long-range similar, contrary or oblique motion between lines is fixed, but where, due to the polyvalent construction of the lines, much shorter range linear relationships take place that contradict this overall tendency. For example, the violin and cello from bars 1–26 are engaged in a long-range contrary motion (violin ascending and cello descending), but there are numerous moments where one or both instruments change melodic direction, creating different relationships.

Another important element was the use of extended techniques. In comparison to *QEM2*, *desert* integrates them to a much greater extent, both as part of the ‘character’ of a line and another way of adding long-range directionality to it. This is particularly evident in the opening cello line, in which a temporal process of ‘intervention’ is added. In this, a technique—harmonics, overpressure, or a tuplet of left-hand fingerboard tapping—was superimposed in a polyvalent sequence of intervals of semiquaver pulses. For instance, the second phrase of the cello part

(beginning in bar 19) features both a process of harmonics and a process of overpressure. Tables 4.5 and 4.6 show the multi-linear processes, both demonstrating a tendency towards longer spaces between techniques.

*Table 4.5: Over-pressure sequence*

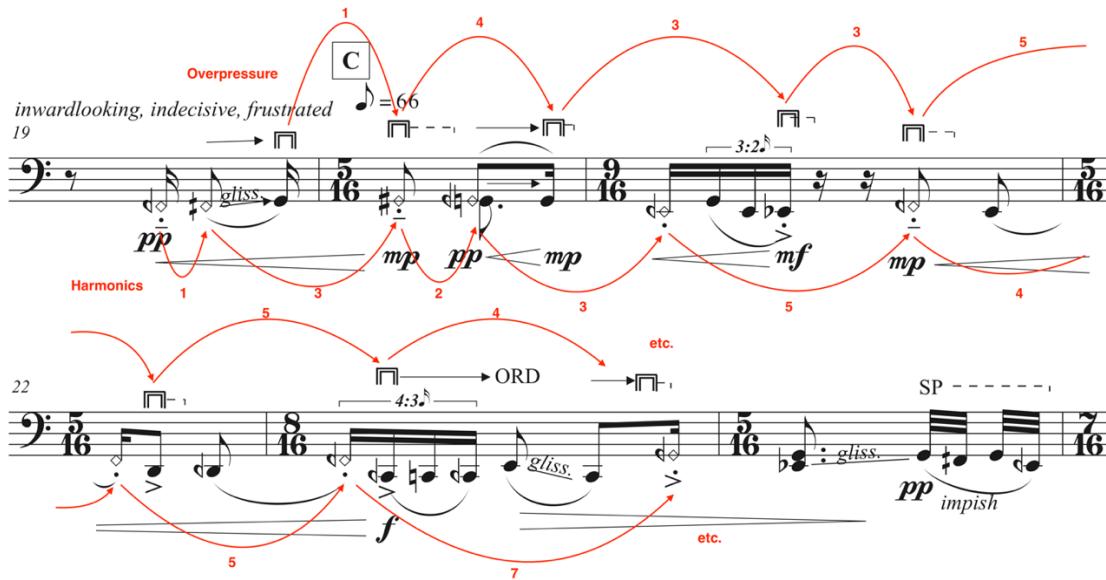
Additive	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Subtractive	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8
Aux subtractive	5	3	4	5	3	4	5	3	4	5	3	4	5	3	4
<b>Result (semiquavers)</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>7</b>	<b>6</b>	<b>6</b>	<b>8</b>	<b>8</b>	<b>7</b>	<b>10</b>	<b>9</b>

*Table 4.6: Harmonics sequence*

Additive	14	13	12	13	12	11	12	11	10	11	10	9	10		
Subtractive	8	7	6	5	4	3	2	1	0	-1	-2	-3	-4		
Aux subtractive	5	3	4	5	3	4	5	3	4	5	3	4	5		
<b>Result (semiquavers)</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>4</b>	<b>5</b>	<b>7</b>	<b>6</b>	<b>7</b>	<b>9</b>	<b>8</b>	<b>9</b>		

Figure 4.4 shows how these sequences were applied to the phrase. The beginning of the overpressure sequence was delayed by three semiquavers in order to produce a more interesting interaction between techniques. (The harmonics sequence regularly lands on pitches that cannot produce a harmonic on the given string (the C string is tuned one quarter-tone flat); in these cases, the intention is for a ‘ghost note’ to sound).

Figure 4.4: Extended techniques structures realised in cello part (bars 19–24)



Based on the results of each of these parametric processes, each part was given a character marking, giving the performers the role of interpreting this in order to help clarify the texture:

- bass flute: 'distant, calm lyricism'
- clarinet: 'brash, but self-conscious'
- violin: 'cold, aloof, mechanical, quasi-militaristic'
- cello: 'solipsistic pining, espressivo'
- piano: 'graceful, dance-like'

Each of these characters were maintained from the beginning until rehearsal mark I (bar 63). From that point on, parts begin to change their basic construction and characters, often switching with another part. For instance, from bar 75 to rehearsal mark O (bar 105), the bass flute and clarinet repeatedly switch character and switch back, creating a close, imitative counterpoint, meanwhile the violin adopts the 'outlining metre' function that the cello had hitherto been assigned.

### **Form: Horizontal processes and vertical texture types.**

The macro-level form of the *desert* reflects the conception of counterpoint as representation of social relations. Two types of texture were defined, one that emphasised independence of parts and one that emphasised interdependence,

representing ‘alienated’ and ‘integrated’ social relations, respectively. In the score the former were assigned the tempo of quaver = 66 and the latter were assigned quaver = 103. The ‘independence’ sections proceed as outlined above: each part is given its own rhythmic, melodic, and other processes. There are a number of aspects that the parts share in common, in particular, the metric structure, and a progression towards shorter phrase lengths. However, most relationships that emerge between lines on the local level are contingent and are highlighted by freer parameters, such as dynamics. Conversely, the ‘interdependence’ sections are characterised by a “more integrated texture with a looser division of material, more rhythmic unification, and a harmonic structure of I–V7–I–IV–I inspired by the Irish folk song Limerick Lament” (BP March 23, 2015).

The form is an alternation between the two types of section. At the beginning of the work, however, the latter sections, while having a different metric structure and tempo, are given the same material as the former. The basic formal idea of the work was that this second type of material

is initially indistinct from the other [‘independence’] material, but across the course of the work, it slowly becomes more and more itself, increasingly revealing the harmonic progression and slowly undoing the rigid stratification between lines, allowing more sharing of materials between them. (BP March 23, 2015)

This is the meaning of the title, based on the statement by Alain Badiou (2007), paraphrasing a Malevich poem, that “The act is ‘a new day in the desert’” (p. 57). For Badiou, this statement suggests a philosophical position of ‘subtraction’ or ‘minimal difference’. In the composition, this idea of minimal difference was interpreted as suggesting that radical discontinuity can be initially disguised by an appearance of continuity.

This process was treated intuitively rather than mathematically. The approach was to try to increasingly reveal the underlying tonal harmonies in the interdependence sections, to increasingly align phrase structures of the various lines, and to introduce elements of melodic ‘imitation’. As Figure 4.5 demonstrates, this is particularly evident in the final section of the work, at bars 175–179, where several melodic motives—repeated notes and microtonal, ascending wide

tremolos—are shared across the ensemble, along with greater rhythmic and gestural unity.

*Figure 4.5: Rhythmic and dynamic unity and motivic relations in bars 175–179*

The musical score displays five staves for B. Fl., Cl., Vln., Vc., and Pno. over five measures (bars 175-179). The piano part (Pno.) is particularly prominent, featuring dense sixteenth-note patterns. Vertical green lines connect specific notes and rhythmic patterns between the instruments, illustrating motivic and rhythmic unity. Colored boxes highlight specific dynamics and patterns: red boxes appear above the bassoon and cello staves; blue boxes appear above the piano staff and the beginning of the violin staff; and a single blue box appears in the middle of the violin staff. The piano part includes dynamic markings such as *f*, *p*, *pp*, *mf*, *ff*, *pp*, and *ppp*, as well as performance instructions like 'with purpose' and 'shadowy, well-articulated'.

Two other major formal devices cut against this rondo-like schema. The first of these is the two points of ‘rupture’ in which a number of instruments (initially two, and then all five) descend in ‘similar motion’ but rhythmically staggered or in different metric subdivisions—producing a more or less heterophonic texture. This was planned as an alternative mode of interrelating the lines in the discourse, and was thought of as a ‘militant’ rather than ‘integrated’ mode of social relation. The first of these, involving the clarinet and the piano, begins in bar 35 (the bar before E) and is completely finished by bar 56; the second, involving all instruments, begins in bar 109 and continues to bar 144. These ‘rupture’ points were conceived as ‘inserts’ in which processes already set up prior to their interventions ‘continued’ underneath the inserted material, so that by the time the insert was over, the underlying material had transformed. The other main formal aspect of the work was the climax at bar 105, which gives the preceding bars (from around bar 100) a united crescendo as well as general ascending melodic motion. This climax was not

the result of precompositional processes, but instead an intuitive formal decision, as such, many processes were suspended or distorted for it to take place.

The work had no precompositional strategy for determining the density of textures on a macro-level. In fact, this was something that only occurred to me as I reached the end of composing the first major section (from the beginning to rehearsal mark I) where I began to believe that the density of this opening texture could not be sustained indefinitely. While in retrospect this was not necessarily the case, sections from rehearsal mark I onwards begin to control, still in a non-systematic way, the number of parts in a texture at any point (particularly in the ‘interdependence’ sections). This involved dividing sections into groups of bars and then assigning a sequence of numbers of parts to these durations, such that densities varied from solo to tutti. Following this, specific parts were intuitively assigned to these sub-sections. From rehearsal mark J, those parts not assigned to a group of bars sustain held notes for that duration; from rehearsal mark T, parts not assigned to a group of bars simply have rests. This method of defining texture density is considerably refined in the following work *Si el clima*, and becomes systematic by *braneworlds*.

### **Compositional process: Fixed and free parameters.**

As shown above, many parameters were fixed in the precompositional stage in order to structure the lines in complex, long-range tendencies. The totality of these fixed processes gave each part its specific linearity and character, allowing for a degree of independence to each part that was not achieved in *QEM2*. However, not all parameters were fixed. Chiefly, articulation and dynamics remained largely open until the notational stage itself. Because the lines, particularly in the ‘independence’ sections, were precompositionally planned in isolation from each other, they produced contingent, emergent relationships as the processes progressed. These open parameters, particularly dynamics, enabled drawing stronger local-level relations between parts by allowing me to react to where, for instance, two different lines began or ended at the same or similar time, where there was a rhythmic unison, where there was a close registral or pitch relationship, etc. For instance, in bars 23–26, the flute line ends at a similar time to that of the violin, while the other three

instruments all play on the downbeat of bar 26. This was accentuated by giving the bass flute and violin lines a similar dynamic contour, and to give the clarinet, piano and cello accents on their rhythmic unison, as shown in Figure 4.6.

*Figure 4.6: Dynamic and gestural interrelations (bars 23–26)*

The musical score for bars 23–26 is a multi-staff system. The instruments included are Bass Flute (B. Fl.), Clarinet (CL), Violin (Vln.), Cello (Vc.), and Piano (Pno.). The score shows complex rhythmic patterns with many sixteenth-note figures. Dynamics are indicated throughout, such as *f*, *ff*, *pp*, *mf*, *sp*, *mf impish*, *gloss*, and *strident*. Articulation marks like *ORD* and *gliss* are also present. The piano part includes performance instructions like *mf ppp* and *8va*.

Yet no parameter, however precompositionally structured, was truly ‘fixed’ until the writing stage itself, where many adjustments were made based on local level concerns of gestural shape and interaction with other lines. In this sense, not just dynamics and articulation, but all parameters were potentially ‘reactive’ to a greater or lesser extent.

### **Compositional process: The clicktrack.**

Shortly after the work was composed, a significant problem emerged: the rhythmic material was too complex for a group to perform conductorless without a prohibitively large number of rehearsals for time- and cash-poor new music groups. The Belgian group for whom the piece was written essentially refused to play it on these grounds. When Kupka’s Piano decided to perform the piece (over a year after it was written), a solution was required. Instead of simply adding a conductor, which I still felt went against the logic of the work, I decided that the best solution would be for the musicians to each wear a single in-ear headphone with a clicktrack. Thus,

ironically, instead of the integrated, ‘utopian’ chamber music model that was initially planned and that helped structure the metric relations, a highly mechanised, ‘alienated’ approach was adopted. At the time of writing this piece at the end of 2014, influenced by the concept of social relations, I would have rejected this possibility. However, by the time Kupka’s Piano performed the work, my perspective on counterpoint had changed significantly, and I saw the clicktrack as a resource for exploration. This eventually led to the use of multiple clicktracks in *braneworlds*. The performers of Kupka’s Piano were initially uncomfortable with the performance of this intricate chamber music with the sound of the clicktrack in one ear. During discussion in rehearsals, the metaphor emerged of a number of different characters each in different cubicles of the same office, each with their own drama, but largely oblivious to each other, despite occasional gestural convergences. The cellist Katherine Philp suggested that, with this metaphor in mind, the performers should all directly face the audience in a line, rather than face each other as in traditional chamber music. This metaphor and staging idea helped the performers conceptualise their new role, and led to a very engaging performance.

### **Scope of the world: Folk materials.**

While the instruments each define a particular character and set of materials, they all remain within a relatively homogeneous atonal and microtonal framework. In contrast to this, the work also draws upon folk materials. As stated above, the quaver = 103 sections attempt to progressively reveal fluidly deployed I–V7–I–IV–I harmonic structures derived from the Irish air, ‘Limerick’s Lamentation’. The purpose of this was not solely for affective reasons; another reason was to increase the contrapuntal distinction between the independent and interdependent sections. This choice of folk materials also significantly expanded the scope of the ‘world’ of the piece, allowing a structural parameter of the folk song’s presence or absence to be explored.

In addition to the harmonic progression, the melody of ‘Limerick’s Lamentation’—as played by Mikie Smyth on the Uilleann pipes (2015)—was deployed in the piano part. Again, apart from an affective dimension, this was primarily for contrapuntal reasons: to introduce a radically heterogeneous element

into the musical texture, thus expanding the distance between linear characters. This is introduced in a rhythmically and melodically distorted form on the single notes in the right hand beginning in bar 69, and progressively reveals its identity towards bar 145 through a long-range process of reducing the intervallic and durational distortions applied to the melody. Table 4.7 shows the beginning of the process for intervals at rehearsal mark 0 (bar 105). Both the ‘ascending’ and ‘descending’ lines slowly reduce until the ‘auxiliary ascending’ line—the contour of the Limerick’s Lamentation itself, as played by Mikie Smyth—is revealed.

*Table 4.7: Distortion process of Limerick’s Lamentation*

Ascending	10	9	8	7	6	5	9	8	7	6	5	4	8	7	6	5	4	3
Descending	10	3	9	4	8	5	7	6	9	2	8	3	7	4	6	5	7	1
Aux ascending (contour: Limerick Lament)	3	1	1	2	-2	-1	-1	1	-1	0	1	1	2	-2	-1	-1	1	0
<b>Result</b>	3	7	0	5	-4	-1	1	3	-3	4	-2	2	3	1	-1	-1	-2	2

The intervals are all within the major mode of the song (realised in F# *ionian* in the score), which means that despite their distortion of the contour of the melody, the resultant contour will still have a unifying character. The major problem with this process was that it was not anchored: because the base level of the process was intervallic and not fixed pitch, there was no guarantee that once the interval modification was reduced to zero, the melody would be returned to the correct *pitches*, so ad hoc modifications were required. The rhythmic distortion process had the problem of realising zero or negative values, which cannot be directly translated into any rhythmic value. In this work, these values were, on a case-by-case basis, either ignored and replaced with the original value, made to signify a deleted note of the melody, or made into a rest of the positive form of the negative duration.

### Reflections on the Counterpoint

Since *desert* did not receive a performance until over a year after its completion, my initial reflections on the work were based on the compositional method and the aspects of the work clearly manifest in the score. After its performance in March 2016, the recording of which is included in the folio submission, a more thorough assessment was made. Several aspects of the work were successful, especially as presented in its opening texture. However, there were

several aspects to its construction that I felt were not sufficiently logically controlled or presented with enough clarity. This resulted in a structure that did not explore the full scope of possibilities of its fundamental parameters, or of its possible contrapuntal relations.

### **Polyvalent method.**

A key technical problem in *desert* was the method for constructing ‘polyvalent’ lines. This was a very time-consuming process that involved a considerable guesswork, since there was no way of knowing in advance exactly the shape of the resultant line (at least without the aid of software, which at that stage I was not able to operate). As such, as many as five different attempts were made for each parameter to generate a contour that suited my overall intention and fit within the duration of the section to which this process would belong. In retrospect, many of these processes could have been expressed by equations, which would have allowed a much quicker computation of results and adjustment of terms. It was only later in *warped passages* that a simplified method of controlling processes and fitting them to sectional durations was found. In the intervening works, *Si el clima* and *Kampflieder*, the emphasis on mathematically generated polyvalent lines was simply relaxed while maintaining its basic approach. The compositional method of *desert* showed that the time taken to create a resultant sequence was disproportionate to the importance placed on its exact rendering in the work: if so many ad hoc adjustments were made to the linear sequences as they were notated, then a simpler, more randomised or intuitive approach would suffice.

### **Density and register.**

Not long after the work was composed—well before its performance—I became concerned that the polyphonic textures of *desert* was too consistently dense. A large percentage of the work is made up of five-instrument textures, often with very complex and busy material in each line, and the fear was that too much detail and linear independence would be lost. After the performance of the work, this fear was shown to be largely unfounded: the textures are relatively transparent and it is possible to aurally follow each part separately. This is primarily a result of the

individual parametric characterisations of the instruments. At the same time, the polyphony, particularly at the beginning of the work, also shows a high degree of integration and blends well. This is partly because the registral fixing of the instruments is not rigid:

- the cello often has harmonics embedded in its line, and therefore jumps several octaves several times per phrase;
- the clarinet often splits its time between very low ascending lines and very high descending lines;
- the piano regularly shifts register very quickly.

This gives many of the textures a kind of mosaic structure of interlocking linear fragments. This does not negate the independence of each line, but shows that each of these lines adds up to a coherent whole. Another significant shaping element is the fact that every third phrase of the bass flute is played up in its high register and becomes very audible, as opposed to its other material, which are in the low register and is relatively hidden behind the cello line, which is in the same register. This gives the opening section a slow, '*feldmanesque*' cyclical feeling.

### **Role of dynamics.**

Dynamics also played a particularly important role in the opening section (to rehearsal mark I, bar 63), as I reflected after listening to the work:

There are short breaks within this opening cohesion, particularly the few moments of louder clarinet and piano flourishes, but these are contained within a feeling of a kind of united intent of the ensemble. I guess this is because the dynamics are all very soft, the swells are slow, and the material type stays more or less the same in each instrument. (BP April 22, 2016)

On the one hand, the consistent soft dynamic in this opening section helps create a blended ensemble sound, and a sense of united ensemble affect; on the other hand, the crescendos help draw the ear to particular instruments or particular groupings of instruments. The realisation that dynamics can be used as a contrapuntal element, rather than simply a dramatic one, played a role in influencing the construction of dynamics in *braneworlds*.

### **Hesitance of presentation.**

One of *desert's* core problems is the hesitance towards full presentations of compositional elements. The essential problem was the lack of a concept of 'maximum' and 'minimum' values and their importance in a contrapuntal logic, but this realisation was not made until much later in the research. This problem is audible in many aspects of the work. Firstly, rather than being too long and too dense, as I had feared, the opening section could have continued for a significantly longer duration: "In retrospect, this opening texture should last at least three or four minutes, or even much longer. It's a waste that the piece moves on from it so quickly" (BP April 22, 2016). Likewise, this work never gives a 'maximally' dense texture. This experience had a profound impact on the compositional approach in *braneworlds* and informs the perspective for future works, both in terms of sustaining ideas for substantially longer durations and in terms of exploring moments of much more extreme textural density.

Another example is the hesitance in the presentation of the central formal idea of the work. Ultimately, the contrast between 'independent' and 'interdependent' sections is only faintly audible, even at the end of the work, where they should be completely differentiated. Neither texture type receives a 'maximal' presentation. While the quaver = 66 sections were supposed to be very independent from each other, this independence was 'mediated' by a number connections between instruments, in particular dynamics and registral proximity. Although this produces an interesting contrapuntal texture, it never reaches a complete presentation of linear independence. Likewise, while the quaver = 103 sections were supposed to be 'interdependent' primarily through harmonic means, this dimension was undermined by the introduction of so many non-chord tones as to render these harmonies often imperceptible, while also avoiding structuring lines into clearly unified rhythmic gestures.

A final example is that of the folk melody itself. In retrospect, the undistorted presentation of the melody is not given enough time for it to become recognisable. When the melody does finally fully arrive, it is within the very dense texture leading up to bar 145 and is practically inaudible. As I wrote after listening to the performance:

I was much too hesitant in its deployment. I distort it in too many ways for too long, and so it never really reveals itself. What does happen is the slow emergence of a ‘modal’ or ‘quasi-tonal’ sounding piano line in that section. But it is by no means a ‘folk’ material or a quotation. The effect isn’t actually bad. I think it sounds nice. But it was not the intention! (BP April 22, 2016)

As discussed in the next chapter, *Si el clima* attempts to present borrowed melodies far more directly.

### **Uncontrolled textural development.**

A problem relating to the lack of extremes, which remained an issue until the change of approach in *warped passages* and *braneworlds*, was the relatively unclear way of treating multiple durational processes. In the ‘independence’ sections, the approach of layering parts yielded mixed results. While it produced some interesting textures and local-level relationships between parts, it also, on the macro-level, led to sections that lacked clarity of basic overall shape. For example, the process in the section from A to I, whereby each part decreases its phrase lengths, produced a relatively chaotic and unsatisfying way of reducing the texture. In retrospect, when the highly dense opening texture began to break up, it could have done so in a way that asserted a contrapuntal logic—for instance, one that highlighted relations between lines by isolating particular pairs or groups of lines over particular durations—rather than allowing the haphazard emergence of local figures. This continued to be an issue in later works, and was resolved only in *braneworlds* by abandoning the ‘horizontal’ and independent temporal approach in favour of a more directly vertically coordinated one.

In general, the dense, full-ensemble textures, with more sustained tones and longer phrases, appear to be more successful than those with smaller instrumentations and shorter gestures. Listening to the work, the sections of smaller combinations, such as from rehearsal mark I to the climax at O (bar 105), are somewhat contradictory: on the one hand, they clarify the form of the work and provide the space for isolating the relations between smaller sets of parts; on the other hand, they do not provide a coherent logic for listening in themselves, because

they are fleeting and not systematically elaborated. This section therefore seems to lack clarity in its contrapuntal logic. At the same time, the shorter the gestures, the greater the expectation of some rhythmic or gestural coordination between the lines appears to be. As suggested in a blog post after the performance, a more unified dynamic contour between parts in these sections could potentially have created a more coherent sounding counterpoint (BP April 22, 2016). This is also the case with the final section from bar 145 to the end of the work, although there is, in general, a greater clarity to their presentation, and they have the quality of a coda, which lends them some structural meaning. In general, however, this early experiment with structuring combinations of parts over time was not particularly successful and was the subject of considerable refinement in future works.

### **Audibility of metre.**

While the metric structure played an important role in the formation of the rhythmic structures of a number of the instrumental parts, there are very few if any points in *desert* where the metre is audible as such. This is for two reasons: firstly, the metric structure itself does not display sufficiently obvious patterns and contrasts; and secondly, the rhythmic, pitch, timbral and phrase structures of most parts are generally structured with little or no reference to the metre. This is not a major problem in itself, but it fails to utilise the metre as a method of increasing the identity between the different parts, and providing obvious collective tendencies. The ‘feudalism’ section in *Si el clima* attempts to make the common metre a more perceptible structural unit, while the final work *braneworlds*, abandons the idea of a common metre altogether and finds another solution to creating common and independent temporal structures between parts.

### **Clicktrack.**

Finally, the role of the clicktrack in the performance of the work was a significant development. My initial reaction to the performance was a positive one:

There was a degree of precision that came from this, and the interconnections between parts were quite palpable because of this accuracy and this commitment, but they had this effect of occurring

randomly, rather than in the intention of the performers. I like this effect. (BP April 22, 2016)

The clicktrack's capacity to lend a greater clarity to complex textures led a consideration of potential applications of the technology that were more fundamentally connected to the founding conception of the work, rather than simply being a solution to a practical problem in its realisation. This led to one of the fundamental ideas of *braneworlds*.

**Chapter 5: Si el clima fuera un banco**

110

L. Pno. *smooth, even, distant* 13:9  
*pppp*

P. Piano *ppp* *mp* *ppp*

Tape cues

111

L. Pno. *II:8* 11:6  
*mp* *ppp*

P. Piano *III* *mp* *ppp*

Tape cues

## Work Overview

While at Darmstadt in August 2014, Kupka's Piano pianist Alex Raineri asked me to compose a work for a recital-length program of new works for solo piano and audio playback in mid-2015. Prior to this, I had not written a piano solo since my undergraduate study, and I had never written a piece with electronics. In this sense, the work was simultaneously an attempt to expand on and develop some of the contrapuntal ideas in *desert* within a vastly different instrumentation, as well as a first attempt for the medium of solo instrument and electronics.

The relationship between the emphasis on the long-range processes in individual lines and the intricacy of contrapuntal texture in *desert* were amplified and thematised more clearly in *Si el clima fuera un banco* as a dialectic between 'militancy' and 'dignity'. This idea was outlined in a blog post for Kupka's Piano:

The dignity comes from the refinement and complexity of the contrapuntal discourse – its resistance to reified musical language; the militancy comes from the 'stickin'-to-it-ness' of the lines, the driving nature of a lot of the material, the intentionally crude elements, the unadorned, unaestheticised texts, musical quotations, and so on.

To my mind the one can't exist without the other: too great an emphasis on dignity turns the music into a paranoid negativity, always avoiding what might be a 'naïve' or 'crude' idea. Such an approach tends to collapse in on itself, leaving neither complexity nor dignity. On the other hand, too great an emphasis on militancy makes it brutish, unthinking, and, in a sense, easily 'domesticated'. The idea is to find the point where the two intersect and reinforce each other.

This is my idea of counterpoint. (BP June 12, 2015)

This was influenced by Adorno's (1997) critique of abstract art in *Aesthetic Theory*:

In the age of total neutralization, false reconciliation has of course also paved the way in the sphere of radically abstract art:

Nonrepresentational art is suitable for decorating the walls of the newly prosperous. (p. 300)

Despite having rejected the intuitive approach of *QEM2* and the idea of '*musique informelle*' in general, Adorno's (1998) critique of post-war serialism exerted an influence on the compositional perspective of *Si el clima*. According to this, through its abstraction from traditional structures and 'organic' forms via its emphasis on the naked pitch or parameter, it had led to a loss of tension both within itself and with society (pp. 282–283). *Si el clima*'s solution to this perceived problem was that "something beyond the abstract must be re-injected in order to recuperate tension" (Flenady, 2015b). This idea was prefigured in *desert* by the use of the Irish folk melody. In *Si el clima*, the element 'beyond the abstract' is politics itself, despite Adorno's dismissal of politically 'committed' art (Jarvis, 1998, p. 121),

The work is the most explicitly political in the entire folio, influenced by reading *This Changes Everything*, Naomi Klein's recent book about climate change and capitalism. The title of the work is taken from the famous speech by the late Venezuelan president Hugo Chávez to the UN Climate Summit in Copenhagen in 2009, where he stated: "If the climate were a bank, it would have been saved already." From the beginning, the goal was not to instrumentalise music for the sake of awareness raising or agitation, but to give an experience of the 'counterpoint' of the issue itself, while also raising the possibility of a solution: "I wanted to create an experience that in a sense condensed the complexity of the social-environmental relations we find ourselves in today, but also pointed generally to a political way out" (BP June 12, 2015). As such, the aim was both to create densely contrapuntal textures, as well as pitting various heterogeneous and irreconcilable materials against each other:

I was interested in confronting what seemed to be completely heteronymous worlds: a virtuosic, notated solo piano work, popular political songs from across the last century and a half, conservationism and evolutionary science, and social and political analyses of our climate crisis. (BP June 12, 2015)

I now find this idea far too simplistic and reductive for a number of reasons: firstly, ‘abstraction’ in no way *necessarily* leads to the dissolution of the particularity of elements, as Adorno thought; secondly, ‘tension’, at least conceived in its classical form of harmonic tension-and-release, is no longer a central part of my aesthetics of counterpoint, having been replaced by ‘intensities’ of identity relations; and thirdly, there is no necessary reason why it should be political references that play the role of confronting ‘abstraction’. Nonetheless, however naïve theoretically, such a position did provide impetus to test out a number of compositional possibilities.

With its emphasis on the ‘militant’, *Si el clima* features more ‘maximal’ presentations of compositional elements. For instance, whereas *desert* tended to avoid clear musical quotations and simple rhythmic and melodic structures, *Si el clima* highlights these aspects at numerous points. At the same time, the work also has many moments of *minimal* distinction between elements, aided by the timbral and spatial unity of the different lines of the piano.

*Si el clima fuera un banco* is an 18'45" work for solo piano and fixed media (in stereo and four-channel configurations), and features Hugo Chávez's Copenhagen Speech, as well as *Marx's Ecology* by John Bellamy Foster, *Sand County Almanac* by Aldo Leopold, and *Wonderful Life* by Stephen Jay Gould, spoken by Jess Moore, Nat Evans, Andrew Last, respectively. The stereo version was premiered on the 19 June, 2015 by Alex Raineri. A new 4-channel version was later was later premiered by Alex on 13 May, 2016.

## Compositional Elements

The work explores the major research questions according to the following main themes:

- Compositional process: Role of piano and electronics
- Form: Multi-temporality and macro-strata
- Relation of parts: Character (primitive communism, feudalism, capitalism)
- Form: Three methods for the distribution of parts
- Scope of world: Political songs
- Scope of world: Use of text

### **Compositional process: Role of piano and electronics**

The new emphasis on the ‘militant’ or ‘concrete’ informs the thinking of the basic technology and ‘instrumentation’ of the work. The live piano is treated solely as a keyboard with no inside playing, and the playback consists of another piano part and spoken non-fiction prose. The intention of this was to produce a degree of ‘crudeness’ that would be conducive to contrapuntal structures. The basic setup of the work changed a number of times during the course of its composition. Originally, the live piano part comprised four simultaneous melodic lines, written on four separate staves, requiring an extreme degree of virtuosity. In addition to this, the playback also featured an independent piano part. The live piano part was intended to represent ‘society’, and the playback piano part was intended to represent processes of nature, the latter constraining the temporal flexibility of the former at various points. In addition to this relation, the playback was intended to feature a number of voices reading passages from a variety of texts relating to the climate crisis.

Unfortunately, my planning processes at that stage were not sufficiently coherent and developed to handle such a vast array of parts, and I was not used to working with electronic media. Additionally, since my compositional process began with the live piano part, I soon realised that its textures were already very dense. Early in the compositional process, therefore, I decided that the work as it was could not sustain any further musical elements without it detracting from the contrapuntal logic. At this point the decision was taken to reduce the tape part solely to spoken texts, and the live piano take all the ‘musical’ materials. This tape part was to be broken up into a series of different audio files that would be triggered (via a patch in PD) at various points in the work, allowing the pianist moments of relative temporal freedom and moments of relative constraint.

However, in the workshopping and rehearsal stage, it became clear that, while not *technically* impossible, the four-line live piano part would require so much practice time as to render it unfeasible in all but the most utopian of contexts. Thus, the decision was made to arrange the work for live piano and playback piano, as well as slowing down the tempos so that the originally planned duration of 15 minutes became 18 minutes 45 seconds. The new arrangement was created in a

collaborative way with Alex via a series of skype sessions and emails discussing which lines should be moved to the tape part and which should stay with the live pianist. These were then exported from Finale into Logic Pro, and the midi parts were assigned to a piano sample, before the spoken text parts were added. This meant that the entire tape part had to be a single, continuous, audio file, rather than broken up into a sequence of triggerable moments in a Max/MSP or Puredata patch, putting an end to the idea of greater or lesser temporal freedom for the pianist at different points of the work.

### **Form: Multi-temporality and macro-strata.**

Formally, *desert* and *Si el clima* share some similarities: both deal with questions of independence, both have insertions and alternating structures, and both have teleological global forms. However, in the latter work, there is a greater formal emphasis on the concept of ‘multi-temporality’, as defined by Belgian musicologist Klaas Coulembier. Specifically, the multi-temporality of *Si el clima* is characterised by “the combination of different simultaneous processes, the superposition and/or interruption of characters” and in particular “the asynchronicity of formal divisions” (Coulembier, 2016, p. 355). The deployment of this idea in *Si el clima* was also influenced by a number of Adorno’s (1997) statements about complexity in *Aesthetic Theory*, in particular: “Artworks that unfold to contemplation and thought without any remainder are not artworks” (p. 161), and “Every artwork is a picture puzzle, a puzzle to be solved, but this puzzle is constituted in such a fashion that it remains a vexation” (p. 161). As such, in *Si el clima*, the aim was not only for a counterpoint at the local-level, but also at the global level, between macro-strata, or formal elements.

Globally, there were three basic layers to the work:

1. The core formal sections of piano material. This was structured by making a somewhat crude musical rendering of the Marxist narrative of human development: a generally constant growth in ‘productive forces’ punctuated by discontinuities that define different epochs or economic systems (‘modes of production’) (Blackledge, 2006, p. 96), in which each new stage represents a further complexification of the division of labour.

Musically, this meant that basic ‘periods’ were defined by different approaches to material: so-called ‘primitive communism’, characterised by a weak division of labour and a generally slow sense of development; feudalism, characterised by a more elaborate and rigid division of labour and a moderate sense of temporal development; capitalism, characterised by an elaborate but chaotic division of labour, as well as a focus on short-range gestures; and the present moment of crisis, in which all previous eras are present in a kind of temporal whirlpool. Apart from material, each section has a different tempo (there is a general acceleration from one section to the next) and basic unit of pulse. The first section is crotchets, the second quavers, and the third semiquavers. The final section (that of the crisis of our times) is one of metric complexity, randomly cycling through all of the previous metric approaches.

2. ‘Flash forwards’ to the material of the ‘capitalist’ period. These insertions of this later material were also linked to the introduction of three simultaneously spoken texts: *Wonderful Life*, *The Sand County Almanac*, and *Marx’s Ecology*. Each of these are preceded by passages where only one voice speaks.
3. Introduction of political songs within the overall texture. These songs are accompanied by extracts from Hugo Chavez’s 2009 speech to the Copenhagen Climate Summit. The songs were chosen for their universalist message: “We shall overcome” by Pete Seeger, “An die Nachgeborenen” by Brecht/Eisler, “We sing for the future” by Cornelius Cardew, “The internationale” by Pottier/Degeyter, and “El pueblo unido” by Sergio Ortega.

Each of these has a different temporal structure:

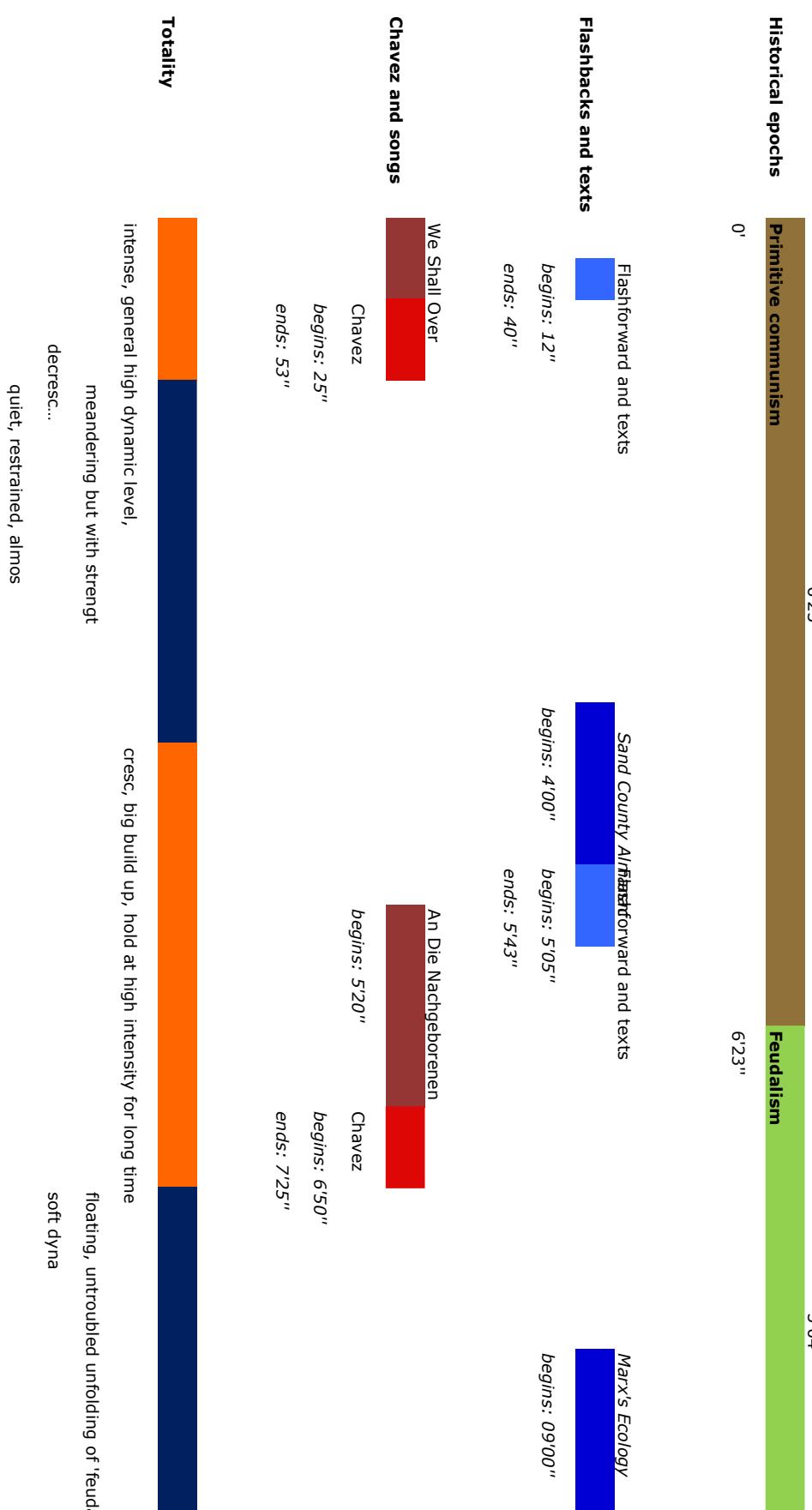
1. The ‘epochs’ that form the basic sections of material gradually contract in length. ‘primitive communism’ lasts 6’23” (originally five minutes), from bar 1 to 90; feudalism lasts 5’04” (originally four), from bar 91 to 160; capitalism lasts 3’47” (originally three), from bar 161 to bar 251. In the original 15-minute plan, the crisis section was intended to last simply two minutes, with the last minute acting as a kind of coda using only political

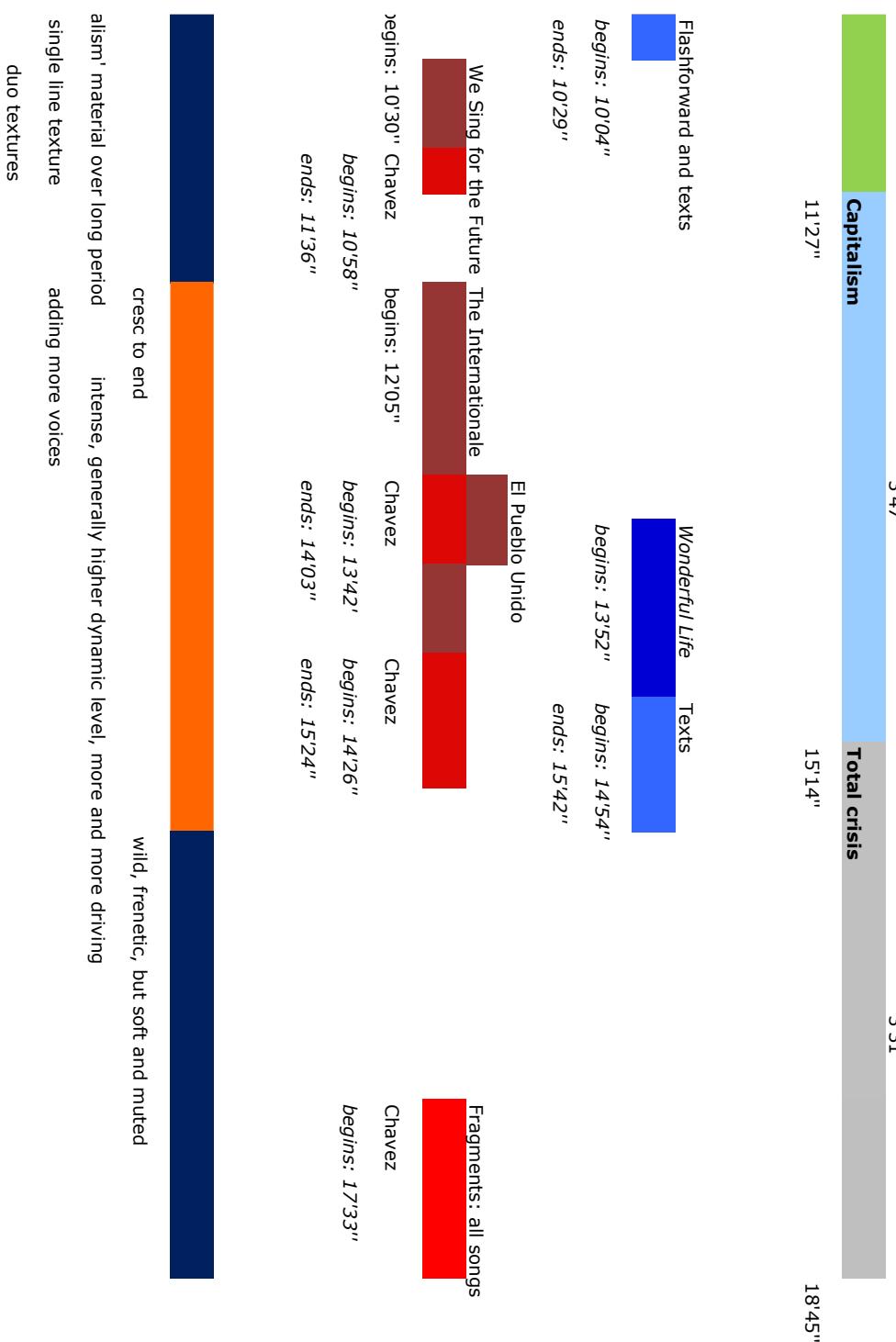
songs and Chavez's voice. Yet the fragmentary nature of the crisis section eventually seemed a more appropriate way to end the work and thus it continued until the end, with the Chavez's voice at the original section change, so that their combined duration is 3'31" in the new work, from bar 252 to the end.

2. After a 12-second displacement at the start of the work, the flash forwards with simultaneous spoken texts appear at intervals of approximately five minutes, though each iteration lasts a different length. These are located in the score at the following bars: 3–24; 58–84; 128–149; and 239–268. Apart from the initial flashforward, each of these are preceded by roughly one minute of solo spoken text.
3. The durations separating the entries of political songs and of the Chavez speech contract across the course of the work until the 'crisis' section is reached, where the Chavez intervention drops out for a longer period. The songs enter early in distorted form with roughly double the duration of the Chavez speech fragment that they precede. As with 'Limerick's Lamentation' in *desert*, these songs begin in a rhythmically and intervallically distorted form and progressively reveal themselves, arriving at a more or less undistorted statement by the time the Chavez extract ends. The Chavez entries are notated in the score, and occur at bars: 12–26; 97–100; 154–161; 203–211; 223–261.

In addition to these three layers, there was a fourth macro-layer of the work, called 'totality', that precompositionally gave a basic shape to the global dynamic level and degree of dramatic directedness (in particular, the rhythmic and polyphonic density) of regions of the work in all temporal layers. This did not have an independent temporal structure, but was created by intuitively interpreting interactions of the different formal layers. It was only very loosely followed, since local-level interactions of the materials also influenced decisions around the dynamic and dramatic shape of the work.

Figure 5.1: Macro-temporal structure of Si el clima



*Figure 5.1 (cont.): Macro-temporal structure of Si el clima*

### **Relation of parts: Character (primitive communism, feudalism and capitalism).**

Each section derived a number of different linear characters from the particular set of social relations being represented, which also provided a general approach to their interrelation.

#### **'Primitive communism'.**

The opening section (bars 1–90) is loosely inspired by Marx's concept of 'primitive communism', and, on a macro-level, is built around a rondo-like structure between a 'primitivist' polyphony, and a 'mystical' chordal passage. In the precompositional planning, the former was intended to represent the "toil of primitive social (re)production" and the latter was intended to represent "the exaltation of primitive nature worship." This was not an attempt to depict any particular society that may be associated with Marx's category, but instead to use an image of this analytical category to inspire musical relations. This image was of a nomadic, technologically undeveloped society, engaged in a constant struggle for survival, without a strong social hierarchy, and without a rigid division of labour; likewise, it is a society that is cyclically tied to rituals of nature worship. In a planning document for *Si el clima*, this is how this image was translated into musical qualities: "low-register, small compass; relatively slow moving; obscure pitches, rough, unsophisticated; wandering simplicity; sparse texture vs. crowded overlaying... indistinct DOL [division of labour]." Already partly present in *desert*, this latter concept of the 'division of labour' was how the degree of shared or distinct characteristics between parts in a texture was often conceptualised. The weak division of labour in this section meant that parts would be susceptible to losing their identity in the overall texture.

After these general characteristics of the section were determined, four distinct linear characters and the parameters to which developmental processes would be applied were sketched. The four characters were:

Line 1: Nomadic

Character: "Extra-metrically determined" (crotchets); infrequent tuplet interventions (in groups); wide, variable compass; not motivic;

unrefined approach to intervals, including octaves and fifths; generally short phrases and long breaks.

Process parameters: Phrase lengths; width of compass (distance from central pitch).

#### Line 2 (appears in opening): Meandering

Character: “Metrically determined” (whole/half bar triplets); melodically weaving, meandering, often descending; upper/lower neighbour repeated-note figures, occasionally accented; relatively short phrases, long breaks.

Process parameters: Speed of triplets; appearance of repeated note figures; melodic interval between repeated note figures.

#### Line 3: Resting-rushing

Character: “Extra-metrically determined” (quaver triplet pulse); generally long durations; rapid acceleration and deceleration; generally extremely low dynamics; long phrases (often with little material within), short rests; grace notes (on both long and shorter notes).

Process parameters: Durations (accel/decel).

#### Line 4 (appears in opening): Toiling

Character: “Metre-defining” (alternating groupings in twos and threes); close diads; repeated notes; long-short rhythms; fast triplet runs, nested triplets; longish phrases with shortish rests;

Process parameters: Sub-phrase lengths; triplets; number of repeated notes within triplet; interval skeleton.

From the perspective of later works *Kampflieder* and *braneworlds*, this method of ‘characterisation’ appears relatively intuitive and impressionistic. Yet, despite the lack of systematisation, Figure 5.2 shows that distinct characters did in fact emerge.

In addition to the four linear identities, this section also attempted to musically render the idea of cyclical nature worship in the form of a recurring chord sequence. These chords were based on a relatively intuitive process of moving from chromatic clusters to widely-spaced chords often with super-imposed major and/or

minor triads distorted by other notes. They were deployed in the texture in a different way to the linear identities. Rather than giving the chord sequence a completely independent temporal structure, at each of its entries the sequence takes over the rhythmic structure of one of the lines, and adopts some of its characteristics. In addition to giving the chordal material a basic principle of variation, this also meant that the chords were not treated as wholly separate from the linear material. They both shared rhythmic characteristics and were often set against other lines in the polyphony in an attempt to undermine the traditional relationship between melody and chordal accompaniment in much Western music.

Figure 5.2: 'Primitive communism' linear characters in bars 30–35

**30**

L. Pno. *ritualistic, pagan* *3:2* *pp p* *4:3*

P. Piano *Line 4 chords: Toiling* *f mp* *3:2* *pp* *4:3*

Tape cues

**32**

L. Pno. *mp p f* *5:3* *Line 4: Toiling* *ppp sempre* *Long-short rhythms*

P. Piano *Grace notes* *3:2* *Triplets* *ultra legato* *9:8* *ppp* *Rapid accel.*

Tape cues

**34**

L. Pno. *Metre-defining* *Fast tuplets and repeated notes* *7:4* *p mp* *Part/whole bar tuplets* *4*

P. Piano *Upper/lower neighbour repeated-note figures* *5:3* *5:3*

Tape cues

**34**

L. Pno. *Line 1: Nomadic* *Predominantly crotchet rhythms* *Octaves* *Variable compass* *3:2* *ppp* *3:2* *3:2*

P. Piano *mp*

Tape cues

### ***'Feudalism'.***

This section takes as its inspiration the 'feudal mode of production'. The core aspects of this image were a stationary, agrarian society, with a considerably more distinct and rigid 'division of labour', as well as a much less fluid conception of time. Some of the key musical aspects of this section, then, were a clearer registral stratification of voices, and a more obvious role for the metre itself. At the same time, it tried to capture some 'dance-like' qualities of peasant culture. As with the preceding section, four linear characters were developed, each with their own basic qualities, and the parameters to which processes would be applied were identified:

#### Line 1: Noble/frivolous

Character: 'Metrically determined' (part-bar tuplets dividing the bar into three); rapid, flourishing melodies; long, unified phrases; stable, upper-middle register; harmonic fields; fast tuplet figures and grace-note figures.

Process parameters: subdivision speed; tuplet density relative to substantive line (in three values: 1, unobtrusive; 2, equally dominant; 3, engulfs the main line); harmonic fields.

#### Line 2: Legato/pesante

Character: 'Metrically determined' (whole-bar or part-bar tuplets); stable, middle register; alternating slow legato phrases and faster phrases with staccato attacks; morphing pitch material from modal to atonal.

Process parameters: Alternating slow-legato/fast-staccato.

#### Line 3: Ploughing/dancing

Character: 'Metrically determined' (all rhythmic figures contained by bar); subdivisions vary; lower-middle register; repeated notes developing into clusters; accelerating figures.

Process parameters: N/A

#### Line 4: Strumming/leaping

Character: 'Extra-metrically determined' (accelerating and decelerating figures); moves across entire piano register; isolated

figures; triadic arpeggios, ascending or descending; variable intervals from adjacent semitones to wider-than-octave arpeggios.

Process parameters: Distance between entries; speed of figure.

As noted above, the aim in this texture was a much clearer registral division: line 1 occupies a 1.5-octave space from E5 to the Bb6, line 2 a 1-octave space between C4 and C5, and line 3 a 2-octave span from C2 to Db4. In contrast, line 4 moves across the entire register of the piano and appears regularly at its extremes. In general, because of its very obvious motivic identity (three-note ascending or descending figures), this line does not dissolve into the others whose registers it occasionally occupies. This registral distribution, along with the other characteristics, allow for a much clearer differentiation of the lines than the preceding section, as shown in Figure 5.3.

Figure 5.3: 'Feudalism' linear characters in bars 110–114

**Line 1: Noble/frivolous**  
*smooth, even, distant*

**Line 2: Legato**

**Line 3: Ploughing/dancing**

**L. Pno.**

**P. Piano**

**Tape cues**

**III**

**L. Pno.**

**P. Piano**

**Tape cues**

**III**

**L. Pno.**

**P. Piano**

**Tape cues**

**113**

**9**

**15**

**8**

**metronomic, like a player piano**

**Line 2: Pesante**

**metronomic, like a player piano**

**Line 4: Strumming/leaping**

**L. Pno.**

**P. Piano**

**Tape cues**

Whereas the 'primitive communism' section alternated between linear and chordal passages, this section alternates between an absence of pitch coordination between lines and an altered modal framework to which all lines adhere. These modal moments, which move through a number of altered diatonic fields, recur five

times throughout the section, with increasingly long gaps in between. The original sketches that outline these modal materials have been lost, but they are partially demonstrated in Figure 5.4, in which the modal framework in effect from the beginning of bar 104 until the fifth beat of bar 105. The presence of a common regulating harmonic framework is demonstrated by the density of occurrence of pitch classes across short durations (normally two to three quavers) both within and across lines.

*Figure 5.4: Modal passage (bars 104–105)*

The musical score consists of two systems of staves. The top system represents the L. Pno. (Left Piano) and the bottom system represents the P. Piano (Right Piano). Both systems begin at bar 104. The L. Pno. staff has a treble clef and a key signature of one sharp. It features a dense pattern of eighth-note pairs and sixteenth-note groups. The P. Piano staff has a bass clef and a key signature of one sharp. It includes dynamic markings such as *p* (piano), *pp* (pianissimo), and *ff* (fortissimo). Below the piano staves are two sets of horizontal lines labeled 'Tape cues'.

Bar 104 ends with a fermata over the L. Pno. staff. Bar 105 begins with a measure of rests followed by a measure of eighth-note pairs in the L. Pno. staff. The P. Piano staff continues its rhythmic pattern. The score concludes with a final set of tape cues at the end of bar 105.

### ***'Capitalism'.***

The last section that develops new characters is inspired by capitalism as a social formation. This runs from bar 161 to bar 251 but appears in ‘flashforwards’ from bar 3 to bar 23, from bar 58 to bar 84, and from bar 128 to bar 149. The image of capitalism here is that of a relatively chaotic system, mechanical and inhuman, fast-paced and often anxious. Musically, this implied extremes of rhythmic and textural density, parts crossing each other’s registers, and often syncopated,

unstable rhythms. Unlike the previous two sections, the ‘capitalism’ section contains only three linear characters. This is for practical reasons: firstly, the lines themselves are quite virtuosic, and secondly, during the capitalism section the extra song-lines enter more frequently, and so, when the piece conceived of as having the live pianist perform all the lines, it was necessary to reduce this texture. The linear characters developed for this section are as follows:

#### Line 1: Lyrical/angst

Character: “Metrically determined” (whole-bar tuplets); generally upper middle register; alternating legato/staccato; rhythmic ‘filtration’ (replacing notes with rests); switching between single line, diads/triads, and clusters.

Process parameters: Speed of subdivision; intervallic skeleton (upper); intervallic skeleton (lower); presence of diads/triads; presence of clusters; rhythmic filtration.

#### Line 2: Martellato/leaping

Character: “Metre-defining” (accents on metric groupings); martellato attacks; pointillist; entire keyboard range; occasional tuplets.

Controlled processes: Register (keyboard divided into 16 half-octaves, intuitive pitch choice within each half-octave span), presence of tuplets.

#### Line 3: Meccanico/trills

Character: “Extra-metrically determined” (demisemiquavers); varied phrase and trill lengths; weaving atonal lines; occasional tuplets.

Controlled processes: Phrase/rest length; presence of trills; interval skeleton for trill notes.

The method for construction of melodic contour line 1 came to be used in later works in the folio. Its basic premise is that two intervallic skeletons are simultaneously unfolding within the one line. These processes are called ‘skeletons’ since they only provide one pitch per bar. The pitch is determined by the interval (ascending or descending) from the previous bar, with a relatively arbitrary starting point. The actual line in the score is realised by filling in pitches intuitively from the

lower to the higher skeleton pitches, or from the higher to the lower, in a relatively (though not necessarily) straight line. In this way, this sequence not only regulates the contour of the melody, but also some of the most perceptually important pitches (the highest and lowest), as well as the width of the compass.

Figure 5.5 shows the linear characters deployed within the ‘capitalism’ section. Within a wider range and faster gestural language, these characters maintain a similarly intermediate degree of differentiation as ‘primitive communism’, where lines are clearly defined yet often overlap registers and produce confusion about which note belongs to which part.

*Figure 5.5: ‘Capitalism’ linear characters in bars 187–189*

While the ‘primitive communism’ section features a chord sequence, and the ‘feudalism’ section introduces a common modal framework, no such structure exists in the ‘capitalism’ section. An attempt was made to create an equivalent, based on superimposed parallel diads or triads (bar 9, bar 66–67, and bar 76), but this was abandoned by the time the ‘capitalism’ section itself was composed. This was largely because it detracted too much from other important processes.

### **Form: Three methods for distribution of parts.**

*Si el clima* attempts three methods for controlling the distributions of parts in time, ranging from essentially no coordination between the linear characters in

the 'primitive communism' section, to a high degree of coordination in the 'feudalism' section, with the 'capitalism' section representing a middle ground.

### ***Primitive communism: no coordination.***

Similar to the opening section of *desert*, the phrase and rest structure of each of these lines was determined by a different multilinear process, leading to a relatively uncontrolled distribution of textural density from solo to all four parts. The results of these processes are shown in Table 5.1, which is counted in crotchet values (phrases are marked in bold, and rests in non-bold). The processes are differentiated by some groups having increasing phrase-lengths and others having decreasing ones. Additionally, two lines start with rests and others start with phrases. However, there was no attempt in advance to determine what the overlaps of the different processes would be, nor were the structures derived as proportions of the total duration of the section; they were simply linear sequences that were cut off when the end of the section arose.

*Table 5.1: Phrase and rest structures in ‘primitive communism’ section*

Phrase structures																	
Line 1	30	<b>14</b>	35	<b>12</b>	40	<b>28</b>	35	<b>10</b>	30	<b>24</b>	25	<b>8</b>	30				321
Line 2	<b>15</b>	15	<b>17</b>	25	<b>19</b>	20	<b>21</b>	30	<b>23</b>	25	<b>25</b>	35	<b>27</b>	30			327
Line 3	9	<b>42</b>	10	<b>41</b>	11	<b>39</b>	8	<b>36</b>	9	<b>32</b>	10	<b>27</b>	7	<b>21</b>	8	<b>14</b>	324
Line 4	<b>36</b>	12	<b>34</b>	13	<b>18</b>	14	<b>32</b>	13	<b>20</b>	14	<b>30</b>	15	<b>22</b>	14	<b>28</b>	15	330

However, this process led to undesired gaps and overlaps, so they were mapped out to see how what distribution of textural density emerged and if there were any moments where there were no lines present. Table 5.2 shows the result of this for the first 153 beats of the section, where 'x' denotes that the line is performed on that group of beats. The beat grouping merely indicates where a line enters or exits.

*Table 5.2: Distribution of lines in ‘primitive communism’*

<b>Beat</b>	1	10	16	26	31	37	45	48	49	52	62	73	80	83	92	96	103	112	114	128	132	133	153
Line 1					x	x					x	x		x						x	x	x	
Line 2	x	x			x	x	x				x	x	x					x	x	x	x		
Line 3		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Line 4	x	x	x	x	x				x	x	x	x	x			x	x	x	x	x	x	x	

Thus, there was a back-and-forth between this understanding of the totality and the construction of the processes in each of the lines. This created a large degree of freedom for each line to have its own process of distribution in time, leading to

very fluid and complex process of textural development; however, it was also a very time-consuming approach with little capacity to explore specific textural densities and texture types as well as dramatic developmental processes.

### ***Capitalism: Partial coordination.***

The ‘capitalism’ section is slightly more coordinated in its distribution of lines. While each line has its own process of distribution of phrases and rests, they are fitted proportionally to the total duration of the section. That is, the total duration of 630 semiquaver pulses is divided into units of 10, 9, and 7 semiquavers, which are each assigned to different linear characters. With the total number of these units known (63, 70, and 90 respectively), processes were created that summed to these totals. At this stage of the development of my technique I did not know how to create processes and map them proportionally onto total durations, and so the method to create these processes reaching the total number of units was done by trial and error. The distributions are shown in Table 5.3, where shaded areas indicate phrase durations, non-shaded indicate rest durations.

*Table 5.3: Distribution of lines in ‘capitalism’ section*

														Total	
<b>LINE 1 (lots of 10)</b>	5	5	4	6	3	7	2	8	1	6	0.5	7	0.5	8	63
Rests/phrases	50	50	40	60	30	70	20	80	10	60	5	70	5	80	630
Cumulative total		100		200		300		400		470		555		630	
<b>LINE 2 (lots of 7)</b>	7	6	8	5	9	4	10	3	11	2	12	1	12		90
Phrases/rests	49	42	56	35	63	28	70	21	77	14	84	7	84	0	630
Cumulative total		91		182		273		364		455		546		630	
<b>LINE 3 (lots of 9)</b>	4	5	3	6	2	7	3	8	2	9	1	10	0	10	70
Rests/phrases	36	45	27	54	18	63	27	72	18	81	9	90	0	90	630
Cumulative total		81		162		243		342		441		540		630	

This meant that the linear trajectories of each line could be much more easily mapped onto the total duration; however, it still yielded essentially aleatoric results in terms of the density of the texture at any given point of the section.

### ***Feudalism: Total coordination.***

The feudalism section took a similar approach to that of the final sections of *desert*, but significantly refined it. Whereas the previous sections of *Si el clima* counted out phrase structures based on a crochet or semiquaver pulse, this section structured phrase lengths according to bars. Moreover, rather than developing each line as an independent process, the density of textures themselves was structured.

Firstly, the duration in bars of each texture-block was determined, according to a process of expansion and contraction shown in Table 5.4.

*Table 5.4: Durations of texture blocks (in bars)*

Texture block durations	1	2	3	2	3	4	3	4	5	4	3	4	3	2	3	2	1	Total
																		49

Then a set of different combinations of lines was developed that could be deployed in any of the above texture-blocks, with a minimum of two parts in a texture and a maximum of four. Eleven possible combinations were found and each assigned a letter, before the number of times each would occur in the section (the top line) was determined, as shown in Table 5.5.

*Table 5.5: Possible combinations of parts*

Distr. (no. blocks in section)	1	1	1	2	2	0	1	2	2	2	2						
Texture	A	B	C	D	E	F	G	H	I	J	K						
Line present	1	1	1	2	2	3	1	1	1	2	1						
Line present	2	3	4	3	4	4	2	2	3	3	3						
Line present							3	4	4	4	3						
Line present																	4

How these would be deployed in sequence throughout the section was then intuitively decided, as shown in Table 5.6.

*Table 5.6: Sequence of texture types*

Texture-type sequence	K	A	J	I	E	H	B	G	E	K	J	C	I	D	H	D
-----------------------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Once this was determined, a more detailed representation of the distribution was created. As with the ‘primitive communism’ section, there was then a back-and-forth between this stage and the previous one, until a satisfying overall shape of textural densities and individual linear structures was found. Table 5.7 shows the final structure of the first 27 bars.

Table 5.7: Texture structure of opening bars of 'feudalism' section

Here, 'x' signifies being present in the texture, and blank means that this line is not present. The 'o' in the 'song-line' represents the presents of a distorted form of the melody, whereas 'x' signifies the presence of the melody proper.

An important aspect of this approach is that the texture-block structure interacts with the uneven metric structure, so that a three-bar block (for instance from bar 106–108) can be sometimes shorter than a two-bar block (for instance bars 97–98). This means that the texture-block structure only defines a general durational tendency.

***Crisis.***

The ‘Crisis’ section of the work did not add any new linear characters, nor any essentially new method of distributing them throughout the time of the work. The novelty of this section lies in that it rapidly juxtaposes the linear characters of the preceding sections. It does this by creating a metric structure that moves between crotchet-, quaver-, and semiquaver-based metres. Crotchet-based bars feature lines from the ‘primitive communism’ section; quaver-based bars feature lines from the ‘feudalism’ section; and semiquaver-based bars feature lines from the ‘capitalism’ section. In addition to this, a basic process of rest length and phrase length was determined, based on absolute durations, not bar lengths, thus creating phrases that flow ‘across’ changes of linear characters. Unlike the preceding sections, individual lines did not have their own structure of distribution; instead, they all began and ended in line with the overall phrase structure. Within this general framework, all the other parameters of the lines were intuitively composed, which was possible after having become accustomed to the various characters in the process of composing the previous sections. An example of the distribution of parts is shown in Figure 5.6.

Figure 5.6: Composite phrases in 'crisis' section (bars 305–307)



### Scope of world: Political songs.

*Si el clima* presents five different political songs from Europe, the US, and South America, from the 19<sup>th</sup> and 20<sup>th</sup> centuries, each with a universalist message. These appear in the following order in the work:

1. "We shall overcome" by Pete Seeger, from bar 1 to bar 27,
2. "An die Nachgeborenen" by Brecht/Eisler, from bar 66 to bar 103,
3. "We sing for the future" by Cornelius Cardew, from bar 137 to bar 162,
4. "The internationale" by Pottier/Degeyter, from bar 170 to bar 210,
5. "El pueblo unido" by Sergio Ortega, from bar 214 to bar 254.

As in *desert*, each of these songs begins in a significantly altered state before slowly transforming back into their 'original' version around the time that the extract from Hugo Chavez's speech enters. The melodies were distorted with the same interval-based and duration-based processes as in *desert*, and suffered the same technical issues, which were eventually corrected in *Kampflieder*. In addition, other intuitive alterations were made, including switching register ('El Pueblo Unido'), expanding/contracting distances between phrases (all songs), and alterations to the harmonisation of the melody ('We Sing for the Future').

### Scope of world: Use of text.

Another major aspect of the work was the textual component. While the choice of the four texts in the work had a political justification, it also had a clear contrapuntal purpose. The aim was to simultaneously present both musical and

textual material in such a way that the former was not just an ‘illustration’ of the later, but that their relationship remained essentially enigmatic. Thus, the goal was an equality between the two parts which would require the simultaneous activation of two listening modes: the musical and the semantic. As with the use of political songs, this was meant to confront the often insular world of the piano recital with its ‘outside’, expanding the scope of the ‘world’ while denying its full unification. Nonetheless, while the texts were all non-poetic in nature, they all became aestheticised by being decontextualised and rendered polysemic or ambiguous in their meaning. This aestheticisation was meant to enhance the tension of the two cognitive modes, since, while they could not be fully divided, they could not be neatly mentally separated either, a confusion enhanced by the fact that the spoken texts and the musical lines have a similar basic tempo and sense of phrasing. This confusion of heterogeneous materials was also heightened by the textures of three or four simultaneous spoken texts, which attempted to create an analogous structure to the four-line counterpoint of the piano part, further reducing the semantic clarity of the texts.

### **Reflections on the Counterpoint**

The initial performance of *Si el clima* took place in Brisbane in June 2015, while I was overseas. The recording of this performance, included in the folio submission, formed the basis of the main reflections on the work, despite not capturing the precise sense of interaction between elements of a live performance, and despite problems of balance between the live and playback elements. The performance in May 2016 involved a revised version of the playback part in 4-channel surround. Overall, the work represented several positive developments on *desert*, especially with regard to the differentiation of formal sections and the presentation of heterogeneous materials. Its linear characters are generally better defined and differentiated than the earlier work, especially in the ‘feudalism’ section, which prefigures approaches taken in later works. However, the overall method for the construction of parameters remained vague, and there was no logic for the interrelation of parts. Likewise, the lack of a clear logic for the relation of the

live and playback components undermined the clarity of the counterpoint of the work.

### **Differentiation of sections and cyclical form.**

On the formal level, *Si el clima* represents a significant advance over *desert*. It is significantly clearer in how sections are defined and what kinds of materials and characters are present in each. Despite some passages where the form seems to lose clarity of purpose (largely due to the often haphazard approach to the temporal distribution of lines), the overall contrast of sections is relatively strong. The capacity to sustain basic ideas over longer durations is also significantly developed since *desert*. A good example of this is the final three minutes, which does not develop any new material or have any major contrasts, yet is effective as an extended ‘coda’ to the work. The multi-cyclical, ‘multi-temporal’, nature of the work is also quite successful. The out-of-sync recurrence of the political songs with Chavez’s voice, on the one hand, and the ‘flashforwards’ with the polyphonic spoken texts, on the other, neither of which align with the changes in the large-scale sections, creates a feeling both of the independence of these fundamental elements, but also of an enigmatic logic governing their relation.

### **Character differentiation and stratification.**

Each section of the work aims for a different degree of differentiation between the character of the lines, and in this sense they are all more or less successful. However, upon hearing the piece live for the first time, I was disappointed with the lack of clarity of the characters and their development, particularly in the ‘primitive communism’ and ‘capitalism’ (BP, 25 May, 2016). This relates partly to a lack of a systematic method for the construction of character, but also the uncoordinated nature of the parametric processes and the distribution of lines in time. This occasionally led to happy surprises. For example, both lines 3 and 4 in the ‘primitive communism’ section have processes by the end of bar 90 that are very important to the development of the section but that were unanticipated at the start of composing: line 3 develops a process of increasingly busy grace-note gestures, and line 4 develops its process of repeated notes to an originally

unplanned level. This neatly transitions to the next major section of the work, where repeated notes and grace notes become central material for development. The real advance of *Si el clima*, however, was the clarity of the texture in the ‘feudalism’ section. This section, for the first time in my music, created a contrapuntal structure with four perceptibly different linear identities, whose materials ranged from melodic through to more gestural sonic ‘objects’, and whose distribution both in registral space and in time was rationally regulated, allowing for an exploration of numerous different textural combinations. While character in this section was fairly rigidly constructed, such that different degrees of identity and difference were not explored, the texture and types of materials anticipate the ‘polymorphic counterpoint’ of *Kampflieder* and *braneworlds*.

### **Songs.**

Unlike *desert*, the use of folk materials in *Si el clima* is often very direct and contrasts strongly with the other linear characters of the work, expanding the scope of the counterpoint considerably. Since much of the musical material of *Si el clima* has a mechanical and abstract quality, the entrance of directly melodic material opens up space to consider all lines from the perspective of the parameter ‘melody-like’, even if this was not a conscious compositional decision. For example, in bars 193–196 (shown in Figure 5.7) the top line, playing ‘The Internationale’ represents the maximal melody-like value, followed by second line, which, with its short and long rhythms and weaving contour, remains partly melodic. This in turn is followed by the fourth line, which is almost entirely removed from a ‘melody-like’ character, but preserves a ‘linear’ quality. The least melodic is the third line from the top, which is reduced to simple attacks and arpeggios and leaps across the entire keyboard.

Figure 5.7: Degrees of melody-like linear character (bars 193–196)

The musical score consists of two staves. The top staff is for the L. Pno. (Live Piano), featuring a treble clef, a key signature of one sharp, and common time. The bottom staff is for the P. Piano (Playback Piano), featuring a bass clef, a key signature of one sharp, and common time. The score includes dynamic markings such as **ff non dim.** and **f**, and performance instructions like *so, comrades come rally, and the last fight let us face*. The score also includes **Tape cues** indicated by vertical lines and specific page numbers (193, 194, 195, 196, 197, 198) below the staff. Measure numbers 193, 194, 195, 196, 197, and 198 are placed above the staves.

While I was not aware of this at the time of composing, this kind of texture is a precursor to the approach to identity relations in *braneworlds*.

### Timbral and spatial parameters

In retrospect, some of the most fundamental aspects of the counterpoint of the work from a perceptual point of view—its timbral and spatial dimensions, and ultimately the relation between the tape and live pianos—suffered from a lack of attention in its initial design. Since the basic design of the relation between the live and playback piano parts changed several times during the writing of the piece for largely practical reasons, the final version lacked a clear logic in the deployment of lines between the live and the tape spheres. This is likewise the case for the playback spatialisation, which was done in a relatively intuitive fashion. In this sense, these were as ‘reactive’ parameters (as with the dynamics in *desert*) through which the relationships generated by independent parametric processes were enhanced or hidden. However, this is a dissatisfying approach, since the live pianist and audio playback imply the status of ‘parts’ in that they provide a ‘constitutive difference’ at the heart of the work. The absence of a conceptualisation of their interrelation, and of their relation to the melodic ‘parts’, therefore fundamentally undermined the contrapuntal logic.

This issue was compounded by the essential indeterminacy of the timbral relationship between the live and recorded piano. This was something that my supervisor Gerardo Dirié pointed out after the performance on May 13, 2016. In that performance, the live piano had a very bright and almost brittle sound, whereas the piano used for recording the playback was comparatively mellow and dark. This meant that the counterpoint felt weakened, since “tension embedded in the lines was largely lost because there was no feeling of timbral/spatial contact between them” (BP May 25, 2016). In fact, this listening experience revealed the extent to which the original intuition of the work envisaged that all the lines were timbrally and spatially identical, which would heighten the feeling of difference or friction between registrally and characteristically stratified lines (as in the ‘feudalism’ section) as well as moments of gestalt textures where lines become indistinct (as in parts of the ‘capitalism’ section). Thus, the spatialisation of lines in fact undermines the counterpoint present in the work.

Potentially a more successful realisation of the work could be for two live pianos, with live or pre-recorded spoken text. In other performances, a stereo tape part with a midi piano sample was used. With the sound source for each line in the playback closer to the piano, I can only speculate that the effect would have been more successful, but I was not present at these other performances.

### **Use of text.**

The use of texts as a heterogeneous layer contrasting with the musical material was one of the successes of the work. Despite being non-fiction prose texts, they each gained a degree of semantic ambiguity by their lack of original context and the new context in which they were placed: not just their ambiguous relation to the music, but also to each other. They also presented a scale of semantic directness: the Aldo Leopold text is the most poetic and symbolic, causing the least disturbance to the aesthetics of a piano recital; the Stephen Jay Gould text was more literal and scientific, but not without a degree of poetry with the naming of strange pre-historic animals and his commentary on human life (“quote”); the Bellamy Foster text represents the most prosaic of the texts, its dry articulation of economic theory

breaking quite clearly with the aesthetic world of the concert hall; finally, the Chavez text, for non-Spanish speakers, is some form of pure fiery rhetoric, perhaps easily assimilated into the ‘poetry’ of the work, for Spanish speakers, however, the direct semantic content would contrast in a very direct way with a more traditional musical mode of listening.

The idea of the voices presenting polyphonic textures akin to the piano was less convincing. In retrospect, this did not take into account the specific sonic nature of the voices and their capacity for stratification. As a result, these polytextual moments generally subsumed the individual identities of each voice within a mass texture out of which small fragments of each text are occasionally foregrounded. The spatialisation of the four voices in the May 13, 2016 concert did not provide enough differentiation to counteract this tendency. A more advanced surround-sound setup might have helped, but the essential reason for this problem lies in the voices and texts themselves. Whereas the musical elements on the piano can be clearly distinguished in register, rhythm, pitch, and other parameters, the voices are all far too similar in most essential parameters. Additionally, the fact that they were all complex in terms of their syntax and their semantic content further enhanced this tendency towards the dissolution of their individual identities.

### **Chapter 6: Interlude—*Mirror Motets***

In March–May 2015, I was engaged in a study of early polyphony, as well as reading Eduardo Galeano's book of historical and mythological vignettes *Mirrors* (2009) (Galeano had died earlier in 2015). The result of this was the idea of composing three motets, called *Mirror Motets*, that were intended to experiment with different historical approaches, while taking texts from Galeano's work as basic structural data. The first piece, 'Sappho/Matilde/Flora', was based on the style of the 14th century Ars Nova motet with tenor, motetus, and triplum. The second piece, 'First slave rebellion in America/Brazil slept on a bed of gold/Resurrection of Túpac Amaru', was based on a more 15th–16th century motet style with points of imitation across the groups. The third piece, 'Born of tears/Only human/The Ninth', combined elements of these while experimenting with the absence of a full score and the desynchronisation of players. In general, the constitution and relation of parts were based on a similar intuitive character-based approach to that used in *desert* and *Si el clima*, though there were more conscious attempts to create imitative procedures between parts (BP July 23, 2015).

The pieces were planned for performance by three colleagues in Brussels and Cologne. These concert plans were unfortunately cancelled for personal reasons of the musicians when the works were only partly written. Although my initial intention was to continue and finish the works for future performance, the need to begin work on the next work *Kampflieder* took precedence. I also realised that the compositional methods and contrapuntal logic in the work were unsatisfactory, and I decided to abandon the works.

One of the central problems with these pieces was the attempt to derive much of the rhythmic and phrase structure of each line from the syllabic and line structures, respectively. The method for doing this, however, lacked a way to fit different numbers of rhythmic values proportionally into the same total duration, resulting in various ad hoc solutions. In addition, various long-range rhythmic processes were applied to these lines, which had an unclear relationship to the text-derived structures. As such, numerous, contingent relations of phrase entries, even less controlled than in *desert* or *Si el clima*, were produced. While this is not

necessarily a problem, the lack of coordination, coupled with the lack of a very clear logic for constructing the identity and relations of lines, led to unconvincing structures. The overall method was also extremely time consuming.

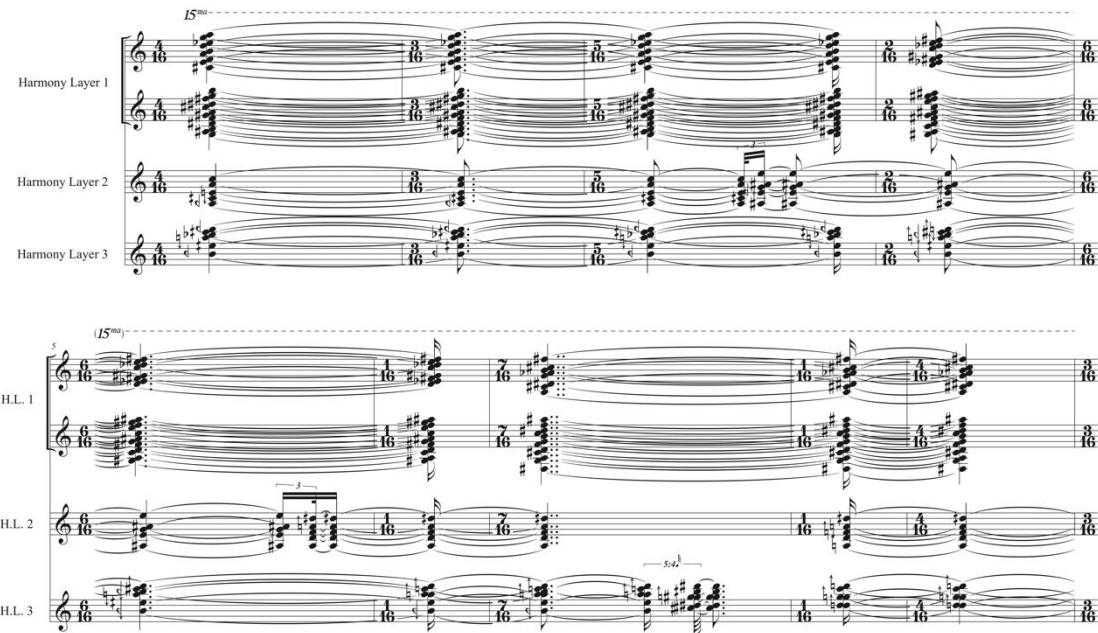
This decision to abandon *Mirror Motets* was also influenced by the rapid development in compositional thinking as a result of my lessons with Richard Barrett. Key aspects of the new aesthetics developed at this time were absent from these compositions. Firstly, the counterpoint was still linear in essence and not based on the broader concept of ‘polymorphy’. Secondly, it had not yet taken on board the idea of parametric ‘space’, thus enabling a clearer method for establishing identity relations and a rational for exploring musical extremes. Thirdly, it was focussed on the concept of ‘tension’ (or “dissonantal relations” (BP May 17, 2015)) as a fundamental aspect of the counterpoint, something that Richard seriously questioned in several of our lessons (BP June 21, 2015).

The rethinking of tension was emblematic of the shift of perspective. Tension has the problem of being a high-order parameter: it is the product of numerous parametric structures, such as space, register, rhythm, tempo, pitch, timbre, and so on. In order to structure tension, it is necessary to abandon, or significantly reduce, the independent structuring of the subordinate parameters. As a result, tension can have the effect of shutting off the possibility of a large variety of interesting contrapuntal relations and structures. Therefore, the new aesthetic approach conceives of tension not as a core parameter, but as a result; not something to be controlled in and of itself, but something that emerges from the interaction of lower-order structures. As noted at the time, this meant abandoning “a clear 1-to-1 relationship between compositional structure,” on the one hand, and “the experience of tension for the listener,” on the other (BP June 21, 2015). This signified a shift to a more experimental and exploratory perspective, away from traditional concepts and assumed values of Western art music, and was vital in developing the approach in the later works of the folio and the theory of counterpoint outlined earlier in this dissertation. Yet despite being abandoned as a result of this shift, the *Mirror Motets* played an important bridging role between *desert* and *Si el clima* on the one hand, and the later *Kampflieder*, *warped passages*, and *braneworlds*.

One aspect relevant for future composing was the decision that motet 3 would not have a full score, but instead three separate parts. The immediate reference point for this was Finnissy's *Nobody's Jig* (1981). Unlike Finnissy's work, however, this approach also involved a simple cueing system, which meant that the different parts would go in and out of synchronisation with each other. The form was essentially a rondo. In the A sections, the musicians were intended to solely follow their individual parts and thus lose synchronisation with the others. Whomever reaches the (rhythmically unified) B section first would hold their opening note of this section, cueing the other musicians to catch up, skipping materials if necessary. Each would hold this note before moving on into the B section proper. After this, they would begin the next A section together, and be allowed once again to go into rhythmic desynchronisation, and so on. This was inspired by Ornette Coleman's Double Quartet, in particular the track 'First Take', an outtake from *Free Jazz* (1961) that appeared on the album *Twins* (1971). While this was never tested in practice, this attempt at composing without a full score prefigured the compositional approach of *braneworlds*.

Another aspect that had repercussions for future works was the method in the first motet of structuring three independently evolving simultaneous harmonic systems. Each part was assigned one of the harmonic layers, but at different times could draw upon pitches from another layer, thus increasing its identity with another part. The three harmonic logics, shown in Figure 6.1, were relatively distinct: 1) a 12-tone all-interval chord spanning the entire register; 2) a microtonally distorted harmonic sequence in D minor in the lower register of the group, based on the Spanish folk song 'Marcha Fúnebre' from the 'Kampflieder' songbook (see below chapter on *Kampflieder*); and 3) a spectrally-derived harmonic sequence, with varying levels of distortion in the upper register. As in the case of 'tension', this approach to multiple structured harmonic frameworks entailed accepting the idea of harmony as a 'resultant' parameter, something that was part of the practice of earlier works, but had not been fully recognised or accepted.

Figure 6.1: Triple harmonic structure of motet 1



This idea of multiple simultaneous harmonic approaches was taken up again in *Kampflieder*, and was substantially refined in *braneworlds*. In the *Mirror Motets* the logic is quite inconsistent for two reasons: 1) the harmonies are each associated with specific registers and thus are composite parameters, undermining the possibilities of independent control of the parameters of pitch and register; and 2) the harmonies are not extreme poles of a continuum, but already altered, such that only intermediate values could be attained within the work and never a pure spectrality, nor a pure folk harmony, showing again the absence of a clear idea of parametric space.

*Mirror Motets* were also of importance to my research in that they were the only pieces composed almost entirely on IRCAM's OpenMusic software. While this software only played a small role in future works, the process of learning how to realise ideas through OpenMusic was important in helping conceive of structures in an increasingly logical way. It was also important in that it led to excesses of compositional abstraction, producing structures that were unrealisable in practice. A great example of this is the bass clarinet part in the second motet, shown in Figure 6.2, which is so dense with eighth-tones, without any regard for fingering or embouchure changes, that it is essentially not possible without major alterations.

Figure 6.2: Bass clarinet part in motet 2



This extreme example of abstraction from instrumental capabilities influenced the idea of basing material on the specific qualities of the instrument itself, which was at the core of *warped passages*.

## Chapter 7: *Kampflieder*

3  
16

Senza sord.  
8

Hn. (7) 3:2<sup>h</sup> pp

Vln. I 4:3<sup>h</sup> p mp p

C. Bn. 5:4<sup>h</sup> - 5:4<sup>h</sup> pp

Vln. II 3:2<sup>h</sup> sul pont. 3:2<sup>h</sup> 3:2<sup>h</sup> 3:2<sup>h</sup> 3:2<sup>h</sup> pp mp p p pp

Vln. III 6:4<sup>h</sup> sul pont. 6:4<sup>h</sup> 6:4<sup>h</sup> 6:4<sup>h</sup> 6:4<sup>h</sup> pp mp p p pp

Vla. 5:4<sup>h</sup> sul pont. 3:2<sup>h</sup> 3:2<sup>h</sup> 3:2<sup>h</sup> 3:2<sup>h</sup> pp mp p p pp

Vc. 5:4<sup>h</sup> sul pont. 5:4<sup>h</sup> 5:4<sup>h</sup> 5:4<sup>h</sup> 5:4<sup>h</sup> ord. pp mp p p pp

A. Fl. 3:2<sup>h</sup> mp

E. Hn. 3:2<sup>h</sup> 3:2<sup>h</sup> 3:2<sup>h</sup> 3:2<sup>h</sup> mp

C Tpt. 3:2<sup>h</sup> 5:4<sup>h</sup> 5:4<sup>h</sup> mp

Tuba 5:4<sup>h</sup> 5:4<sup>h</sup> 5:4<sup>h</sup> 5:4<sup>h</sup> mp

D.B. 5:4<sup>h</sup> 5:4<sup>h</sup> 3:2<sup>h</sup> 3:2<sup>h</sup> mp

## Work Overview

At the end of 2014, as I was finishing *desert* and beginning *Si el clima*, I was asked by Michael Bakrnchev—the director of Melbourne Metropolitan Sinfonietta, a semi-professional chamber orchestra in Melbourne devoted to new music—to compose a work for his concert *Midnight Songs* March 18, 2016. I had previously been considering the idea of writing a work called *Kampflieder*, based on songs from the Spanish Civil War, and decided to fold those plans into this new work. The impetus behind the project came from a PDF of Conlon Nancarrow's personal copy of the 'Kampflieder' ('War songs' or 'Struggle songs') songbook that was sent to me by a friend after digitization at the Paul Sacher Stiftung. The songbook was handed out to all members of the International Brigades in Spain during the Spanish Civil War (1936–39) by the Communist Party of Spain. Nancarrow was part of the Abraham Lincoln Brigade from the USA and fought in the Civil War (Gann, 2001). The work, therefore, attempts to give homage to Nancarrow and his interest in counterpoint and temporal complexity, as well as to the republican fighters in the Civil War and importantly the spirit of internationalism represented by the variety of songs in the songbook.

*Kampflieder* represents a significant shift in the research, in which the concept of 'character', with a more intuitive method of construction and an implied humanism, is for the first time totally replaced by that of 'identity', with a more logical method and broader application. This new framework assigns each part a set of values on complementary parametric scales from minimum to maximum self-identity. It also defines parts as groups of instruments and has a greater focus on 'statistical' structures, creating a polymorphic rather than linear counterpoint. These remain essential elements of the final two works of the folio, though in refined form with addition of the idea of parametric musical 'space'. At the same time, the work is not a clean break from earlier pieces in the folio: it retains the process-based and haphazard approach to the distribution of lines in time of *desert* and the 'primitive communism' sections of *Si el clima*, as well as these works' preoccupation with folk materials. Of the works in this folio, this was also the one composed with the most dialogue with Richard Barrett. The ideas of the work were developed

through lessons with Richard, and a simultaneous engagement with his analysis of his own *Vanity* (1996) and his article on Stockhausen (2012b), along with the latter's own writings in *Stockhausen on Music* (1989) and elsewhere.

*Kampflieder* is a 12-minute work for 15 musicians and draws upon melodies from the songbook handed out to the International Brigades during the Spanish Civil War. It was premiered on 18 March, 2016 in Melba Hall at Melbourne University by the Melbourne Metropolitan Sinfonietta with Elliott Gyger as conductor.

## Compositional Elements

The work explores the major research questions according to the following main themes:

- Relation of parts: Groups
- Scope of world: Statistical structures
- Form: Structural song
- Form: Mensural phrase canon and dynamic canon
- Form: Solo materials
- Relation of parts: Identity inversions
- Scope of world: Accelerating songs
- Form: Vertical blocks

### **Relation of parts: Groups.**

At the core of the work is the composition of group identities. One of the first compositional decisions was to separate the instruments of the ensemble into five different groups of different sizes: one group each of one, two, three, four, and five players. In the early stages of planning the work, the instrumentation of each group was first decided upon and then characters were assigned in a manner similar to earlier works. Originally, these characteristics were to be drawn from the idea of the Spanish Civil War itself: one group would be the enthusiastic but untrained militias, another would be the hardened Communist Party forces, and so on. However, after discussing this with Richard Barrett in a lesson, the basic approach was rethought:

Richard impressed upon me the need to deepen and clarify my basic propositions. In particular, what he suggested was to really think

through the basic characteristics of the groups and then decide on the instrumentation that could best carry this out. This is not entirely different to what I had already done, but I had gone about it in an unsystematic way, which means I missed opportunities for making the ideas really clear, and for having maximum possible manipulations of these ideas throughout the work. (BP September 27, 2015)

Thus, the instrumentation became a fundamental part of the design of the contrapuntal space, rather than simply an unconsciously assumed and neutral framework to which counterpoint was applied. This remained important for the construction of *braneworlds*.

The earlier instrumental groups and characters were abandoned, though the idea of groups comprising different numbers of instruments from 1 to 5 was retained. Through discussion with Richard, a series of parameters were developed for which maximal identity and minimal identity were clearly determined. In the case of the parameter of 'register' for example, maximum identity was where all the instruments in the group would be restricted to playing within one octave. Minimal identity would be that the instruments are spaced out across six or more octaves. From this a scale of five discrete positions could be constructed, as shown in Table 7.1.

*Table 7.1: Range parameter*

Value	Definition
5	within 1 octave or less (maximum identity)
4	within 2 octaves
3	across 3 octaves
2	across 4–5 octaves
1	at opposite extremes of entire ensemble range, 6+ octaves (minimum identity)

Identity scales were developed for five different parameters: register, rhythm, timbre, harmony, and melodic contour. Unlike register, however, these other parameters could not be so easily quantised into discrete scales of identity,

and thus, what constituted a legitimate ‘step’ in identity was often an intuitive decision. Tables 7.2 to 7.5 show the scales for the remaining four parameters.

*Table 7.2: Rhythm parameter*

Value	Meaning
5	rhythmic unison, stable rhythm subdivisions within each
4	rhythmic non-unison, same basic sub-div
3	rhythmic non-unison, multiple semi-stable subdivs
2	rhythmic non-unison, multiple unstable rhythmic subdivs, common general speed bracket
1	rhythmic non-unison, unstable rhythmic subdivs, no common general speed bracket

*Table 7.3: Timbre parameter*

Value	Meaning
5	total homogeneity
4	near homogeneity
3	moderate degree of heterogeneity
2	near heterogeneity
1	total heterogeneity

*Table 7.4. Harmony parameter*

Value	Meaning
5	unison of pitch classes, perceptually obvious harmonic framework
4	non-unison, perceptually obvious harmonic framework
3	non-unison, less obvious harmonic framework, medium-paced harmonic motion
2	non-unison, multiple simultaneous harmonic frameworks, fast harmonic motion
1	non-unison, no common harmonic framework

*Table 7.5: Melodic contour parameter*

Value	Meaning
5	single contour: either unison or parallel motion
4	single basic contour, slightly heterophonic
3	two basic contours
2	three or more basic contours
1	totally independent contours

If a group had only minimum identities in every parameter, it would lose all perceptual coherence as a group, whereas if a group was assigned a maximum identity in one parameter (for instance, timbral homogeneity), this would enable it to have a minimum identity in another parameter (for instance, total independence of melodic movement). If a group had only maximum identity in all parameters, it would lose the capacity for sufficient variation to maintain interest.

Each group was assigned a maximum value in one parameter, a minimum value in another, and the rest at intermediate values. These maximum and minimum values represented the core aspects of the identity of the group, and were unchangeable, while the intermediate values could fluctuate. In order for the groups to maintain differentiated identities, minimum and maximum values could not be assigned to more than one group each. Table 7.6 shows the arrangement of maximums and minimums.

*Table 7.6: Maximum and minimum assigned values*

Group	Range	Rhythm	Timbre	Harmony	Melodic contour
I		<b>1</b>		<b>5</b>	
II	<b>1</b>	<b>5</b>			
III				<b>1</b>	<b>5</b>
IV			<b>5</b>		<b>1</b>
V	<b>5</b>		<b>1</b>		

Following this, instruments were assigned to the different groups based on what would best fit these relations. The intermediate parametric values were then determined, as shown in Table 7.7.

*Table 7.7: Group identity values and instrumentations*

<b>Group</b>	<b>Range</b>	<b>Rhythm</b>	<b>Timbre</b>	<b>Harmony</b>	<b>Melodic contour</b>	<b>Instruments</b>
I	3	<b>1</b>	4	<b>5</b>	3	Hn
II	<b>1</b>	<b>5</b>	2	2–4	3	Vln1, CBsn
III	4	4	2	<b>1</b>	<b>5</b>	Perc, Cl (+bs. cl.), Tbn.
IV	2–4	2	<b>5</b>	2–4	<b>1</b>	Vln2, Vln3, Vla, Vc
V	<b>5</b>	3	<b>1</b>	2–4	2	A.Fl, Cor A., Tpt, Cb, Tba

As noted in a blog post at the time, this was not a one-way process from identity values to instrumentation, but involved a dialogue between these two aspects of groups structure (BP September 27, 2015). At the end of this process, there were five groups with distinct identities on the macro-scale. Each group interpreted the parametric identity scales according to its number of instruments, their qualities, and the interaction with other parameters. Group I proved one of the challenges of the parametric identity scales. Where other groups could express identity by sharing characteristics across the instruments (a vertical relation), the solo horn had to interpret its abstract identity values in terms of the stability or instability of its identity over time (a horizontal relation).

#### Group I—French horn

Rhythmically minimal identity: Constantly speeding up or slowing down, with irregular insertions of faster materials.

Harmonically maximal identity: Set of seven, registrally fixed pitches that change by the alteration of one pitch per phrase.

Range identity level 3: Melodic compass of approximately three octaves.

Timbre identity level 4: Mostly consistent timbre, except for difference of timbre in different tessituras of the instrument and change from *con sord.* to *senza sord.*

Melodic contour identity level 2: Little consistency in melodic contour except for regular leaping.

#### Group II—Violin 1 and contrabassoon

Range minimal identity: The two instruments play approximately six octaves apart

Rhythmically maximal identity: The two instruments play in complete rhythmic unison

Timbre identity level 2: Largely unrelated timbres, except the possibility of blending because the violin occupies the upper partials of the contrabassoon.

Harmonic identity level 2–4: Only intervals of octave and fifth (degree 2); octave, fifth, seven, and ninth (degree 3); and octave, fifth, seven, ninth, third and diminished fifth (degree 4) permitted between instruments.

Melodic contour identity level 3: Prevalence of parallel and similar motion, supplemented by contrary motion.

#### Group III—Percussion, clarinet, and trombone

Harmonically minimal identity: No pitch unisons between instruments, changing three-pitch sets each chord

Maximal identity of melodic contour: Formation of a ‘single-line’ out of the different instruments by way of staggered entrances of held chords

Range identity level 4: Within two octaves

Rhythm identity level 4: Instruments in same subdivision, generally consistent subdivision between phrases

Timbre identity level 2: Highly heterogeneous timbres, partially unified by being doubled by non-pitched percussion

Group IV—Violin 2, violin 3, viola and cello

Maximal timbre identity: All string instruments playing *sul ponticello*.

Minimal identity of melodic contour: Emphasis on contrary and oblique motion, no consistent relation between melodic motion of each line.

Range identity level 2–4: Within 4–5 octaves (degree 2); within 3 octaves (degree 3); within 2 octaves (degree 4).

Rhythmic identity level 2: Randomised distribution of a similar sets of subdivisions in each instrument, leading to a high degree of difference, but also occasional rhythmic unisons.

Harmonic identity level 2–4: A twenty-four quartertone harmonic field, in which each instrument has a subset of 6, 7, 9, 12, or 15 pitches, leading to a large variation in shared pitches.

Group V—Alto flute, cor anglais, trumpet, contrabass and tuba

Maximal range identity: Within an octave, momentary expansions of register.

Minimal timbre identity: Instruments from a variety of different instrumental families, playing at different tessituras.

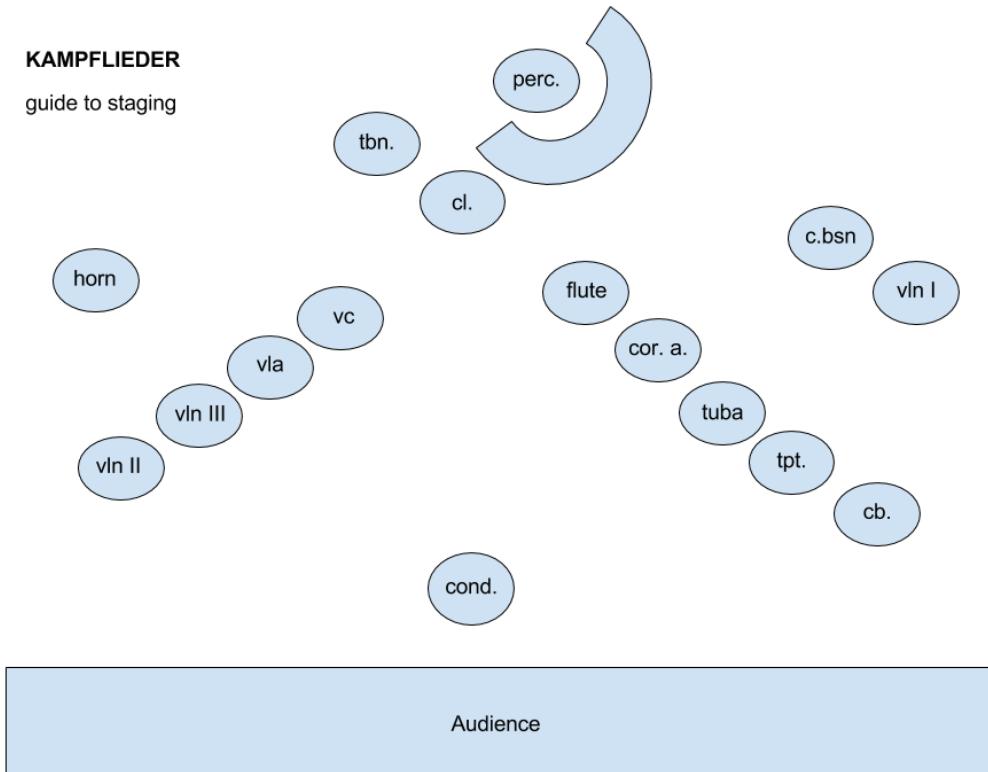
Rhythmic identity level 3: Subdivisions of basic beat into 3, 4 and 5, leading to general differentiation, but also moments of rhythmic unison and stable polyrhythm.

Harmonic identity level 2–4: Harmonic field of 15 uneven microtonal steps (from F3 to G4) of which each instrument has a subset of 3, 4, 5, 7, or 10.

Melodic contour identity level 3: Three different melodic motions (up, down, static) randomly distributed across the five instruments in different ways.

The differentiation of groups also required the physical arrangement of musicians on the stage to be different to the traditional format, as shown in Figure 7.1, which also facilitated the coordination of musicians within each group.

Figure 7.1: Guide to staging groups in Kampflieder



One important outcome of this new approach to identity formation was that the earlier heavy emphasis on rhythmic stratification in previous pieces was reduced, since identities were more thoroughly distinguished by a variety of parameters, which enabled a simplification of the rhythmic language of the work (see BP October 27a, 2015).

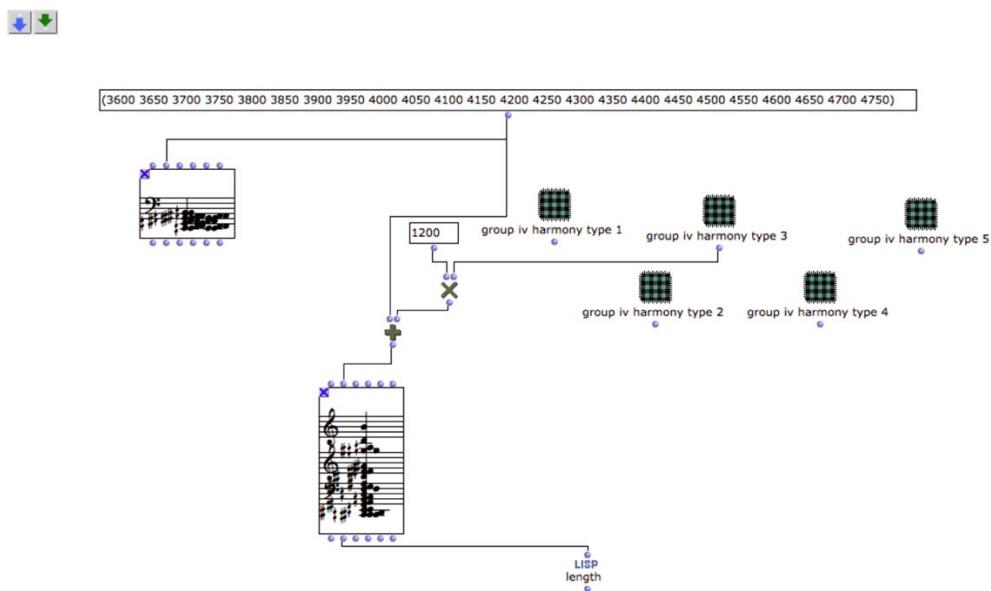
### **Scope of world: Statistical structures.**

While Groups I, II and III were generally structured in a similar multi-linear way to earlier works, Groups IV and V were developed using more statistical methods due to the need for an efficient method of creating material for large numbers of instruments. These structures are not statistical in the sense of using models derived from the sciences, such as the Poisson or Gaussian distributions, but in the general sense that they determine the macro-shape and proportions of elements within a duration, while, within this framework, more or less randomly or intuitively distributing micro-level details (Iverson, 2014, p. 342). The work adopted the idea, suggested by Richard in a lesson, that proportion itself could a

parameter that can be structured, such that, some material might have a more linear distribution and others a more exponential curve, and so on. This became an increasingly important idea in later works in the folio, but began to take shape in *Kampflieder*.

The rhythmic and harmonic dimensions of Group IV in the first two major sections (to rehearsal mark I) show this statistical approach clearly. Harmonically, this group features a sequence of chords of all 24 quartertones spread across five octaves, each chord with a different distribution of the pitches, such that each chord had different densities of pitches in different registers. These were generated in OpenMusic by a randomised process with five different settings of octave displacement of a one octave all-quartertone scale. For each of these harmonic types, three harmonies were selected, giving a total of fifteen harmonies for the work. The harmony generator patch is shown in Figure 7.2.

Figure 7.2: Harmony generator patch in OpenMusic



In this figure, each patch titled 'group iv harmony type x' is a different type of randomised octave distribution, with greater density in the lower register, upper register, middle register, both lower and upper with a thin middle, or an even distribution across all octaves.

This distributional structure was then supplemented by a method for controlling the number of pitches assigned to each instrument, and thus also their melodic compass, as well as the degree of overlap of pitch materials between instruments. Five different distributions, shown in Table 7.8, were created following an exponential curve: 7, 8, 10, 13, 18.

*Table 7.8: Harmony distribution types for Group IV*

					Harmony Distribution															
Distribution 1 Seven					Distribution 2 Eight				Distribution 3 Ten				Distribution 4 Thirteen				Distribution 5 Eighteen			
No.	1	2	3	4	No.	1	2	3	4	No.	1	2	3	4	No.	1	2	3	4	
23	x	23	x		23	x				23	x				23	x				
22	x	22	x		22	x				22	x				22	x				
21	x	21	x		21	x				21	x				21	x				
20	x	20	x		20	x				20	x				20	x	x	x		
19	x	19	x		19	x				19	x	x			19	x	x	x		
18	x	18	x		18	x	x	x		18	x	x	x		18	x	x	x		
17	x	x	17	x	x	17	x	x	x	17	x	x	x		17	x	x	x	x	
16	x	16	x	x	16	x	x	x	x	16	x	x	x		16	x	x	x	x	
15	x	15	x	x	15	x	x	x	x	15	x	x	x		15	x	x	x	x	
14	x	14	x	x	14	x	x	x	x	14	x	x	x		14	x	x	x	x	
13	x	13	x	x	13	x	x	x	x	13	x	x	x		13	x	x	x	x	
12	x	x	12	x	x	12	x	x	x	12	x	x	x		12	x	x	x	x	
11	x	x	11	x	x	11	x	x	x	11	x	x	x		11	x	x	x	x	
10	x	10	x	x	10	x	x	x	x	10	x	x	x		10	x	x	x	x	
9	x	9	x		9	x	x	x		9	x	x	x		9	x	x	x	x	
8	x	8	x		8	x	x			8	x	x	x		8	x	x	x	x	
7	x	7	x	x	7	x	x			7	x	x	x		7	x	x	x	x	
6	x	x	6	x	x	6	x	x		6	x	x			6	x	x	x	x	
5	x	5	x		5	x	x			5	x	x			5	x	x	x		
4	x	4	x		4	x				4	x	x			4	x	x	x		
3	x	3	x		3	x				3	x				3	x	x			
2	x	2	x		2	x				2	x				2	x				
1	x	1	x		1	x				1	x				1	x				
0	x	0	x		0	x				0	x				0	x				

The distributions thus range from small pitch sets with restricted melodic compasses and little sharing of pitches, to large pitch sets with wide melodic compasses and many shared pitches.

The rhythmic dimension was then determined by first deciding on four different subdivisions of the basic beat (by 3, 4, 5, and 6). Five different distributions of these subdivisions were created across the four instruments within 25-beat patterns. In each distribution, each instrument features all four subdivisions but in vastly different densities of occurrence: 1, 3, 6, and 15. The different distributions are shown in Table 7.9.

*Table 7.9: Subdivision distribution types for Group IV*

Distribution type	Type 1	3	4	5	6	Type 2	3	4	5	6	Type 3	3	4	5	6	Type 4	3	4	5	6	Type 5	3	4	5	6
Subdivision		3	4	5	6		3	4	5	6		3	4	5	6		3	4	5	6		3	4	5	6
Distr: Violin 2	6	15	1	3		1	15	6	3		1	15	6	3		15	1	6	3		15	6	1	3	
Distr: Violin 3	1	3	6	15		1	3	6	15		1	6	15	3		1	6	15	3		1	3	15	6	
Distr: Viola	15	6	3	1		15	6	3	1		3	15	6	1		3	15	6	1		6	15	3	1	
Distr: Cello	3	1	15	6		3	6	15	1		3	6	15	1		3	6	1	15		3	1	6	15	

These different distributions also give different average probabilities of the occurrence of rhythmic unison between instruments. For example, in distribution type 1, violin 2 and viola have a relatively high probability of having unison triplets, but a very low probability in type 3. The actual sequence of subdivisions in each instrumental line realised in the score was generated randomly within these sets of distributions using OpenMusic. The subdivision sequences of the first 25 beats, in distribution type 1, are shown in Table 7.10.

*Table 7.10: Subdivision sequences in opening 25 beats of Group IV*

<b>Subdivs</b>	<b>Section 1</b>																								
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
<b>Violin1</b>	4	4	4	3	4	3	5	4	4	4	3	6	6	4	4	4	4	4	3	3	4	4	3	4	6
<b>Violin2</b>	6	4	6	5	6	5	6	5	5	6	6	6	6	5	5	3	6	4	6	6	6	6	6	4	6
<b>Viola</b>	3	3	3	4	3	3	4	3	6	4	3	3	3	3	4	3	3	5	4	3	3	3	5	4	5
<b>Cello</b>	5	5	6	6	5	3	6	5	5	4	5	5	6	5	6	6	5	5	3	5	3	5	5	5	5

With this framework determined, three different ‘phrase types’ were structured: 1, legato; 2, detached/bouncing; and 3, rest. Firstly, a long sequence of values from 3 to 14 was randomly generated. This was then divided among the three phrase types, according to an intuitive repeating pattern of 13 phrases, the first two iterations of which are shown in Table 7.11.

*Table 7.11: Distribution process of phrase types in Group IV*

<b>Repeated phrase pattern</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Durations 1</b>	8	9			7					10	6	11		5	12		4									
<b>Durations 2</b>			5			6		7						8			7	8								
<b>Durations 3</b>	4			6		4	6							8			4		6	4						

This structure was then deployed within each instrument’s subdivision structure, where the values in the phrase structure represent subdivisions (that is, semiquaver triplets, demisemiquavers, demisemiquaver quintets, or demisemiquaver triplets). Since each instrument had a slightly different sequence of structures, this phrase structure sequence yields a different, quasi-canonic, structure in each instrumental line, becoming increasingly different over the course of the section. Figure 7.3 shows the opening phrase. In this example, each group first has four subdivisions’ rest (the opening note is outside of this scheme, being a result of the macro-structural song, see below), followed by two legato phrases of eight and nine subdivisions, followed by five beats of a bouncing figure, before six subdivisions of rest again and then a legato phrase of seven subdivisions.

Figure 7.3: Bars 1–2 of Group IV

The musical score for Bars 1–2 of Group IV is a four-staff system. The top staff is Violin II, the second is Violin III, the third is Viola, and the bottom is Cello. The key signature is A major (three sharps). The time signature is 4/4. Dynamics include 'fff' and 'pp'. Articulations like 'sul pont.' and '6:4:3' are present. The music consists of sixteenth-note patterns with various rests and grace notes.

Numerous decisions were left for the notational stage, such as linear direction, which note to begin a line on, if the line skips any pitches in its harmonic set, and so on. Between these free decisions, and the change already structured in by the ‘statistical’ approach, there was enough room for a great degree of variation, yet this variation was guaranteed to take place within a coherent and consistent identity, by the above structures.

Group V featured a method of harmonic distribution similar to that of Group IV. In place of the above rhythmic structure, it defined three different linear directions (up, down, static), subdivisions (fast, medium, slow), and rhythmic motive type (long–short, long–short–short, long–short–medium). These were then distributed across the instruments of the group, with a different distribution for each phrase, leading to a vast range of combinations of linear directions, subdivisions, and motives.

### **Form: Structural song.**

In addition to the constitution of group identities, the other key element for *Kampflieder* is the use of folk materials. In *desert*, the deployment of *The Limerick's Lamentation* was very tentative and limited, and while the political songs in *Si el clima* are presented more directly, they still played a marginal role—appearing in recognisable form only fleetingly. *Kampflieder*, in contrast, uses the songs of the Spanish Civil War in a more integral way, including the use of Hanns Eisler's song

'Der Rote Wedding' ('The Red Front', shown in Figure 7.4) in an extremely slowed-down form as the skeleton for the global form of the entire work.

Figure 7.4: Music of 'Der Rote Wedding' (Red Front) by Hanns Eisler from the 'Kampflieder' songbook

**Der Rote Wedding**

Text: Erich Weinert      Musik: Hanns Eisler

Links - links - links - links! Die Trommeln werden gerührt.

Links - Links - Links - Links! Der ro - te Wedding marschiert. Wir

tra - gen die Wahrheit von, Haus zu Haus und ja - gen die Lü - ge

Schornstein hinaus, wie — uns die Ge-nos-sen ge - lehrt. Wir

nähren den Hass und wir schüren die Glut, wir hei - zen die Her - zen mit

Kraft und Mut, bis der letz - te Pro - let uns gehört. Ro - ter Wedding,

grüßt euch, Genossen, hal - tet die Fäuste be - reit. Haltet die ro - ten

Rei - hen geschlossen, dann ist der Tag nicht mehr weit. Schon erglüht die rote

Sonne flammand am Ho - ri - zont. Kämpft, Ge - nos - sen,

Sturmko - lon - ne. Rot - Front! Rot - Front!

Eisler's melody is clearly divided into three major parts: bars 1–8, bars 9–20, and bars 21–37. This is translated into the three main sections in *Kampflieder*, which take place from bar 1 to 56 (rehearsal mark D), from bar 57 to 140 (rehearsal mark I), and from bar 140 to the end of the work. Thus, for much of the composition, this melody is taking place at a very slow rate. At the start of the work, each beat of the original tune takes 28 semiquaver triplets. The melody of 'Der Rote Wedding' is outlined in the accented octaves in Group IV, as shown in Figure 7.5.

Figure 7.5: 'Structural' use of 'Der Rote Wedding' in Group IV (bars 48–51)

The musical score shows four staves for the strings: Violin II (Vln. II), Violin III (Vln. III), Viola (Vla.), and Cello (Vc.). The time signature changes from 8/8 to 6/8, then to 3/2, and finally to 4/4. The key signature is mostly A major (no sharps or flats). The score includes dynamic markings such as *p*, *f*, *pp*, *mf*, and *ff*. Red ovals highlight specific rhythmic patterns, particularly groups of eighth notes and sixteenth-note figures, which represent the 'accented octaves' mentioned in the caption. These patterns occur in various measures across the four staves, illustrating the 'structural' use of the melody in Group IV.

The number of semiquaver triplets decreases in a continuous, linear fashion (translating to an exponential increase in the tempo of the melody) until the start of the second major section of the work at bar 57. Where there is a tempo change, the basic rhythmic unit of the line undergoes a metric modulation, preserving its underlying tempo. At the end of the initial acceleration in bar 57, a single beat in the original song equals only three semiquavers (at the original tempo), and is then taken up by Group III and performed as triads with slight glissandi. The durations then immediately begin to expand, as shown in Figure 7.6. In this example, corresponding to bars 9 and 10 in the Eisler melody, the tempo is at quaver = 90, and the basic pulse for the structural line is a dotted demisemiquaver; however, the realisation regularly deviates from this pulse, largely to simplify the rhythms for ease of performance.

Figure 7.6: Deceleration of structural song in Group III (bars 57–61)

Bs. Cl.                      Tbn.                      Vib.  
 Bar/beat    9.1            9.2                    9.3                    9.4                    10.1                10.2                10.3  
 Number of    3              4                      4 and 2/3s            6                      6 and 2/3s        8                      8 and 2/3s  
 dotted demi-  
 semiquavers

By the beginning of the final major section (at rehearsal mark I), one beat of the initial song equals 31 semiquavers in the work. In this section, the melody is passed to Group V, which treats it as sustained or staccato octaves. The durations progressively contract to only one demisemiquaver per one song-beat at the very end of the work. This means that by the very end of the work, the tempo of the melody is faster than its usual march tempo. This approach meant that the macro-level form moved between the deep structure and the surface level and back again, occupying different perceptual levels and interacting in different ways with the other elements of the work.

These processes of acceleration and deceleration are mediated by the uneven melodic rhythms of the structural song itself. The overall process should therefore be audible, but only after some time. In this sense, the melody becomes a kind of tendentially or statistically accelerating/decelerating abstract material. Only at the very end of the work does it become potentially audible as the melody itself.

### **Form: Mensural phrase canon and dynamic canon.**

Within the first and second major sections, the materials of the groups were structured by a ‘mensuration canon’ in which each group evolves at a different, proportionally related rate.

The proportions were as follows:

Group I: 7

Group II: 6

Group III: 5

Group IV: 2

Group V: 4

These did not apply to the local-level rhythmic or melodic structures of the groups, but solely to the distribution of their macro-structures in time—or more traditionally put, their phrase structures. Because of this, the basic unit of this proportion canon was the bar itself, meaning that for a four-bar phrase in Group V, Group IV has a two-bar phrase, and Group I has a seven-bar phrase. This bar-based construction made the process much easier to control than the methods of linear distribution in *desert* or much of *Si el clima*, which generally developed their processes based on the beat or subdivision.

Thus, each group follows the same sequence of values, but at different rates. In this sequence, there were three types of phrases, which repeated as a cycle: tutti (where all instruments from the group play), solo (where only one instrument plays), and rest (where no instruments in the group play). In this sequence, the tutti sections gradually decrease (despite moving in short-range ascending sequences), and the solo sections increase, while the rests cycle through an unchanging set of values. This means that the overall texture thins out across the opening two sections of the work, but certain groups arrive much earlier at almost entirely solo materials, while others retain their tutti materials for much longer. The sequence as it applies to Group V (which is the simplest example because it is based on a proportion of 4) is shown in Table 7.12. The first three tutti–solo–rest cycles in each group are shown in Table 7.13, demonstrating the proportional relations.

*Table 7.12: Tutti–solo–rest sequence in Group V*

GROUP 5																			
Tutti	4	4.5	5	3.5	4	4.5	3	3.5	4	2.5	3	3.5	2	2.5	3	1.5	2	2.5	1
Solo	0.5	1	1.5	2	2.5	1.5	2	2.5	3	3.5	2.5	3	3.5	4	4.5	3.5	4	4.5	5
Rest	1	1.5	2	1.5	1	1.5	2	1.5	1	1.5	2	1.5	1	1.5	2	1.5	1	1.5	2

Table 7.13: First three proportionally related tutti–solo–rest cycles

<b>Group</b>	<b>Number of bars</b>									
	Tutti	Solo	Rest	Tutti	Solo	Rest	Tutti	Solo	Rest	
I	7	7/8	1 3/4	7 7/8	1 3/4	2 5/8	8 3/4	2 5/8	3 1/2	
II	6	3/4	1 1/2	6 3/4	1 1/2	2 1/4	7 1/2	2 1/4	3	
III	5	5/8	1 1/4	5 5/8	1 1/4	1 7/8	6 1/4	1 7/8	2 1/2	
IV	2	1/4	1/2	2 1/4	1/2	3/4	2 1/2	3/4	1	
V	4	1/2	1	4 1/2	1	1 1/2	5	1 1/2	2	

This process also interacts with the metric structure itself, which, while generally fixed at four quavers per bar, is interrupted by occasional inserted shorter bars. This means that there is not an immediate translation of this proportion canon into durations in the score, since if a phrase is three bars in length and those bars are all 4/8, it will have a relatively long duration, but if the three bars are 3/16, 4/16 and 5/16, the rhythmic block will be substantially shorter, despite comprising the same number of bars. This relates to the ‘mediated’ tendencies of early works, where long-range trajectories do not efface interest at the local level (BP October 27a, 2015).

One exception to this overall process is Group III. Because it was the only group that contained percussion, and thus perceptually very distinct from all other groups, it was conceptualised separately as an ‘intervening’ group. Until the start of the second major section at rehearsal mark D, it intervenes only twice. After this point, it plays the role of the structural song while also taking up the mensural canon of the rest of the ensemble.

Another exception is that at bar 57 (rehearsal mark D), there is a general interruption to the process, highlighting the shift on the level of the structural song. At this point, a number of phrases that would have taken place according to the mensuration canon were deleted, so that the structural song in Group III is

foregrounded. Phrases begin again at bar 63, taking up the phrase canon as though it had continued during this hiatus.

A canon also structures the dynamics of the different groups. Initially, this canon was intended to control the dynamic *levels* themselves; however, I realised that this would potentially lead to major imbalances between groups, and reduce my capacity to dramatically shape larger sections. Therefore, I decided that the canon would apply only to dynamic shapes, and that the actual dynamic values would be left open to respond to the local developments of the other structures. There are five dynamic contours that are structured in the canon: 1. crescendo, 2. crescendo-decrescendo, 3. flat, 4. decrescendo-crescendo, and 5. decrescendo. With this set of shapes, a sequence of numbers from 1 to 5 was created, beginning with a stable region of 2's, with a stable region of 5's in the middle, and stable region of 1's toward the end, as shown in Table 7.14. These were to be applied only to the 'tutti' phrases as outlined above.

*Table 7.14: Dynamic canon for tutti materials*

Phrase number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Dynamic profiles	2	2	2	2	2	4	3	2	3	1	5	5	5	5	5
Phrase number (cont.)	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Dynamic profiles (cont.)	2	3	4	3	5	1	1	1	1	1	4	2	3	5	1

This means that in the opening 16 bars of the work all the groups share a similar dynamic shape, but this unity begins to break down after this point, leading to more or less aleatory relations of dynamic shape.

Additionally, a similar canon controls the dynamics of the solo materials from the beginning to rehearsal mark I. However, this process operates 'in reverse', such that the sequence first applies to the final solo phrase of each group and develops backward to the beginning of the work. This gives an opposite trend to the tutti phrases: instead of beginning with a common rhythmic shape and diverging, the solo phrases begin with different dynamic shapes and tends towards a unified shape for all solo lines across groups.

### **Form: Solo materials.**

The solo blocks within this canonic structure are composed from a completely different starting point to the tutti blocks, supplementing the identity logic of the work with another principle of construction. Each group has one instrument that takes up the solo material. Rather than the identity structures of the groups, the solo lines are based on songs from the Spanish Civil War (many taken from the ‘Kampflieder’ booklet), as shown in Table 7.15.

*Table 7.15: Songs played by solo instruments*

Group	Instrument	Song
I	Horn	Svět Patří Nám (Werich/Jezek)
II	Violin	Marcha Fúnebre (anon.)
III	Trombone	Los Cuatro Generales (anon.)
IV	Cello	Viva la Quince Brigada (anon.)
V	Cor Anglais	El Quinto Regimiento (anon.)

These solo passages, like those in *Si el clima and desert*, undergo a process of self revelation: they begin as more or less indistinguishable from the tutti material, and end, by the end of the second major section, as more or less pure instantiations of these songs—with the exception that their basic tempo may be much faster or slower than characteristic of these songs. Unlike *Si el clima and desert* however, this was achieved by progressively decreasing the size of the deviation from the *pitches*—rather than intervals—and rhythms of the original song, through a semi-randomised process. That meant that, instead of having an intervallic sequence that is distorted by various processes, the pitches of a mode were numbered, from 0 to 7 in the case of diatonic scales including the octave, and a process of deviations from the melody applied within this mode. To these deviations a ‘modulo’ approach is applied, in order that only positive values take place. Table 7.16 shows the first values for of the pitch structure of solo violin in Group II (‘Marcha Fúnebre’), with a random permutation of different positive and negative values (for which OpenMusic was used), and a Modulo 8. In this process, the proportion of 0s in the randomly

permuted values increases until there are no other values and the pitches are no longer distorted.

*Figure 7.16: Opening values of pitch structure for Group II solo violin material*

Melodic alteration														
Original pitch (0-7)	0	4	3	2	1	0	4	3	2	1	0	1	1	1
Permut-random (increasing zeros)	1	-6	-3	0	-7	3	5	-1	4	-2	2	-5	-4	7
Result	1	-2	0	2	-6	3	9	2	6	-1	2	-4	-3	8
<b>Result (Modulo 8)</b>	1	6	0	2	2	3	1	2	6	7	2	4	5	0

The intended effect of the entire first two sections is therefore the emergence of five soloists within a relatively close registral bandwidth from the far denser group structure, partially interrupted at the beginning of the second major section by the solo exposition of the new material in Group III (bar 57).

### **Relation of parts: Identity inversions.**

The major point of rupture comes at bar 140 (rehearsal mark I) in the score of *Kampflieder*—corresponding to the third section of the melody of ‘Der Rote Wedding’. In this section, both the group identities and the songs are treated differently. Each group is assigned a different song, and for the first time the songs are played tutti in each group. At the same time, the core parametric identities of the groups are ‘inverted’ to produce very different types of material and relations. This means that the maximum and minimum parametric values of each of the groups, which were fixed for the first two thirds of the work, are switched, such that what was maximal is now minimal and vice versa. This produces the new identity constructions shown in Table 7.17. This often meant going against the natural properties of the groups, upon which the original identities were based, which meant that some ‘inversions’ were more successful than others. Nonetheless, it provided a useful method for fundamentally transforming the material of the groups.

*Table 7.17: Inverted core identity structure*

<b>Group</b>	<b>Range</b>	<b>Rhythm</b>	<b>Timbre</b>	<b>Harmony</b>	<b>Melodic contour</b>	<b>Instruments</b>
I		<b>5</b>		<b>1</b>		Hn
II	<b>5</b>	<b>1</b>				Vln1, CBsn
III				<b>5</b>	<b>1</b>	Perc, Cl(+bscl), Tbn.
IV			<b>1</b>		<b>5</b>	Vln1, Vln2, Vla, Vc
V	<b>1</b>		<b>5</b>			A.Fl, Cor A., Tpt, Cb, Tba

This translates to the following properties:

- Whereas Group I (the French horn) was originally rhythmically unstable and harmonically consistent, it becomes rhythmically highly stable and harmonically inconsistent (based on variations of a 24 quarter-tone series);
- Whereas Group II was registrally very distant and in rhythmic unison, it now occupies a small bandwidth in the centre of the regstral space, and becomes rhythmically very divided;
- Whereas Group III previously lacked a strong harmonic identity, and had a unified melodic contour, now the three instruments play the same pitch class, but melodically move in different directions, jumping to different octaves.
- Whereas Group IV was timbrally very unified but melodically very distinct, it becomes timbrally divergent (through different playing techniques) and moves in parallel or similar motion;
- Whereas Group V was registrally very united and timbrally very distinct, it now breaks open to cover six octaves and, through its common attacks and dynamics, becomes timbrally more unified.

This led to a vastly different array of materials and textural possibilities, which were explored in the concluding sections from rehearsal mark I.

## **Scope of world: Accelerating songs.**

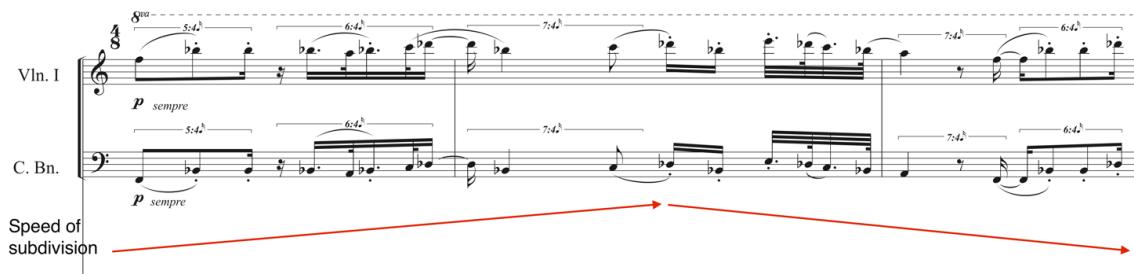
The new songs assigned to each group and performed tutti from bar 140 are as follows:

- Group I: 'Connolly's Rebel Song' (anon.)
  - Group II: 'Es Wird die Neue Welt Geboren' (Stefan Wolpe)
  - Group III: 'Felzug az Enek' (anon.)
  - Group IV: 'Die Thälmann-Kolonne' (Kabisch/Dessau)
  - Group V: 'Himno de Riego' (anon.)

In homage to Conlon Nancarrow, each of the songs are also submitted to a process of temporal acceleration and deceleration. To do this a scale of bar or half-bar subdivisions from slowest to fastest was created. For each song, a range of subdivisions within this overall span was established within which each could move back and forth in a linear fashion. This ensured a differentiation of average speeds, with Group V at the fastest average speed and Group IV at the lowest.

With this established, group phrases were developed by choosing a starting point, and creating a curve for the section. The melody was then written ‘through’ this tempo structure, adjusting the it for each subdivision structure. This yielded phrases that, while changing subdivision each bar or half-bar, and thus discontinuously, nonetheless has an overall effect of a relatively continuous acceleration and deceleration of the melody. Figure 7.7 demonstrates this principle at work in Group II.

*Figure 7.7: Accelerating and decelerating melody in Group II (bars 189–191)*



In sections where there are multiple groups playing tutti folk materials, such as at rehearsal mark M, each group has a separate curve of acceleration and deceleration, beginning at a different point on their scale of dynamics.

### **Form: Vertical blocks.**

Whereas the first two major sections of the work proceed in a long-range and canonic structure, the final section is broken up into shorter, vertically determined blocks that directly control the distributions of groups. This shares similarities with the presence of multiple approaches to distribution of parts in *desert* and *Si el clima*, though the surface manifestation of the difference between the two approaches is more obvious in *Kampflieder*. This final section comprises seven delineated subsections that are structured according to the groups present and the kinds of materials deployed (i.e. whether inverted group identities, or song materials), as shown in Table 7.18. As an approach to structuring maximum, minimum and intermediate values, and thus exploring the ‘world’ in question, this series of sections features one moment where all groups perform the song, one moment where all groups perform their ‘inverted’ material, and one moment where only one group performs. In the four remaining sections, different ‘intermediate’ combinations and degrees of density are presented.

*Table 7.18: Distribution of parts and material types in last sections of Kampflieder*

Group	Rehearsal Mark							
	I	J	K	L	M	N	O	
I	Inv	Inv	-	-	Song	-	-	
II	-	Inv	Song	Inv	Song	-	-	
III	-	Inv	Inv	-	Song	-	-	
IV	Song	Inv	-	-	Song	-	Inv	
V	S. Song (Inv)	S. Song (Inv)	S. Song (Inv)	S. Song (Inv)	Song + S. Song (Inv)	S. Song (Inv): Solo picc.	S. Song (Inv)	

### **Reflections on the Counterpoint**

Of the works in the folio, *Kampflieder* received the least successful performance, rendering reflections on the success or failure of different aspects of the composition difficult. The work was, in general, too difficult and unfamiliar for the semi-professional group, despite the efforts of many of the musicians and the

conductor Elliott Gyger, and there was far too little rehearsal time and very little time with all instrumentalists present. The recording of this performance is included in the folio submission. Nonetheless, there were a number of provisional conclusions that could be drawn from the experience of writing, rehearsing, and listening to the performance of *Kampflieder*. In general, despite seeing *Kampflieder* as a step forward to previous works in terms of the logic of its construction, I was more dissatisfied with it than earlier works. A number of potential future revisions are listed in the blog post ‘Revising Kampflieder’ (BP March 24, 2016). Yet, more importantly, its fundamental compositional flaws led to a number of key conclusions that shaped the final works: the need for greater clarity of parametric values, the need to put identity-to-others at the centre of the contrapuntal logic rather than self-identity, and the need to abandon the open-ended processual logic in favour of a more tightly controlled form made of vertical blocks of time.

### **Successful elements.**

Several elements in *Kampflieder* were positive developments of technique and aesthetics. Firstly, the new ‘statistical’ approach found in Groups IV and V yielded very interesting structures that were both consistent across time, but also capable of local-level variation and long-range development. The textures of Groups IV and V until rehearsal mark I demonstrated how a group can have a clear identity while simultaneously sustaining a degree of internal polyphony that maintains interest over a long duration. Both of these retain the aim of the early approach to ‘polyvalent’ lines—long-range trajectories with local-level detail—but do so with a method that is much less convoluted and potentially more generalizable and easily applicable, particularly to larger groups of instruments.

The global form of the work was also a successful development. For the first time in the folio, the macro-level form was built of the same material as the local-level structures, giving it a semblance of ‘necessity’ in the score. While not made sufficiently audible in the performance, the expansion and contraction of ‘Der Rote Wedding’ further integrated the long-range form into the work by shifting time-scales from macro-time to local-level, or ‘melodic’ time within the same part and same process.

Finally, the dynamic canon that structures dynamic contours for the first two-thirds of the work, was the first time I had structured dynamics in a more controlled way. Rather than seeing them purely as a reactive parameter (although they retained an element of this through the openness of the dynamic values), *Kampflieder* integrates them into the compositional logic itself, helping to articulate the canonic process, as well as giving rise to a lot of interesting local-level interrelations between groups.

### **Clarity of parametric values.**

The first major issue with *Kampflieder* was that the definition of the different degrees of self-identity in the parameters was often quite unclear and often required a large amount of interpretation in their translation into actual structures in each of the different group. In particular, intermediate values for all groups in almost all parameters (except register) were unclear. This was not an issue if this precompositional framework was merely used as a provocation to create differentiated group identities. However, if the composition is seen as an attempt to explore and compare relations between the self-identities of different groups in various parameters, this becomes a major problem. While composing, I equivocated between these two perspectives, and this confusion contributed to the lack of clarity of the parametric scales themselves.

Even when values were at maximum or minimum level, and therefore relatively easy to define, this was occasionally not successfully realised in the score itself. This was clear in the case of the constitution of the ‘harmonic’ parameter. In Group I’s non-inverted identity, it was supposed to have a maximal self-identity in the harmonic parameter. Since it was a solo instrument, this meant a maximal degree of stability of harmony over time. In my realisation of this idea, however, the horn has a relatively unstable harmonic framework, and, particularly in the context of the complexity of the texture, will not be heard as particularly consistent or stable. In retrospect, the horn should have either been restricted to a much smaller set of pitches (e.g., three), of which one would change each phrase. Alternatively, a larger group (potentially even the given seven pitches) could exist that remained registrally fixed and absolutely unchanging. Likewise, Group III was supposed to

have a ‘minimum’ degree of harmonic self-identity, yet from chord to chord, it shows many common pitches. Even though on a vertical level each instrument plays a different pitch, on a horizontal level, there is a substantial degree of pitch continuity. Thus, the ‘minimum’ degree of harmonic identity in the work had a similar feeling to the ‘maximum’ degree. This indicates a lingering tendency, as identified in *desert*, of avoiding the exploration of the extremes of ideas, leading to a partial breakdown in the precompositional logic of the work.

### **Group sizes.**

In retrospect, the fact that the different sizes of groups were decided before the assigning of group identities is a design flaw of the work, further re-iterating the need for a logical relationship between the identity constructions and the instrumentation of a work. Beyond leading to balance issues between groups (Group V tends to dominate in the opening sections), what this meant was that each group related slightly differently to the scales of parametric identities. This lead to further inconsistencies in the logic of identities. For example, value 3 in the ‘melodic contour’ parameter is defined as ‘two fundamental melodic contours’ while value 1 is ‘entirely different contours’. This formulation implies that all groups have the same number of instruments, however, Group II was assigned the value of 3 for this parameter, giving it two different contours, yet it only has two instruments. This meant that the value of 3 and value of 1 were rendered equivalent, since in both cases each instrument had its own melodic contour. Similar issues emerged in almost all parameters in different groups.

As mentioned above, this was also particularly problematic in the case of the solo horn. How could a solo instrument have a weak ‘group’ unity? The answer had to come from turning a vertical definition into a horizontal one. While this could still lead to generally sufficient solutions, it further undermined the consistency of the scales of identity.

### **Relation of parts: Self-identity or identity-to-others.**

Ultimately, this relates to a flaw in the core logic of controlling parameters of self-identity. While this represented a step forward in the degree of control and

clarity in the construction of parts compared with earlier works in the folio, this method is not able to sufficiently control the identity relations *between* parts. Within this approach, relations between parts are not wholly ignored: the five structured parameters are shared across the five groups, producing a series of hierarchies of identity in the parameters. However, these relationships remain haphazard. The problem lies in the fact that the scale of parameters is relative to each group, not fixed and absolute for the entire composition. For example, range was structured as the compass of the linear materials of the groups, not the absolute registral space occupied by the parts. As a result, two groups, for example Groups IV and V, could have almost totally divergent identity values for this parameter (2 and 5, respectively), and still have significant overlap in their respective registers (see bars 1 and 2); their self-identities are distinct, but their identities to each other are not. Similarly, each group had a different harmonic system by which they realised the parameter of harmonic self-identity. This again gave groups the ability to harmonically unify with themselves to a greater or lesser extent, but it had no real way of regulating whether there was any overlap between harmonic qualities—this led to a greater indistinctness between groups on the harmonic level than was originally intended. Similar problems of uncontrolled relations between parts can be found in the other structural parameters: rhythm, timbre, and melodic contour.

Without this careful attention to the interrelation between parts, their aural distinctness was relatively weak and uncontrolled in *Kampflieder*, and the overall texture tended towards a dense and murky sound, especially when all groups were playing. Two further elements contributed to this. Firstly, the groups were all in too close spatial proximity on the stage, making it difficult to distinguish the different sound sources. Whether this could be corrected in future performances without introducing a large number of other problems is unclear. Secondly, the entrance of the untuned percussion, particularly the cymbals—as in the very first work in the research, *Trio*—had the effect of dominating the frequency-space and reducing the separation of the different groups even further (BP, March 24, 2016).

### **Processual form.**

Another major conclusion drawn after listening to the work was that the approach of distributing parts by horizontal-processual structuring (such as by mensuration canon) needed to be abandoned, or at least fundamentally altered. While problems with this approach had already been identified in earlier works, *Kampflieder* more clearly revealed that this approach was too uncontrollable, and made it impossible to systematically explore the broadest possible set of identity relations between parts. The density of the work was such that much of the nuanced and internal development of each group was lost in the barrage of five simultaneous groups. This in itself may not have been a problem, if the degree of density at each point of the work could have been controlled to a greater extent. Instead, the fluctuations between the different degrees of density were contingently produced by a system (the proportion canon) that could not, in principle, foresee its results. These limitations are overcome in the final third of the work, with its seven sections that distribute the groups according to different possible combinations, including maximum and minimum degrees of density and material homogeneity. While this new approach is only rudimentarily begun in this work, and not entirely successful, it showed the way to a different method, which becomes one of the key points of focus in the next two works in the folio.

### **Use of songs.**

A final issue with *Kampflieder* was the use of the Spanish Civil War songs. In part, this was simply a result of the fact that they were not handled with sufficient control. A number of miscalculations were made in the creation of the distortion processes, and these were not sufficiently corrected by ad hoc decisions in the notating stage. This meant that the emergence of these melodies was too late and too abrupt and it did not leave a sufficient period of time where it was simply the five solo lines playing simultaneously. As such, the work does not present ‘maximal’ expression of this idea of simultaneous solo folk melodies, leaving a region of the world in question unexplored and lending the process of the opening sections a lack of clarity.

A different problem emerges in the treatment of the folk materials in the final third of the work. On the one hand, this section does explore the maximal presentation of the layering of song types at letter M. However, as identified in my blog post after the performance (BP March 24, 2016), the songs are too divergent in their ‘median’ tempos, leading the slower groups, such as Group IV, to sound closer to accompanimental figures. At the same time, this counterpoint suffers from the same problem as much of this work in that its registral relationships are not clearly considered, leading to significant overlap between groups. In this section, a greater registral stratification would significantly enhance the effect of the counterpoint.

**Chapter 8: warped passages**

The musical score consists of five staves of music, each with a different time signature and dynamic marking. The first staff (measures 80-81) starts with a 5/16 time signature, followed by a 6:5:5 measure, a 6/16 measure, and a 7:6:5 measure. Dynamics include ff, p subito, mp, pp, and pp. The second staff (measures 82-83) shows a 6:7:5 measure, a 5:4:4 measure, a 3:2:3 measure, and a 7:8:5 measure. Dynamics include mf, f, ff, pp subito. The third staff (measures 84-85) shows a 22:19:5 measure, a 3:2:3 measure, and a 22:19:5 measure. Dynamics include ff, p subito, and ff. The fourth staff (measures 86-87) shows a 15:11:5 measure, a 3:2:3 measure, a 3:2:3 measure, and a 5:4:5 measure. Dynamics include mp, ff, pp subito, and ff.

## Work Overview

While working on the score and parts for *Kampflieder* in late 2015, I began conceptualising a work for a much smaller configuration, that of solo flute. My partner Hannah Reardon-Smith had often asked me to write a flute solo, and I had always refused, since I was conscious of the already vast repertoire of modern flute solos and did not want to add to that without making a worthwhile contribution. At the same time, my focus on counterpoint had also led me to avoid writing for entirely single-line instruments. However, the idea of a solo work became attractive, because it would allow testing out a number of new ideas of counterpoint developed during lessons with Richard Barrett, and my engagement with Badiou's *Logics of Worlds* and Adam Harper's *Infinite Music*. The work takes its name from the popular science book *Warped Passages* by theoretical physicist and science populariser Lisa Randall (2005), in which she outlines various theories of extra-dimensional physical reality from both string theory and particle physics. These ideas also helped stimulate the development of the new contrapuntal perspective in the work.

In particular, *warped passages* was the first work in the folio to conceive of a musical work as a 'space' or 'world' comprised of parametric 'dimensions', as well as to put identity *relations*, rather than character or self-identity construction, at the centre of the contrapuntal logic. Unlike earlier works, the form was composed non-linearly and according to a series of proportionately related temporal 'regions'. Finally, the work is based on a perspective of 'radically idiomatic' composition, in which the fundamental logic is derived from the properties of the instrument itself (Barrett, 2002). Barrett also encouraged this latter idea in lessons, consistently challenging me to discard non-essential or important materials or techniques and focus solely on what emerges from the specific aspect of the instrument being explored. Thus, while only a 'single-line' piece, *warped passages* focuses on a number of aspects of composition important for the compositional aesthetics outlined in Chapter 2, and which were applied to simultaneous-sounding textures in the later *braneworlds*.

Moreover, at the time of composing this work, formal arrangement was conceptualised as connected to simultaneous superposition, along a continuum

from closest proximity to greatest distance in the temporal form of the work. In my conference presentation at the IRCAM study day *Musique et Politique*, it was argued that the principle of counterpoint as identity relations “unifies vertical simultaneity and formal proximity” (Flenady, 2016a; see Appendix 5). While this viewpoint has been modified such that simultaneity is now seen as a privileged point of formal relations (see Chapter 2), horizontal form and vertical simultaneity are still closely related. Therefore, the research question concerning the relation of parts is here considered in the form of the approach to defining and differentiating sections (or ‘regions’ as they are called in *warped passages*).

*warped passages* is a 10'30" work for solo flute and was given a partial premiere by Hannah Reardon-Smith on January 17, 2017 at the Melbourne Arts Centre as part of the Tilde New Music Academy, and was recorded on February 11, 2017, at the Queensland Conservatorium of Music.

## Compositional Elements

The work explores the major research questions according to the following main themes:

- Scope of world: Instrument-space as composition-space
- Scope of world: ‘Extended techniques’
- Form: Moment form/global proportions
- Relation of parts: Parametric determinations
- Relation of parts: Determinacy level
- Relation of parts: Pitch layers
- Relation of parts: Rhythmic dimension
- Compositional process: Randomised sequence

### **Scope of world: Instrument-space as composition-space.**

*warped passages* was inspired by Barrett’s flute solo *vale* (2011) the compositional logic of which is based on finding paths between given pitches by changing only one finger at a time, creating phrases with an alternative logic to that of traditional flute writing. This perspective presupposes an alternative way of conceptualising the role of instruments in compositional logics. Adam Harper

suggests, musical instruments are musical ‘objects’, regions within ‘music space’ with more or less fixed variables, as well as variables that remain free, thus creating a particular space for variation. In other words, “musical instruments are contexts in which musical variability is quantised and limited in various specific ways” (Harper, 2010, p. 42). Richard Barrett has articulated a similar standpoint:

for many years I’ve thought of instruments too as defining a space with many dimensions (also including time as a dimension), through which each composition traces a different pathway, constrained by the physical laws of the instrumental “universe” in question, which might cause dimensions like loudness, register and timbre to be inter-dependent in characteristic ways. The shape of the pathway becomes the structure of the composition; a notated score as a system of more or less precise directions along the way. (Barrett & Deforce, 2015, p. 148)

Barrett (2002) has referred to this approach to composition as “radically idiomatic” in which “the instrument/player combination itself, in all perspectives from ergonomic to historical, becomes the “material” from which music is shaped, either in real time or in notation.” This idea influenced my concept of ‘liberated territory’ that began to emerge in the research toward the end of 2015, in which a work should “build a space from a free starting point, a starting point that is not ‘of this world’ (or is, but in affirming something repressed within it)” (BP October 25, 2015). With this idea as the starting point, the approach of *warped passages* was to try to construct an alternate path through the region of ‘music space’ called the ‘flute’ and open up some different, perhaps hidden, dimensions of this region.

On a more prosaic level, the emergence of the specific idea for the work came from listening to my partner Hannah Reardon-Smith practice the flute. Often when she practices the fingering of passages in the third register without wanting to fatigue her embouchure (or annoy the neighbours), she maintains the notated fingerings but underblows all of the notes, yielding a structure of pitches roughly two octaves below that did not correspond directly to the contour of the passage had it been played in its ‘proper’ register. After discussing and workshopping this technique with Hannah, it was found that through changes of note-production

techniques, under each note in the third register there were at least two different underblown pitch possibilities, and sometimes up to three or even four. Figure 8.1 shows the chart of pitches that emerged from these experiments.

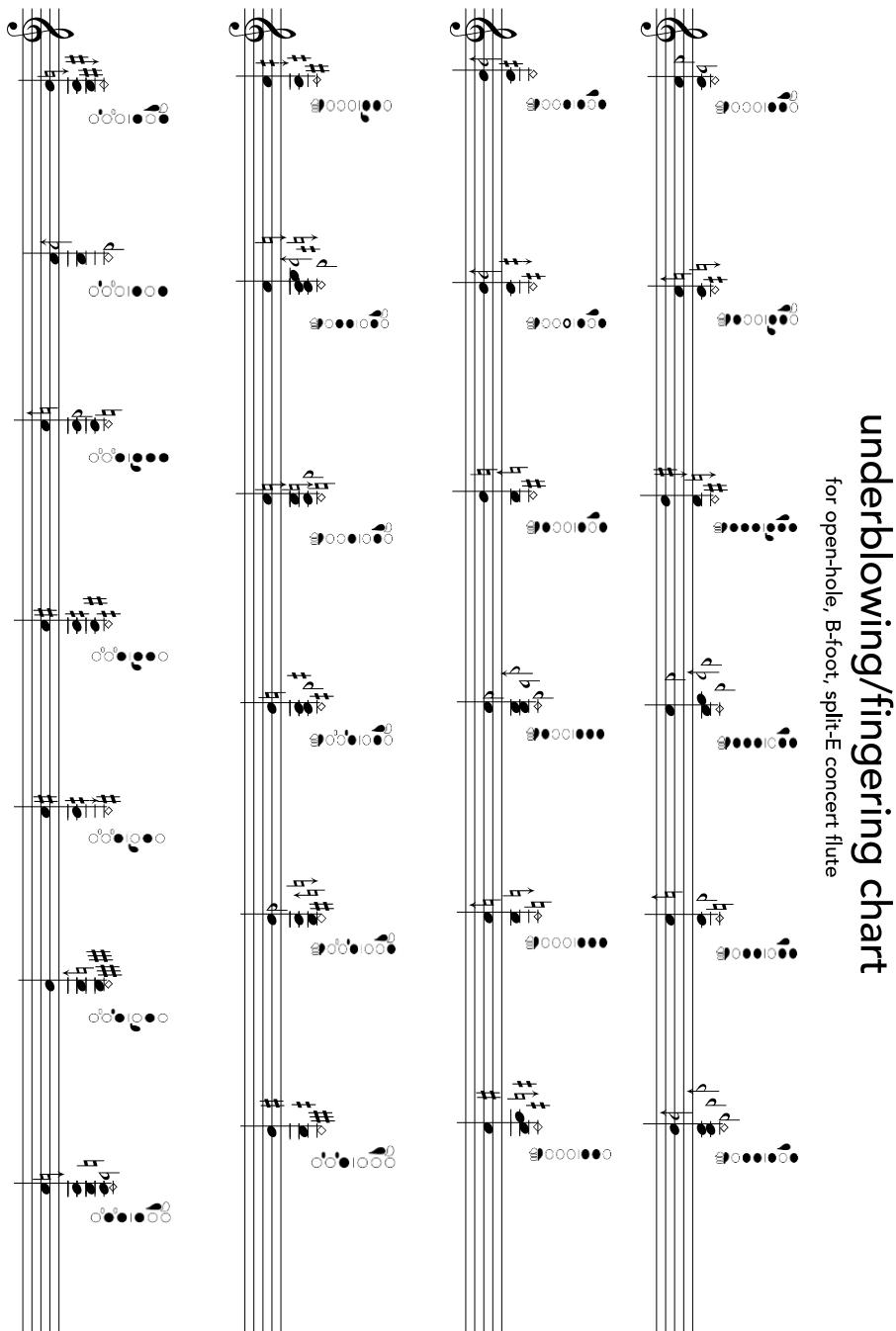


Figure 8.1: warped passages *underblowing/fingering chart*

Here the top note is the fingered pitch and any lower notes are possible underblowings. The specified accidentals are not exact; they are more or less accurate to the eighth-tone, but the precise sounding pitch varies according to the status of a number of sound production parameters. As discovered through working with the other flutist from Kupka's Piano, Jodie Rottle, different flutes will yield slightly, or sometimes vastly, different underblown pitches and timbres. This means that different performances of the work will require changes to both this fingering chart and the score itself. In this sense, the work is written for Hannah's Sankyo flute, and requires 'transcription' for any other instrument.

For roughly half the fingered pitches there are two other layers below, and for the other half there are two layers. To control this aspect of the work (see section below on pitch layers), the top (fingered) pitches were labelled 'layer 1', the next set of pitches below are much less stable and only available in half the fingerings, these were called 'layer 2', the next-to-bottom layer was 'layer 3', and then the very bottom is 'layer 4'.

Since one set of fingerings can yield a vast number of different 'passages' on the level of pitch, the work is based on a single 'isofingering' that would be repeated in different manifestations across the work. Early in the work's genesis, the addition of notes outside this chart of underblowings was considered, but it became evident that there was enough material to maintain interest within this single piece. However, one concession made after workshopping the first version of the score was that, in some sections, adjacent fingerings in the isofingering could be alternated within their combined duration, giving a greater possibility for pitch changes and faster melodic passages.

Each iteration comprises a fixed 25-fingering sequence as well as 5 rests that could be inserted at variable positions in this sequence. The work was initially composed with a sequence of pitches based on melodic concerns of divergent motion, stepwise ascent and descent on the top layer, as well as an interested 'warped' contour on the underblown layers. However, this led to a fingering structure that was very awkward for the instrument. As such, a new fingering structure (see Figure 8.2) was created, based on the simplest possible fingering changes from pitch to pitch while maintaining melodic interest.

*Figure 8.2: warped passages 'isofingering'*



### **Scope of world: 'Extended techniques'.**

*warped passages* attempts to overcome the superficial approach to the use of 'extended techniques' in earlier compositional logics in the research. As part of the logic of exploring the specific space opened up by the technique of underblowing, the work excludes the use of a number of standard extended techniques, such as fluttertongue, singing and playing, tongue rams, etc. Instead, the work exclusively uses extended techniques that emerge logically from the act of underblowing itself.

Through workshopping, it was found that achieving the different layers of underblowing depended on subtle shifts in a host of sound production parameters. These were all deeply interconnected, but could be divided into the following: dynamics, intensity of airstream, angle of airstream, and rotation of flute towards or away from the upper lip. Generally speaking, when a flute player aims to play a particular pitch in a particular layer of underblowing, these parameters must all adjust in interdependent ways to produce the desired pitch result. In this case, they are not independent, but subordinated to the goal of producing the specified pitch. However, once delimited logically, these parameters of sound production technique can be treated relatively independently, enabling the structuration of different aspects of the sound. Since they are inextricably linked to the parameter of pitch, the more independently structure these parameters are, the less determinate pitch will become. This idea of having degrees of pitch determinacy and indeterminacy itself became a structural parameter of the work.

### **Form: Moment form/global proportions.**

Significantly, *warped passages* abandons long-range multi-temporal processes in favour of more tightly controlled vertical blocks. The global form comprises a number of instantiations of the isofingering. To create a mechanism for temporal variation, each instantiation of the isofingering is at a different temporal expansion, where some iterations would last a very short time (and thus each

fingering would have a short duration) and others would last much longer (and thus each fingering would have a long duration). This approach was partially inspired by Stockhausen's methods of both Momentform, as exemplified in *Stimmung*, and formula composition, particularly as in *Mantra* (see Toop, 2005). An exponential sequence from the smallest to the largest expansion was created, as shown in Table 8.1, since this would represent a more perceptually significant differentiation than a purely linear increase.

*Table 8.1: Global form proportions (values in seconds)*

Global formal proportions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL
Iteration number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Increase*		0.5	1	1.75	2.75	4	5.5	7.25	9.25	11.5	14	16.75	19.75	23	
Iteration length*	5	5.5	6.5	8.25	11	15	20.5	27.75	37	48.5	62.5	79.25	99	122	547.75
Avg dur per fingering/rest*	0.1667	0.1833	0.2167	0.275	0.3667	0.5	0.6833	0.925	1.2333	1.6167	2.0833	2.6417	3.3	4.0667	

In this sequence, the increase in the duration of the iteration (starting with 0.5 seconds) itself increases in a linear fashion by 0.25 seconds each iteration. At this stage, sequences were still constructed by an intuitive trial and error method until a satisfactory result was achieved. As such, the form did not start from a desired total duration and then divide it proportionally into a predetermined number of sections as was the case in structuring the sections themselves and in the structure of *braneworlds*. Instead, the number of iterations and the exact total duration of this sequence of 9'07.5" were results of experimentation. The duration of a number of these sections, and thus total duration itself, was modified in the final version of the work due to a number of practical and aesthetic considerations. The sequence was rearranged to produce a formal balance between contrast and similarity. As shown in Table 8.2, this sequence is the uneven interpolation of two divergent sequences: 5, 6, 4, 7, 3, 8, 2, 9, 1, 10 and 13, 12, 14, 11.

*Table 8.2: Durational structure of global form*

Global form	5	6	13	4	7	12	3	8	14	2	9	1	11	10
Iteration number	11	15	99	8.25	20.5	79.25	6.5	27.75	122	5.5	37	5	62.5	48.5

Because the number of fingerings was fixed at 25 plus 5 rests, the tempo of each section could be determined by dividing the number of fingerings/rests (30 total) by the duration of the iteration, and then multiplying this by 60 seconds. The results of this were generally written in quaver tempos, with each fingering (and

rest) having the duration of a quaver. In the case of very fast passages, the resulting tempo was divided by two and each fingering had a duration of only one semiquaver, yielding the same effective tempo, but avoiding excessively large tempo markings; conversely, in the case of very slow passages, the bpm was doubled or quadrupled and each fingering had a duration of a crotchet or minim. For example, the tempo of the five-second iteration at Region 12 is determined in the following way:  $\frac{30}{5s} = 6$ ;  $6 \times 60s = 360$ ;  $\frac{360}{2} = 180 \frac{q}{s}$ . Therefore, in this section, the tempo is quaver = 180 and each fingering has a duration of one semiquaver. As another example, the 79.25-second iteration at Region 6 is determined in the following way:  $\frac{30}{79.25} = 0.3786$ ;  $0.3786 \times 60 = 22.7129$ ;  $22.7129 \times 4 = 90.8517$ . Therefore, the tempo is quaver = 91 and each fingering has a duration of one minim.

### **Relation of parts: Parametric determinations.**

Each iteration was precompositionally differentiated with regard to the following set of core parameters:

- determinacy level
- pitch/underblowing layers present
- number of rhythmic groupings
- temporal tendency, or denominator of rhythmic groups
- degree of ‘mediation’ or ‘refraction’ of the tendency

These defined the precompositional space and logic of the work, but were not fully determined before notes were written in the score; instead, they were progressively filled in in an excel spreadsheet as each moment was composed. The abstract formal plan at the end of the process of composing is shown in Table 8.3.

Table 8.3: Formal plan

<b>Region</b>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Duration (seconds)	11	15	99	8.25	20.5	79.25	6.5	27.75	122	5.5	37	5	62.5	48.5
Determinacy level (pitch)	1	2	1	4	1	2	3	1	4	3	1	1	2	3
Pitch layers	3,4	1	1,2,3	1,2,3,4	3	4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1(2,3,4)	4	3	1,2,3,4
BPM (quaver)	164	120	73	109	88	91	138	65	59	164	97	180	115	74
Metric denominator	semi-q	semi-q	quaver	semi-q	semi-q	quaver	semi-q	semi-q	quaver	semi-q	quaver	semi-q	quaver	quaver
No. of metric pulses	60	60	120	30	60	120	30	60	120	30	60	30	120	60
Number of r. groups (5,6,10,12,15,30)	12	10	30	1	6	12	5	15	5	6	30	10	30	5
Sequence/tendency (denominator)	5	3	2	NA	3	2	4	1	4	2	3	3	2	2
Set of values (numerator)	2	3	1	NA	1	4	3	2	NA	4	2	1	2	5

### **Relation of parts: Determinacy level.**

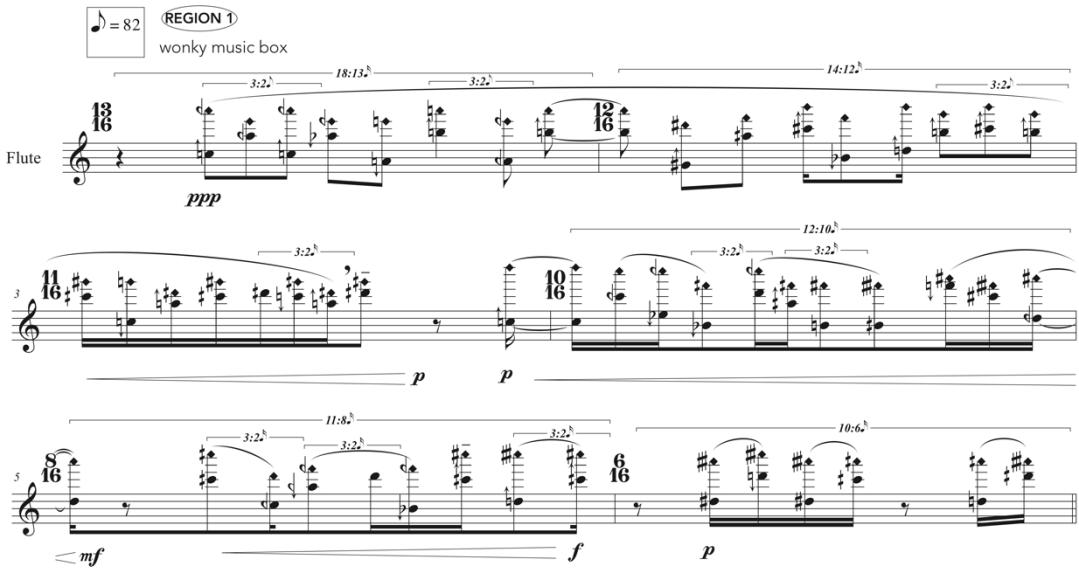
This parameter controls the degree to which pitch is determined, leaving sound production parameters indeterminate, or, conversely, the degree to which sound production parameters are determined, leaving the pitch as an indeterminate result. The basic degrees of this parameter were numbered from 1 to 4 as shown in Table 8.4.

*Table 8.4: Determinacy levels*

Determinacy level	Meaning
1	Pitch determined, other parameters subordinate
2	Pitch partially determined, partially destabilised
3	Pitch indeterminate/resultant, sound production techniques determined
4	Fingerings and overall duration given, all other parameters improvised.

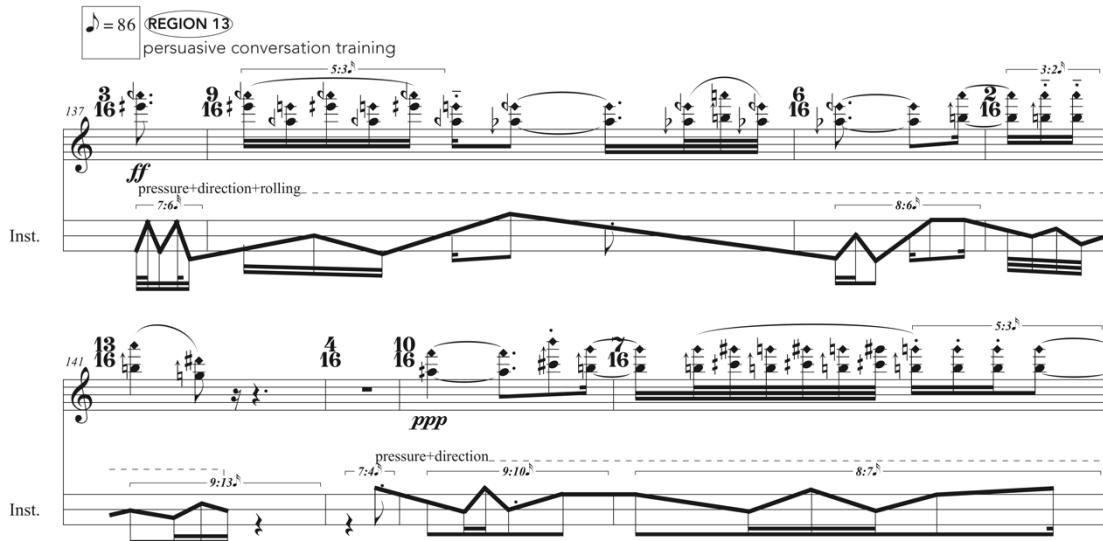
In the first value, pitch is determined and all sound production parameters are subordinate to it. Other traditional parameters like rhythm and dynamics are independently structured, though these too are ultimately subordinate to the pitch. For example, see Region 1 in Figure 8.3.

Figure 8.3: Determinacy level 1 in Region 1



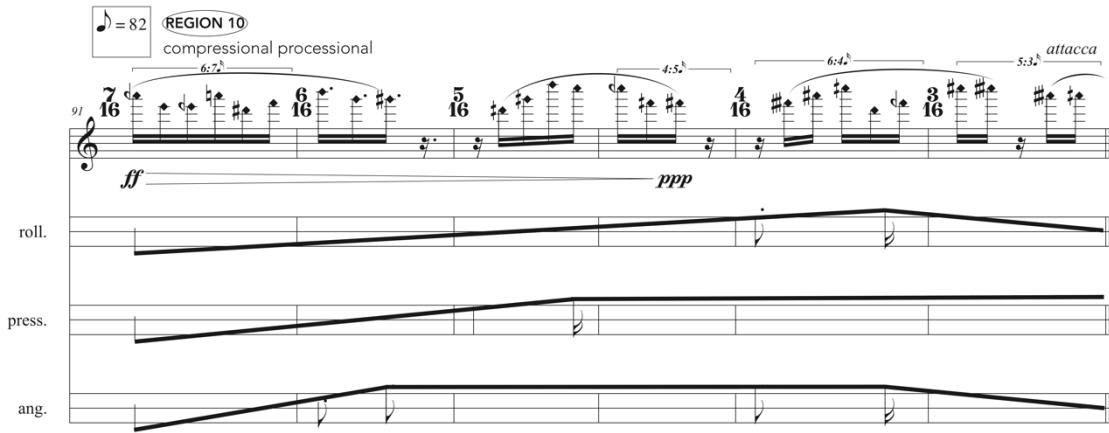
At determinacy value 2, the pitch is determined, but a secondary parameter called 'instability' acts directly on the notated pitch to push it towards jumping up or down to other strata of underblowing, to destabilise the pitch between layers, or to simply bend the pitch and change its colour. This instability parameter groups together one or more of the following sound production techniques: rolling, air pressure, and direction of air stream. Thus, these techniques, while not fully determined by the pitch, are not independent, but subordinated to the effect of producing instability in the melody. This determinacy level is demonstrated in Figure 8.4.

Figure 8.4: Determinacy level 2 in Region 13



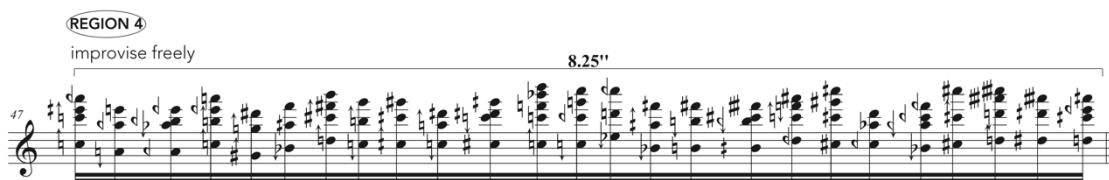
At determinacy value 3, the fingering and duration are specified along with the three sound production parameters, leaving the precise pitch indeterminate. Whereas in determinacy value 2, the notation indicates an intended result (deviation from written pitch); in this case, the notation is effectively ‘action notation’, where the degrees of notation indicate physical degrees (more or less intense embouchure, more or less rolled in or out) without reference to an intended sounding result. The sounding pitches will be a partially indeterminate result of the sum of the parametric structures as well as the performer’s interpretational choices. Figure 8.5 shows the example of Region 10.

Figure 8.5: Determinacy level 3 in Region 10



At determinacy level 4, only fingerings and overall duration of the section or sub-sections are determined. Everything else is left to the performer, meaning that these sections are basically improvised. In these sections the exact order of the pitches can be modified, and pitches repeated. Figure 8.6 shows Region 4 as an example.

Figure 8.6: Determinacy level 4 in Region 4



Across the 14 sections there are six sections at degree 1, three sections at degree 2, three sections at degree 3, and two sections at degree 4.

### **Relation of parts: Pitch layers.**

The presence of underblowing layers in each section was influenced by the choice of determinacy level in the above parameter. In sections where determinacy is at degree 3 or 4, all layers are effectively present (at least in the sense that no layer could be excluded at the compositional level). For the other two determinacy levels, either the precise layers present could be specified (level 1), or instead the 'centre of gravity' of the pitch domain (level 2).

Since the five sections that are either determinacy degree 3 or 4 have effectively all the pitches in them, the other sections focus mostly on single layers and smaller combinations of layers, to explore these areas of the ‘world’ of this technique. Thus, the six sections of determinacy level 1 had the following pitch layers: 3 (Region 5); 4 (Region 12); 3,4 (Region 1); 1,2,3 (Region 3); and 1,2,3,4 (Regions 8 and 11). Layer 1 was not featured by itself because it was the least sonically interesting layer, and layer 2 could not be featured by itself, since it is generally the least stable layer, and not all fingerings have this extra pitch. As a logical result of the technique, the regions with multiple layers present could move between these either sequentially (melodically) or as more or less stable simultaneous sounds (multiphonics). The three sections of determinacy level 2 had only the single layers, so that there would be a basic point of departure for the ‘instability’ parameter: 1 (Region 2); 3 (Region 13); and 4 (Region 6).

### **Relation of parts: Rhythmic dimension.**

The other major parameters that were pre-structured in this way concerned the internal temporal or rhythmic dimension of each section: number of fundamental rhythmic groups, temporal tendency (or denominator), degree of ‘refraction’ or ‘mediation’ of this tendency (or numerator).

### ***Number of rhythmic groups.***

Each region divided its total pulses of into a number of smaller groups. The total number of pulses was often simply 30 (the total fingerings and rests), but it was often 60 or 120 in longer sections (since each fingering had a duration of larger values, such as crotchets or minims). Therefore, the possible numbers of groups by which a region could be divided were specified as factors of 30: 5, 6, 10, 12, 15, and 30. The primary function of this parameter was to determine the number of possible changes to subdivisions, and thus the ‘resolution’ of the rhythmic structure: the greater the number of rhythmic groups, the more supple and precise the rhythmic structure could be. The rhythmic groups were a compositional category, not a notational one, and thus they occasionally coincide with bar structures, but often do not.

### ***Temporal tendency.***

This parameter specified five possible types of distribution of the total pulses among the rhythmic groups: 1. exponential acceleration (decreasing number of pulses per group); 2. gradual acceleration; 3. totally flat, equal division; 4. gradual deceleration (increasing number of pulses per group); 5. exponential deceleration. In reality, this was not adhered to in any systematic way, particularly with regard to the distinction slow/exponential, but define general approaches. For each region, a sequence whose length was the number of rhythmic groups was generated by a formula of the kind  $y = x^a$ . The variable  $a$  was used to create the degree of curvature of the section. A value of  $a = 0$  would give a completely even distribution, since any number to the power of 0 is 1; where  $0 < a < 1$ , the sequence would have a slow curve that was quicker at the start and slower at the end; where  $a = 1$  there was a sequence of a linear increase; and where  $a > 1$ , there was an exponential increase. These (apart from  $a = 0$ ) generated decelerating structures (since the durations increased). To achieve accelerating structures,  $a$  was given negative values, or simply inverted the positive sequences. Occasionally the formula was varied in other ways in order to boost the bottom of a curve while keeping its exponential character.

These sequences were then made to fit the overall number of pulses in the section by first dividing each  $y$  value by the sum of all  $y$  values, and then by multiplying these values by the total number of pulses in the section. These results were then rounded to the nearest whole number. Table 8.5 shows a simple example of the process (from Moment 5).

*Table 8.5: Process for determining temporal tendency of Moment 5*

Denominator ( $x^{0.5}$ )							
x-values (number of rhythmic groups: 6)	1	2	3	4	5	6	Sum
y-values	1	1.41	1.73	2	2.24	2.45	10.8
divided by sum of y-values (10.8)	0.09	0.13	0.16	0.18	0.21	0.23	
multiplied by 30 semiquavers	2.77	3.92	4.8	5.54	6.19	6.78	
quantised	3	4	5	5	6	7	30

**Degree of ‘mediation’ of temporal tendency.**

This parameter was constructed in a similar manner to the previous one. For each region generated a sequence of numbers was generated according to an exponential formula, changing the variable  $a$  for different degrees of increase or decrease as in the previous process. However, rather than use this as a basic tendency or process, this parameter treats it as a set of proportions—a reservoir of numbers that have a particular proportional relation. In other words, the sequence generated by the formula was permuted rather than applied in its original form. This permuted sequence gives the number of even divisions within the total durations of the rhythmic groups determined by the ‘temporal tendency’ parameter, producing a sequence of tuplets (usually of whole-bar length), of which these values are the numerator. The total pulses for the numerator sequence are always the same as the denominator and thus the realised rhythm oscillates around the pre-established tempo of the section—mediating or refracting the overall tendency of the section. For example, Table 8.6 shows the numerator and denominator of Region 1 which has 30 semiquaver pulses with six rhythmic groups at a tempo of quaver = 164.

Table 8.6: ‘Mediated’ temporal tendency of Region 1

Numerator	9	7	11	12	11	10
Denominator	13	12	11	10	8	6
Tempo (at quaver = 164)	227	191	328	394	451	547

In this case, the tempo result has a *tendency* towards acceleration, but it has been mediated by the uneven and non-teleological number sequence that is in the numerator. Figure 8.3 above shows its realisation in the score.

These temporal structures not only affected the tempo and rhythms, but also the ‘harmonic rhythm’, since the absolute duration of a fingering changed from subdivision to subdivision. Subdivisions within fingering rhythmic units, such as the triplets or duplets in the above example, were generally intuitively determined based on a sense of melody and gesture. In other regions, such as Regions 2, 6 or 7, where there are multiple simultaneous independent parametric lines, numerous

different numerator sequences were generated, creating a kind of ‘virtual polyphony’ between parametric lines.

While it would be possible, in small sections like Region 1, to simply create these simple number sequences intuitively, this mathematical approach makes it much easier to control the durational structures and tendencies of longer sections, making sure that they fit within the overall duration of the section. This had been a consistent problem in earlier works in the folio. Another major benefit was that degrees of curvature and rhythmic fluctuation or stability could be controlled from region to region, creating another way to systematically explore relations across the work. There are limitations using such simple formulas, and in future works the intention is to significantly expand the range of possible structures determined in this way.

### **Compositional process: Randomised sequence.**

As mentioned above, *warped passages* is the first work in the research since *QEM2* that composed non-chronologically—i.e. not from start to finish, but in a back and forth throughout the work. This was a suggestion made by Richard Barrett in a lesson, and was part of an attempt to conceive the work more as a spatial than a temporal entity. As such, the compositional trajectory followed a randomise sequence of the region numbers: 6, 8, 2, 14, 10, 3, 9, 11, 13, 1, 12, 4, 5, 7. Unlike earlier works, where there was a clearer separation between precompositional and notational stages, the process in *warped passages* determined precompositional structures for each region as they were composed. As the compositional process progressed, the possible structures of the remaining regions were increasingly constrained due in part to an intuitive sense of what would ‘work’ in relation to adjacent regions, and in part to the decreasing number of available parametric combinations that had not already been structured.

Thus, despite having a relatively tight precompositional logic, the form also had a significant ‘open’ dimension. Likewise, within the constraints established by the above structures, there was a lot of room for compositional shaping, such as extra subdivisions, rest placement, phrasing, articulation, dynamics, specific

application of the fingering structure (alternating or direct), and, in the sections with multiple underblowing layers present, the precise pitches.

### **Reflections on the Counterpoint**

*warped passages* has not yet been performed in full, and Hannah is still in the process of refinement of interpretational and technical aspects. However, based on the workshop recording made in February 2017, included in the folio submission, I feel that the work successful in many respects. While the work is not contrapuntal, it nonetheless demonstrates that the approach to identity construction presented here is capable of yielding a diverse array of possibilities found in a particular region of ‘music space’. It therefore offers some interesting insights on the development of materials that is pertinent to future contrapuntal practices, both *braneworlds* and the piece currently in the early stages of composition *A Book of Migrations* (see the Epilogue). However, since the work is not contrapuntal, reflections on its performance and recording will remain brief.

#### **Scope of world.**

*warped passages* is the most homogeneous work in the folio. There is no point of rupture with the quality and expressive character of the materials (although this could technically take place in the improvised sections). Thus, while the form is very sectional in its conception, it nonetheless conveys a high degree of continuity, with short moments of intensification where shorter regions occur. On the surface, this seems to contradict the emphasis on creating world-like scope mentioned in Chapter 2. However, the work is relatively successful in covering the extremes of the restricted dimensions that emerge from the foundational playing technique. In this sense, the absence of a section that simply performs the ‘normal’ pitches of the fingering sequence is a flaw, since this one logical extreme implied by the idea of the work.

The fixed nature of the isofingering also limits the possible temporal approaches in regions. Because each region has the number of fingerings and rests, the longer sections tend to have a slower general rhythm and the shorter sections tend to be faster. This is partially corrected in longer sections by shifting between

underblowing layers, repeating notes, and alternating between adjacent fingerings, which increase the speed of materials. However, this has a limit point, and shorter sections are invariably rapid. As such, neither short, slow regions nor very fast, very long regions can be explored by the work. While this gives the work something of its formal and expressive identity, it remains a limitation to the logic that future works should take into account.

### **Collaboration.**

Even more than the other solo work in the folio, *Si el clima, warped passages* is a collaborative effort. Since the foundational technique of the work is not in common practice, the developmental process was also a process of both Hannah and I learning about the material, its capacities and limitations. Similar to Klaus Hübler's (2002) suggestion that the composer must "shuttle back and forth" between compositional idea and the materiality of the instrument (p. 244), this work developed by several stages of alternating between notated score and practice, first in February 2016, then in October 2016, and finally January–February 2017. While the score was never drastically rewritten, a number of important changes were made, many of them suggested by Hannah. Even the submitted score in the folio could still undergo some changes, and the work has not received a complete premiere performance. Performances by other flute players, with other flute builds, will also potentially require significant alterations to the current score.

The first major change to the score was to alter the fingering sequence. As mentioned above, the initial sequence was created with melodic concerns in mind, but led to a number of very awkward fingering changes, especially for written-out tremolos. Thus, a more fluid fingering sequence was required. Yet even with this new sequence, the non-uniform nature of the underblown pitches meant that some original structural decisions needed to be modified.

### **Tempo and dynamics.**

A number of sections required significant changes to tempo. Regions 1, 2 and 8 all required having their tempos halved, and Region 13 had its tempo reduced to 75%, since the underblown pitches would not sound effectively in the time

originally given. Even in regions where the general tempo did not need to be modified, certain underblown pitches are so difficult to find that a number of fermatas were placed on particular notes. This was particularly the case in Region 3, where an entire bar (bar 39) is to be taken in the flutists' own time (the final Ab of the bar is the most difficult underblown pitch in the piece). Moreover, for other regions where no change was made, it was decided that the tempo should be simply an indication, and free to be altered by the performer in order to achieve the best sonic result. While this undermines the formal proportions that were organised early in the compositional process, the more important aspect was to explore the 'inner space' of the instrument. The temporal structure, while modified in this final version, was nonetheless a very useful structuring method, helping determine the characters of sections, and it was an important step towards the approach taken in *braneworlds*.

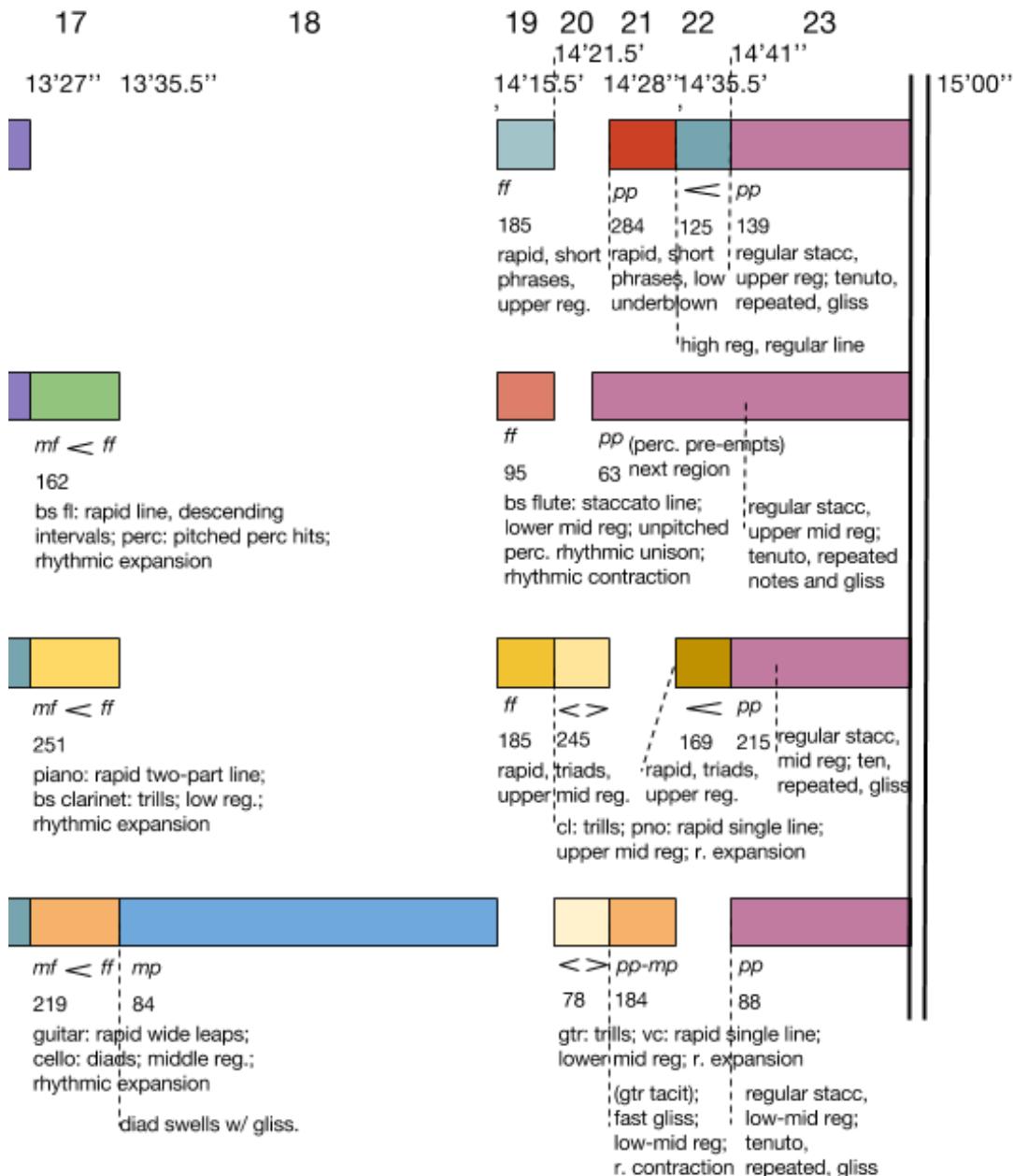
Similarly, a large number of changes were made to dynamics because certain underblown tones were nearly impossible at high volumes (particularly the layer just underneath the fingered pitch), and some of the fourth register pitches—in particular the C three-quarter flat—could only be reached with a great deal of intensity.

### **Interpretation and character.**

In the original version, no character or expression markings were given. However, after workshopping the piece several times with Hannah, it became clear that, because of the foreign nature of the techniques, contradictory interactions between parameters, and indeterminate nature of the results, the performer would benefit from a mental image that could allow these other levels to coalesce into a meaningful whole. As such, character markings for each region were collaboratively developed. The aim was to keep the characters ambiguous so that the complexity of the ideas was not reduced, but clear enough poetically to give the performer a way both to synthesise the information presented by the score, and to fill in any gaps that it left (the resulting character descriptions were reminiscent of Pauline Oliveros' 1986 text composition *13 changes*, which Hannah had previously prepared and performed). This has interesting implications for future composition. It implies that,

regardless of the identity formations on a higher-level parametric level, their result can still yield a ‘character’ that is not necessarily immediately reducible to these original macro-level decisions, and that may have a strong impact on the experience of the musical object.

### Chapter 9: *braneworlds*<sup>1</sup>



<sup>1</sup> Elements of this chapter first appeared in the *Directions of New Music* article ‘Composing musical branes’, published February, 2017.

## Work Overview

Between completing the initial score for *warped passages* in April 2016 and returning to make changes in October–November 2016, I composed the final piece of the folio: the septet *braneworlds*. This piece was initially conceived of as a kind of concerto for flute, with large sections of *warped passages* directly transferred into an ensemble context, along the lines of Berio's *Sequenza/Chemins* pairs, Richard Barrett's solos with ensemble versions such as in *Negatives* (1988–1993) or *The Opening of the Mouth* (1992–1997), or Boulez's re-composition of the flute concerto ...*explosante-fixe...* for various ensemble formations (1972, 1985, 1993). This was also influenced by Mahnkopf's (2002) concept of the 'polywork', where works can both stand on their own, or form part of larger-scale works (pp. 49–50; see also Hoban, 2004).

As with *warped passages*, *braneworlds* is inspired by the extradimensional theories in Lisa Randall's book *Warped Passages* (2005), and the original intention was for the two to have similar, or at least compatible, basic structures. However, as the planning of *braneworlds* progressed, the logic of the work became too specific and complex that the polywork idea had to be largely abandoned. Nonetheless, the new work adopts *warped passages'* original 25-quartertone isofingering with underblown variants. The solo flute part in *braneworlds* plays material exclusively based on this sequence, although, as mentioned above, this 25-note sequence actually changed in the updated version of *warped passages*, meaning that the two works do not share the same sequence, but maintain a common approach.

Like the second of the aborted *Mirror Motets*, this work has no full score. However, *braneworlds* explores the resulting possibility of temporal independence much more systematically. The founding conception is also very different. Rather than the temporal stratification and lack of score leading to a higher degree of communication and coordination amongst musicians on stage, as was the idea in the third motet, the idea of *braneworlds* from the beginning was to have four independent but coordinated clicktracks, negating the need for either internal ensemble coordination or a conductor.

The work significantly expands on the ideas and techniques developed in *warped passages* and for the first time in the folio tests out a systematic approach to identity relations between simultaneously presented parts. It is the work of the folio that is most associated with the aesthetics of counterpoint as ‘world determination’ as presented in Chapter 2.

The work is also significant in that it is my first attempt—after repeated encouragement by supervisor Gerardo Dirié—to compose for myself as a performer since writing tunes for my jazz ensemble in undergraduate 10 years ago. This experience of being part of the realisation of the contrapuntal structure was very stimulating, and has led me to begin further work as a performer in Kupka’s Piano as well as planning future works for myself on electric guitar.

*braneworlds* is a 15-minute work for seven musicians: two flutes, clarinet, piano, percussion, guitar, and cello. The work was premiered at the Judith Wright Centre on October 7, 2016, and was recorded as part of the Kupka’s Piano forthcoming album (working title ‘*braneworlds*’) on December 20–22, 2016, at the University of Queensland Nixon Room, and on January 30, 2017, at the Real Productions studio in Albion.

### **Compositional elements.**

The work explores the major research questions according to the following main themes:

- Form: Macro-durational structure
- Relation of parts: Group and brane structures
- Scope of world: Structural parameters
- Form: Combination types
- Relation of parts: Parametric identity structures
- Relation of parts: Representing identity relations
- Compositional process: Clicktrack construction

#### **Form: Macro-durational structure.**

The construction of the duration of sections (or ‘regions’) in *braneworlds* followed similar principles as that in *warped passages*. However, whereas the latter

started with a non-linear formula and derived a final number of sections and total duration from it, the former began with a total duration and number of sections and fit a non-linear formula proportionally within it. *braneworlds* comprises 23 regions, ranging from 5.5 seconds to 130 seconds long according to an exponential sequence  $y = x^3 + 23^2$  up to 23  $x$  values, mapped proportionally onto 900 seconds (minutes) and quantised to the half-second. This yields the following sequence of values in Table 9.1 (in seconds).

*Table 9.1: Macro-durational proportions in braneworlds*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
5.5	5.5	5.5	6	6.5	7.5	8.5	10	12.5	15.5	19	23	28	33.5	40	47	55.5	65	75.5	87	99.5	114	130

This was then rearranged as shown in Table 9.2.

*Table 9.2: Rearranged macro-formal proportions*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
5.5	12.5	55.5	23	28	33.5	130	47	10	114	5.5	75.5	87	99.5	15.5	65	8.5	40	6	6.5	7.5	5.5	19

A key early compositional decision was that all the parts would fit within this single durational framework, such that all parts would change their structures and processes at the beginning of each region. This allowed for a very tight control of identity relations between groups over the form of the work.

### **Relation of parts: Group and brane structures.**

*braneworlds* divides the ensemble into groups of instruments as in *Kampflieder*. For the entirety of the work, the seven musicians are divided into four groups:

Group I: flute

Group II: flute (doubling alto flute and bass flute) and percussion (pitched and unpitched)

Group III: clarinet (doubling bass clarinet) and piano

Group IV: cello and electric guitar

Inspired by extradimensional theories, each group was assigned to a different ‘brane’ within the multi-dimensional space of the work. A brane, Randall (2005) explains, is a lower-dimensional “slice” of a higher-dimensional space (p.

50). If physical reality has as many as ten or more spatial dimensions, as string theory posits (p. 16), our human universe would represent a three-dimensional brane within this extra-dimensional space. We are free to move about within the three dimensions, but are fixed with regard to the other dimensions.

In *braneworlds*, this was used as a metaphor for the fact that each group has a number of dimensions, or parameters, in which it was largely fixed for the entirety of the composition, and others in which it was very free to move around. This differs from the group identity construction in *Kampflieder*. Whereas in the earlier work, the parameters applied differently to each group and functioned as self-identity relations, in *braneworlds* the parameters applied to the entire ensemble and thus were able to define identity-to-others across the different groups. The ‘space’ created in *Kampflieder* was one of differing degrees of self-identity, and thus had a less explicit and coherent way of relating different groups to each other. In *braneworlds*, on the other hand, the degree of self-identity of the various groups was not directly structured, enabling a more coherent method of structuring the relations across groups. The distinction between the two approaches was not fully conscious at the time of composing, but in retrospect it can be seen to mark a significant shift and one of the key conclusions of the research.

### **Scope of the world: Structural parameters.**

Four core parameters were selected to establish the basic ‘space’ of the work in which identities could be constructed and compared, leaving others to be dealt with on a more intuitive level as the composing progressed. A number of parameters were fixed in advance by the context of the work and could not be chosen as parameters to structure. Timbre, for instance, was already largely fixed by the properties and build of the instruments chosen and thus the groups could not move through this dimension with sufficient freedom for the purposes of the composition. Likewise, as spatial position is more or less unchanging in any performance context, it had to be ruled out. The four parameters essential dimensions selected were:

1. Temporal division of section lengths
2. Register
3. Pitch

#### 4. Dynamic contour

Each parameter was given a minimum and a maximum value. These were partly based on the inherent properties of certain instruments. For instance, the guitar's capacity for volume swells and the percussion's natural decay influenced the idea of including 'dynamic contour' as an essential parameter. Likewise, the 25-quartetone series and its underblown pitches from *warped passages* became the 'minimum' of the pitch dimension. The maximum and minimum values of the work are as follows:

##### 1. Temporal division:

Max: largest temporal division of each section, according to a scale of 'tempo frames' (see below): 17, 23, 31, 41, 53, 61, or 71.  
 Min: smallest temporal division of each section according to this same scale: 5, 7, 11, 13, 17, 19, or 23.

##### 2. Register:

Max: within the top two and a half octaves of the ensemble range.  
 Min: within the bottom two octaves of the entire ensemble range.

##### 3. Pitch:

Max: an expandable, non-tonal, sequence of major and minor triads.  
 Min: 25-quartetone series and its derivative pitches from flute underblowing.

##### 4. Dynamic contour:

Max: crescendo.  
 Min: decrescendo.

This resulted in a total of eight extreme values. Since there were four groups, each group could be assigned two values with no duplication:

Group I (flute): Register max, pitch min.  
 Group II (flutes, percussion): Tempo min, dynamic contour min.  
 Group III (clarinets, piano): Tempo max, pitch max.  
 Group IV (cello and e-guitar): Register min, dynamic contour max.

Within the logic of the work, each group could move freely with regard to the two other essential parameters and any other parameters unspecified in the precomposition process, but was fixed with regard to the two above (with

occasional exceptions). These fixed parameters helped establish a consistent identity for each group beyond its mere instrumental formation and spatial position, while allowing for a large space of variation.

**Parameter 1: Temporal division.**

Building on the approach to rhythmic structures in *warped passages*, the parameter of temporal division was particularly important in this work. The decision that each group would have its own clicktrack facilitated a high level of temporal dissociation between groups. These multiple clicktracks were synchronised by a Max/MSP patch created by composer Vincent Giles. Each formal section of the work (or ‘region’) was divided evenly according to a scale of ‘tempo frames’ that were made up of a range of prime numbers above 5, as shown in Table 9.3. The choice of prime numbers above 5 was to ensure that no simple ratio, such as 1:2 or 2:3, could occur, and that each different division would yield a substantially differentiated tempo. Depending on the length of the section and the desired general speed of materials, a different level of the scale would be selected.

Table 9.3: Scale of tempo frames

Tempo frame	Min (1)	Intermediate (2–4)	Max (5)
1	5	7, 11, 13	17
2	7	11, 13, 17, 19	23
3	11	13, 17, 19, 23, 29	31
4	13	17, 19, 23, 29, 31, 37	41
5	17	19, 23, 29, 31, 37, 41, 43, 47	53
6	19	23, 29, 31, 37, 41, 43, 47, 53, 59	61
7	23	29, 31, 37, 41, 43, 47, 53, 59, 61, 67	71

Thus, the scale of values for this parameter from one to five changed depending on the ‘tempo frame’. The value of 1 and 5 were always the minimum and maximum, and the value of 3 was always the middle or one of the two middle divisions. The values of 2 and 4 were significantly freer, especially in the higher

tempo frames, being any number in between the minimum and the middle, or the maximum and the middle, respectively.

Beyond this basic temporal structure, a further step was required to create a basic pulse for longer sections, since these values often yielded pulses with bpms below 30, and sometimes below even 10. This was achieved by deciding on a basic subdivision of these major divisions. For instance, in Region 3, which has a total duration of 55.5 seconds, Group IV divides the section into 23 basic divisions, resulting in a bpm of 24.87. To give a basic pulse, these divisions were further subdivided by 7, to give a pulse bpm of 174.1. In very short sections where the initial division already produced a fast pulse, this extra subdivision layer was often not required, but instead the original set of pulses were grouped relatively intuitively into bar structures.

This extra subdivision meant that the surface rhythmic speed of a group located on the minimum of the temporal division parameter but with a high subdivision could be faster than one located on the maximum but with a low subdivision. This had the potential to undermine the function of the minimum–maximum scale for this parameter since there was no longer a direct relation between the position on this scale and the sounding speed of the group. To correct this, the primary divisions from the ‘tempo frame’ were usually translated as a bar, and each bar defined a particular event, based on one of their core parameters:

Group I: change of fingering.

Group II: decrescendo.

Group III: change of harmony.

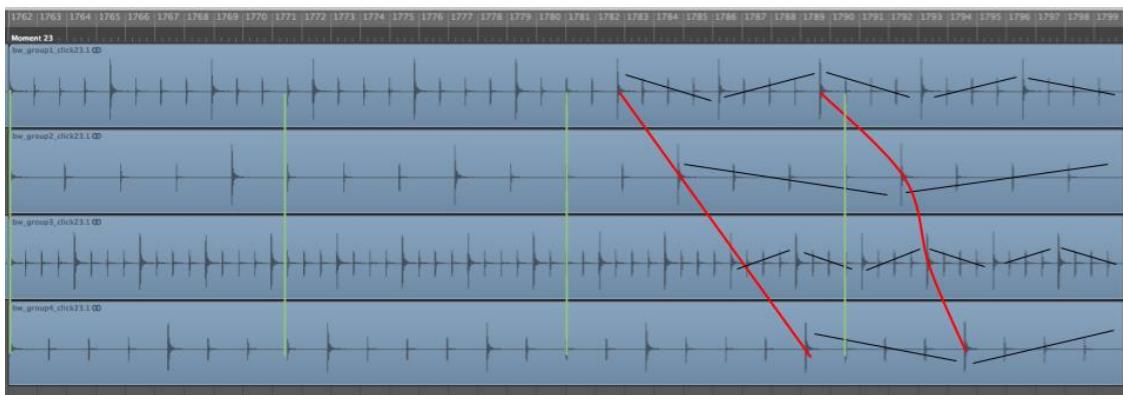
Group IV: crescendo.

This meant that while the surface speed could be fast in a group with a slow temporal division, it would nonetheless still preserve a slow tempo in terms of the change of a fundamental element—pitch (providing a ‘harmonic rhythm’) or dynamic shape (providing a ‘gestural rhythm’).

Similarly to *warped passages*, the way these subdivisions were distributed within the total number of bars was varied. In some regions, the total number of subdivisions were divided equally among the number of rhythmic units (bars), producing a stable metre across the region; in other regions, this subdivision value

was used as the average metre length, around which the metres varied according to three basic shapes: contracting length (acceleration), expanding length (contraction), and fluctuating values around the average. In regions—in particular Region 7 and 23, see Figure 9.1—where divisions were entirely even and all groups had different values in this parameter, this meant that there would be a long-range, complex polyrhythm on the level of their metric structure, with no common downbeat until the start of the following section.

*Figure 9.1: 'Time plot' of Region 23*

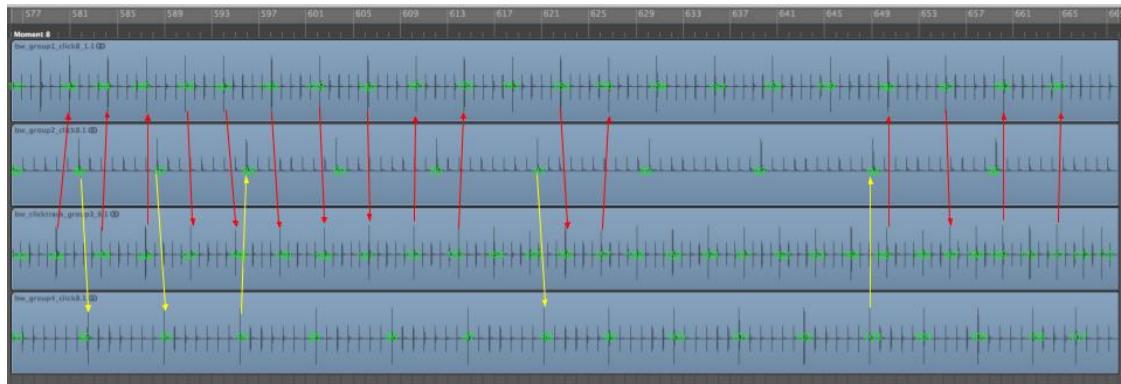


In this figure the green lines represent points of rhythmic coincidence between groups, of which there are four, since each group subdivides their basic division by four. However, since for most of this section, groups only play on their respective downbeats, the second and third rhythmic unisons do not materialise, and the fourth is avoided by the introduction of tuplets. The red lines signify, firstly, the (staggered) entrance of ascending/descending lines in each group, and, secondly, the introduction of tuplets in these figures. Black lines represent the melodic motion of each group.

Where the subdivision was instead an average value and the metres had a changing structure, the parameter of temporal division would give an overall differentiation of speed of change in a more 'statistical' sense, giving an overall density and effect without having a determinate polyrhythmic relation to other groups, but often giving the group a highly directional feeling (e.g. Region 8, see Figure 9.2). In both cases, this approach to time meant that the four groups aligned

rhythmically at the start of each region of the work, but were often independent from that point until the start of the next one.

*Figure 9.2: 'Time plot' of Region 8*



In this figure, the green numbers represent bar numbers, the red arrows represent proximal downbeats between Groups I and III and the yellow arrows represent proximal points between Groups II and IV.

These temporal relations resulted in the abandonment of the idea of a full score, since the temporal relations between the parts were too complex for music software such as Sibelius or Finale and would have been extremely time consuming to draft by hand. For *braneworlds*, therefore, there were only four parts—one for each group—and a basic form scheme to outline the basic overall structure.

### **Parameter 2: Register.**

The dimension of register had a relatively simple construction. This parameter involved a trade-off between delimiting very distinct bands within which the groups operated, on the one hand, and giving the groups enough of a compass for internal variation, on the other. In the end, fairly wide compasses for the minimum and maximum values were decided upon, which led to a significant amount of overlap between points on the register identity scale of 1–5, while allowing them to remain relatively perceptually distinct. The maximum registral value was given by the register of the flute in pitch sequence as well as its underblowings, giving a range G#4 (slightly sharpened) to a high D7 as shown in Figure 9.3.

*Figure 9.3: Maximum registral value*



The minimum registral value was defined by the lowest note of the cello C2, up to around C4 (with the occasional excursion to above pitches), as shown in Figure 9.4.

*Figure 9.4: Minimum registral value.*



This low C was thus taken as the lowest note of the work, and as such the piano does not play any notes below this throughout.

At each point of the work, the groups occupying the maximum or minimum values tend to stay within a much smaller registral compass than the full range given by this position. However, they always occupy the highest or lowest position in the ensemble texture. As such, the intermediate values were not given very clearly fixed registral bands across the entire work, but instead they were determined differently for each region according to the register in which the highest and lowest groups were playing within their overall compass.

### ***Parameter 3: Pitch***

The pitch parameter did not have an immediately discernible minimum and maximum in the same way as register. In a way that resembles the attempt to draw links between folk materials and atonal materials in earlier works, this parameter was structured around two conflicting pitch frameworks. The ‘maximum’ value was attributed to a sequence of alternating major and minor triads, intentionally avoiding a tonal centre, and root motions of semitones and minor thirds were generally avoided. The sequence was partially palindromic: at the middle, it was

reversed but chords swapped their type from major to minor or minor to major. Figure 9.5 gives the chord sequence as it applies to sections with 17 basic divisions.

*Figure 9.5: Maximum value of pitch parameter for 17 divisions*

B♭M F♯m CM Fm E♭M Am DM Em BM EM Dm AM E♭m FM Cm F♯M B♭m

In sections with greater or fewer basic divisions, this was expanded or contracted by intuitively interpolating new triads or sequences of triads at various points along this original sequence, while always preserving its basic characteristics.

The ‘minimum’ value was assigned to the pitch sequence and its underblown pitches represented in Figure 9.6. In the figure below, the high notes are the fingered pitches, all notes underneath are possible underblown pitches. As with the sequence in *warped passages*, these underblown pitches are approximated to the eighth-tone.

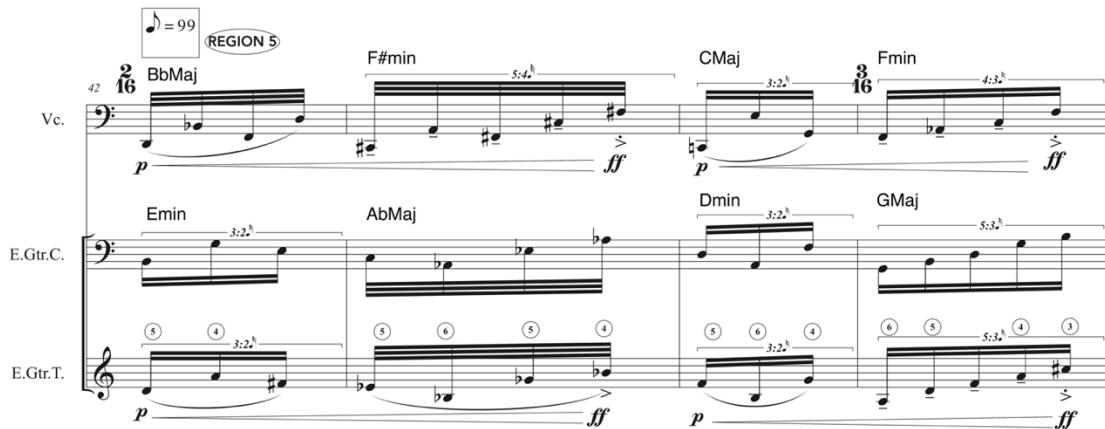
*Figure 9.6: Minimum pitch parameter value*

The specific qualities of these underblown notes could obviously not be replicated in all other groups, however, the pitches themselves were transposable to the registers of other groups.

Finding clear intermediate values for this parameter was difficult, and a number of loose strategies were adopted across the course of the work. For the close-to-minimum value (2), the above flute pitch sequence was varied by changing its ordering and/or adding new pitches, and usually reducing the number of underblown notes present. For the close-to-maximum value (4), the chord sequence was normally varied by adding different repetitions of smaller sequences of chords within the progression (e.g. Group 2, Region 12), or by having two variations of the chord sequence played simultaneously (e.g. Group IV, Region 5; see Figure 9.7), thus

preserving the presence of triads, but with more dissonant and complex sonorities. In the case of the middle value (3), atonal pitch sequences were intuitively developed which were more or less equidistant from both pitch sequences, though technically not 'between' them (e.g. Group IV, Region 4).

*Figure 9.7: Intermediate value for pitch parameter in Group IV, Region 5*



#### **Parameter 4: Dynamic contour**

As with Kampflieder's dynamics canon, rather than fix 'dynamics' themselves (where one group would always play *pp* and another *ff*, for example), which would limit the degree of control over dramatic shape in the work as well as potentially leading to rigid hierarchies between groups, instead the dynamic contour of the groups was fixed. Similar to the pitch parameter, the terms 'minimum' and 'maximum' simply signify two opposing poles on a spectrum, in this case from decrescendo to crescendo. This meant that the five different values translated as: 1 = decrescendo each division; 2 = mostly decrescendo, though not necessarily in sync with the division structure; 3 = stable or generally fluctuating dynamics; 4 = mostly crescendo; 5 = crescendo each division. Like other parameters, these intermediate values were not hard and fast, but often intuitively determined at each section.

The parametric structure outlined gave a relatively coherent and extensive space for the differentiation of musical objects. At the same time, the structure also limited the number of possible musical objects. For example, on the one hand, a musical object with the characteristics of being played by a flute, in the high register, with quartertones, very fast, and crescendo was entirely possible in the work; on the

other hand, an object with the characteristics of being played by a flute, in the high register, with major and minor arpeggios, very fast, and crescendo, was not possible.

### **Form: Combination types.**

Building on the approach to distribution of parts in the ‘feudalism’ section of *Si el clima* and the final third of *Kampflieder*, all the possible combinations of groups from each group solo to tutti were written out as part of the aim to explore as thoroughly as possible the possible identity relations of the musical space. The following combination types were then selected, and their number of occurrences in the work determined:

- 4 group solos (one of each group)
- 3 duos between single instrument in different groups
- 6 duos between different groups
- 4 trios between different groups
- 2 quartets between single instruments in different groups
- 4 tutti sections

These were progressively attributed to specific regions of the work, yielding the final structure presented in Table 9.4, where x signifies that the whole group plays, and  $x^1$  signifies that one of the two instruments in the groups plays.

*Table 9.4: Macro-distribution of groups*

		REGIONS																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
GROUPS	I	x	x	x	x		x	x	x		x	x	x		x		x		x		x	x	x	x
	II	x		x		x	$x^1$	x	$x^1$		x		x	x		x	x	x		x				$x^1$
	III			x	x			x	$x^1$	x	x			x	$x^1$		x	x		x	x		x	$x^1$
	IV			x	x	x		x	$x^1$		x	x	x				x	x	x		x	x		$x^1$

### **Relation of parts: Parametric identity structures.**

With these textural identities determined, the possible combinations of parametric identity between groups were structured. The brane structure outline above limited the possible identity combinations in the work: Since each of the groups was differently fixed with regard to two out of the four parameters, it was impossible for all four groups to have unified characteristics on all four dimensions.

For instance, a texture could have existed in which groups I, II, and IV could play in the same tempo, but not group III; groups II, III, and IV could have a unified harmonic structure, but not group I; groups I, II and III could play in the same high register, but not group IV; and groups I, III and IV could have the same crescendo dynamic contour, but not group II. Thus, the ‘constitutive difference’ of parts mentioned in Chapter 2 was strengthened by the compositional logic.

A list of basic ensemble relationships was sketched, that structured a number of core identity parameters within each group, while leaving their precise realisation fairly free until the notational stage:

‘Stratified’: Each group had a separate set of values in each parameter, creating a maximally differentiated polyphony.

‘Dom-1’ (‘1-dominated’): Each group adopts, to the extent that it can, the fixed values of Group I: Group II, register max and pitch min; Group III, register max; Group IV, pitch min.

‘Dom-2’: Each group adopts, to the extent that it can, the fixed values of Group II: Group I, tempo and dynamic contour min; Group III, dynamic contour min; Group IV, tempo min.

‘Dom-3’: Each group adopts, to the extent that it can, the fixed values of Group III: Group I, tempo max; Group II, pitch max; Group IV, tempo and pitch max.

‘Dom-4’: Each group adopts, to the extent that it can, the fixed values of Group IV: Group I, dynamic contour max; Group II, register min; Group III, dynamic contour max and register min.

‘Bifurcation’: Groups I and II unify with register max, tempo min, pitch min, dynamic contour min; Groups III and IV unify with register min, tempo max, pitch max, dynamic contour max.

‘Heterophony/micropolyphony’: High degree of similarity (usually including register) between parameters of two or three groups.

‘Homogeneity’: High degree of similarity of materials in other composed parameters, despite stratification along the four core parameters.

Table 9.5 shows the final chart of region identity relations and durations, after having been progressively filled in across the course of the compositional process.

Table 9.5: Global form and identity structures

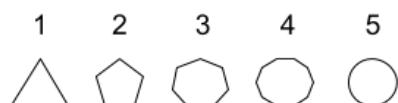
This chart outlines the following aspects of each region: duration, tempo frames, tempo indexes (which was determined by dividing the duration by the tempo frame, giving a rough abstract indication of relative tempo), texture types, the four different primary parameters and the group position on these parameters (1 = min, 5 = max), general ensemble relationships (identity arrangements), relative general surface speed (on a scale from 1 to 5), and other general notes, such as dynamic level, etc.

While this ‘precompositional’ outline is considerably more developed than in earlier works in the folio, it is far from an exhaustive system. Much was left to intuition in the notational stage. Nonetheless, establishing this abstract, pre-temporal, and pre-subjective space helped provoke the composition to explore extremes of material, as well as types of simultaneous relation, that may have not otherwise been considered. As Table 9.5 above shows, the work charts a space between a very close heterophonic texture of Groups I and II in Region 1, on the one hand, and an entirely stratified texture at Region 12 between groups I, II, and III.

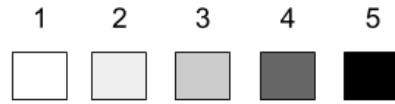
### **Relation of parts: Representing identity relations.**

For my article ‘Composing musical branes’ (Flenady, 2017b), I developed representations of the identity structures of four regions in the work in order to more clearly demonstrate the different possible relationships. The four-dimensional space defined by the core parameters cannot be represented on a two-dimensional surface in a totally spatial way. In these representations, the x-axis represents the temporal division parameter and the y-axis is the register. The shape (from triangle to circle) represents the pitch parameter, as shown in Figure 9.8.

*Figure 9.8: Representation of pitch parameter*



The shade (from white to black) represents the dynamic contour as shown in Figure 9.9.

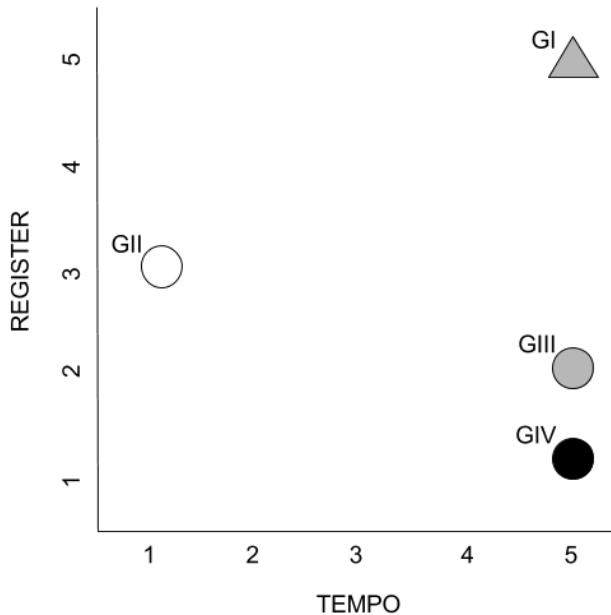
*Figure 9.9: Representation of dynamic contour***Region 10: Group III-dominated.**

Region 10 was based on the fixed parameters of Group III. This means that Group I adopts the tempo maximum, Group II the pitch maximum, and Group IV the tempo and pitch maximum. Any remaining free parameters in each group were intuitively given values. The structure is given in Table 9.6.

*Table 9.6: Identity values of Region 10*

	Group I	Group II	Group III	Group IV
Tempo	5	1	5	5
Register	5	3	2	1
Pitch	1	5	5	5
Dynamic Contour	3	1	3	5

This can be represented as shown in Figure 9.10.

*Figure 9.10: Representation of identity relations in Region 10*

This shows that Groups I, III and IV are unified in terms of temporal division, while Group II remains distinct; at the same time, Groups II, III, and IV are unified on the pitch level, while Group I remains distinct.

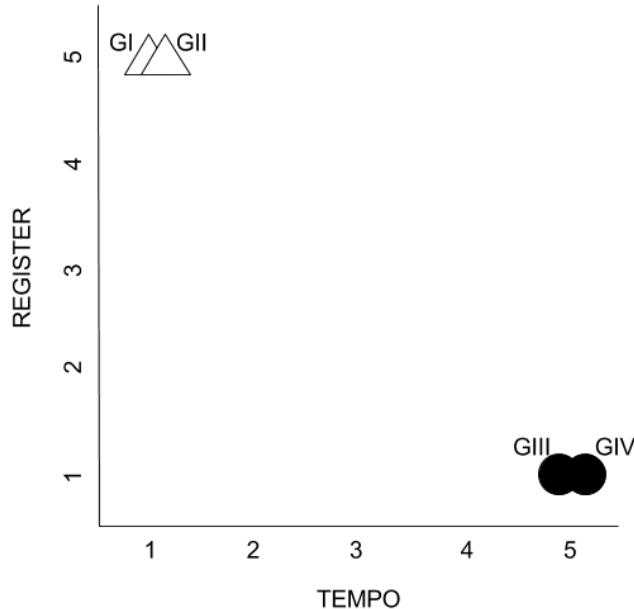
### ***Region 16: Bifurcation.***

In this region—in some senses the simplest core identity relationship besides solos—the ensemble is divided into two sets of groups: Groups I and II and Groups III and IV are entirely unified at opposite ends of the four parameters, as shown in Table 9.7.

*Table 9.7: Identity values of Region 16*

	Group I	Group II	Group III	Group IV
Tempo	1	1	5	5
Register	5	5	1	1
Pitch	1	1	5	5
Dynamic Contour	5	5	1	1

This is represented in Figure 9.11.

*Figure 9.11: Representation of identity relations in Region 16*

### ***Region 12: Stratification.***

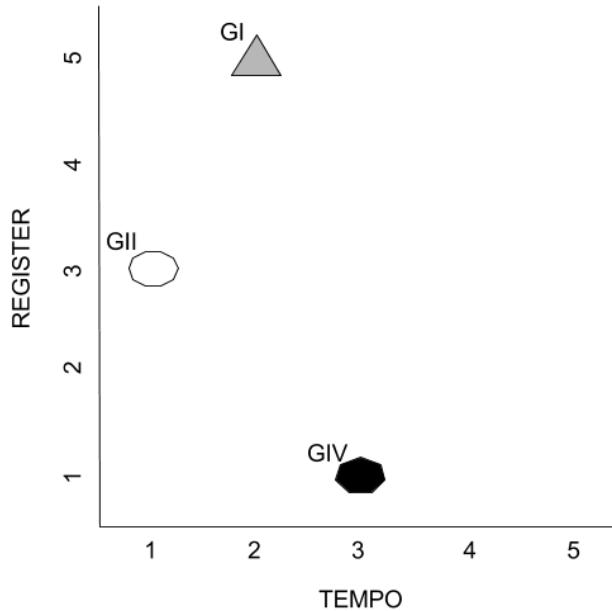
This region featured only three of the four groups, and tried to create the highest degree of differentiation possible between them, as shown in Table 9.8.

*Table 9.8: Identity values of Region 12*

	Group I	Group II	Group III	Group IV
Tempo	2	1	-	3
Register	5	3	-	1
Pitch	1	4	-	3
Dynamic Contour	3	5	-	1

This yields the structure represented in Figure 9.12.

Figure 9.12: Representation of identity relations in Region 12



This shows the high degree of differentiation between the three groups, with no clear way of dividing the three into any higher groupings based on similarity.

#### ***Region 7: Stratification with homogeneity.***

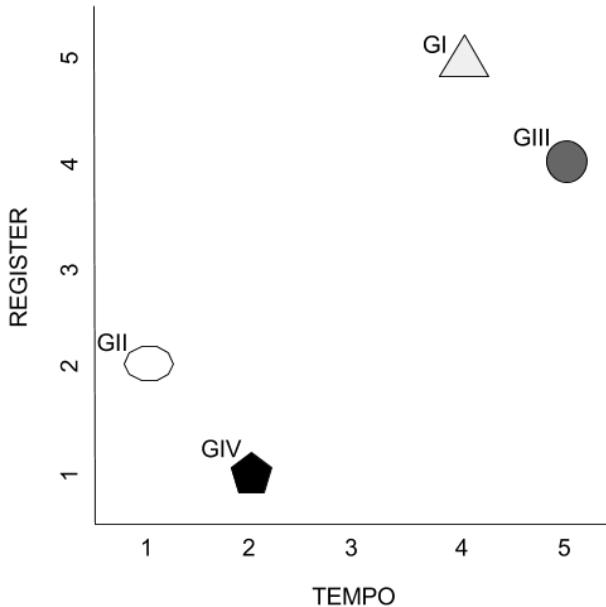
As with Region 12, this region attempted to have the highest possible degree of differentiation between groups across the four parameters, as shown in Table 9.9. However, Region 7 represents an extreme example of the potential disjunct between the abstract identity formation and the perceived relations in the sounding work, since in all other aspects, the materials between groups were homogeneous: short chordal attacks at the start of each bar alternating with repeated tenuto chords repeated at regular pulses through each bar.

Table 9.9: Identity values of Region 7

	Group I	Group II	Group III	Group IV
Tempo	4	1	5	2
Register	5	2	4	1
Pitch	1	4	5	2
Dynamic Contour	2	1	4	5

The identity relationships at the level of the four core parameters can be represented as in Figure 9.13.

*Figure 9.13: Representation of identity relations in Region 7*



On the level of all their other attributes, this is perhaps one of the most materially unified regions in the work. However, through this material homogeneity, the nature of this parametric structure nonetheless presents itself, with highly registrally stratified chords moving at different tempos, in different pitches, with different dynamic shapes.

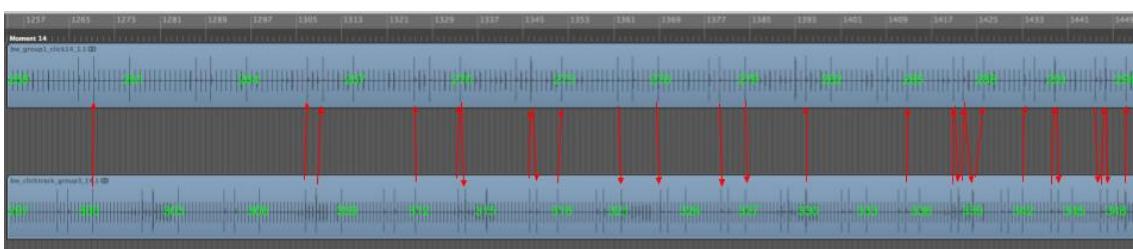
#### **Compositional process: Clicktrack construction.**

Each of the four groups divided the duration sections by a prime number. In some sections, different groups share the same division, and therefore the same tempo and metric structure; in other groups they are entirely independent temporally. Hence, it was not possible to have a single clicktrack that musicians subdivide differently (as in the performance of *desert*). Thus, four separate clicktracks were constructed. The initial idea was to construct a single four-channel sound file, run through a multi-channel digital–audio interface to wireless headphones. However, the cost to hire or purchase the necessary equipment revealed itself to be prohibitively expensive. As such, a simpler setup was created,

involving a Max/MSP patch to synchronise a number of laptops. Each laptop could play one clicktrack, and this was split (via a headphone splitter) to two sets of in-ear headphones. This meant that only four (as opposed to seven) laptops were required. A composer colleague in Melbourne Vincent Giles constructed a simple server-client Max patch for this purpose. In this patch, the four laptops connect to a single network, then the server laptop sends a bang to all four laptops, which then simultaneously start their respective files. Once begun, the laptops run their files independently. This was a much more cost-effective method, since Kupka's Piano already had access to four laptops, and headphone and network gear is simple and cheap to source.

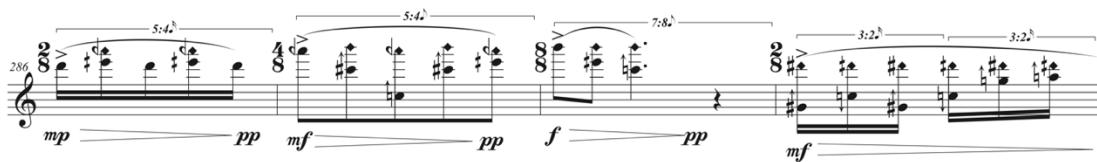
Unlike *desert*, where the clicktrack came as an afterthought, the construction of the clicktrack in *braneworlds* was bound up with the writing of the music itself. As with *warped passages*, *braneworlds* was composed section-by-section according to a random sequence. As soon as the abstract identity relations and temporal structures of the groups in the region were determined, the clicktrack for each group was then created and then fit into the full Logic Pro file that held all four clicktracks synchronised on different tracks. By screen-shutting this Logic Pro window, a 'time plot' for each region could be created, in order to examine—in the absence of a full score—points where barlines or other pulses were in close temporal proximity. These were used as focal points around which dynamics were structured, often leading to strong accents or melodic high-points on particular downbeats. This was influenced by the success of the reactive dimension of dynamics in *desert*. Figure 9.14 shows the time plot for Region 14, a duet between the flute of Group I and the solo piano from Group III, with arrows showing the points of proximity of the groups' respective downbeats.

Figure 9.14: Time plot for Region 14



Once this was produced, each group in the region was composed separately according to their identity structure, which often left a large degree of room for local-level intuitive musical development, influenced by the awareness of the possible points of rhythmic proximity demonstrated in the time plot. Figures 9.15 and 9.16 show simultaneous extracts of the two parts from Moment 14, with accented downbeats representing highlighted points of proximity.

*Figure 9.15: Simultaneous part, Group I, bars 286–289*



*Figure 9.16: Simultaneous part, Group III (piano), bars 334–340*



Once each region was entirely composed and all the clicktracks were filled in in the primary Logic file, each track was bounced separately.

It was only after the first performance that a graphic ‘form schema’ for the work was produced (see front matter to *braneworlds* score). In retrospect, this would have been a useful tool to have during rehearsal, during which I had only a spare set of parts on which I had marked in who was playing in each group. The form schema allows a much quicker way to refer to sections and understand what is happening.

### Reflections on the Counterpoint

The performance and recording confirmed for me that *braneworlds* was the most successfully contrapuntal work in the folio. The recording recorded in the folio

is a rough mix of the studio recording that will be released on Kupka's Piano's debut album in late 2017. While a number of technical and conceptual issues became apparent, including the construction and interrelation of parameters and the division of sections, the work was the most coherent and consistent in its basic principles and their realisation, and conformed most to the aesthetics of counterpoint as 'world determination'.

### **Expansiveness of the parametric space.**

Unlike earlier compositions in the folio, *braneworlds* clearly defines its parametric space, including clear maximum and minimum values for each core parameter. This means that the work was both more expansive and more consistent. Whereas earlier compositions rarely allowed for the 'maximal' presentation of particular parameters, *braneworlds* regularly explores the extreme ends of the fundamental parameters, and often for extended periods. The pitch parameter is a very obvious one in this respect. As mentioned my post-concert reflections, I was initially very satisfied with how the work occasionally presents the simplicity of the major–minor triad sequence (minimum harmonic identity):

despite how cinematic and potentially kitch the section where the guitar and piano lock into the chord-sequence could be seen [Region 16], it is quite compositionally justified (since it is present in a lesser degree in almost all sections) and is not some kind of post-modern ironic gesture. (BP October 9, 2016)

In retrospect, there is a tension in the work between the scope that this construction of the pitch parameter affords, and its potential to lend the work an 'arbitrary' or collage-like quality, thus undermining the degree to which the work defends a 'liberated territory'. Nonetheless, the full exploration of the other parameters, including the rhythmic dissociation, ensures that this collage-like feel does not dominate.

### **Identity relations.**

The use of core identity structures to determine key relations of identity and difference helped create a vast array of different contrapuntal textures and was

generally a success in the work. No other work in the folio explored in such a systematic and inventive fashion the range of possibilities from close heterophonies (e.g. Regions 1 and 6) to a unified but rhythmically dissociated polyphony (e.g. Regions 7 and 23) to a polyphony of two contrasting blocks (e.g. Region 16), up to more thoroughly stratified polyphonies (e.g. Regions 4 and 12). In terms of density, extremely dense sections (e.g. Region 19) contrast with the extremely sparse and slow (e.g. Region 18).

*braneworlds* is also most effective work in the folio at clearly differentiating parts in a polyphonic texture. In particular, Regions 4, 5, 7 and 23 have highly stratified textures in which each group is easily aurally identifiable, even when, in the case of groups 7 and 23, the groups are all unified in most other parameters.

Nonetheless, a number of potential flaws emerged in some sections after the live performance. Region 12, for example, was structured as having a maximally differentiated identity structure between groups. However, the clarity of this texture was reduced by the resonance of the percussion, as well as the guitar and cello swells, which tended to fill out the spectral space, as was an issue with the percussion in both the early *Trio* and in *Kampflieder*. Yet, as noted in my blog post after the studio recording process (BP February 8, 2017), the greater degree of rhythmic and gestural precision afforded by the recorded medium partially resolved this issue, and future adjustments of the stereo panning, equalisation, and other sonic elements may further differentiate the groups, strengthening the polyphony.

Other sections were intended to be registrally close but still highly aurally distinguishable due to other parameters. Region 13—a duet between groups II and III—created a situation where

timbral, registral, and spatial similarity cancel out the independent rhythmic and harmonic logics, rendering the result somewhat awkward: it feels like a harmonic unity of sorts, and a near gestural unity, but with a lack of unison. (BP October 9, 2016)

In this blog post, I suggested that this could be resolved by a greater clarity of rhythm, dynamic and articulation in the different groups. The studio recording in its current rough mix form already partially resolves this, and future editing, mixing and mastering may greatly strengthen this section.

### **Construction of parameters and intermediate values.**

The parameters themselves also had inconsistencies and flaws. The parameter of pitch was successful in many ways, giving a sense of difference between quasi-tonal, atonal and quartertonal harmonic types, yet a problem emerged with its ‘maximum’ value: the underblown pitches on the flute are too fluid and imprecise to establish clear, and transposable, harmonic sequences for other instrumental groups. As a result, the ‘maximum’ value in other groups became merely the presence of microtones, not any recognisable harmonic material. As with *warped passages*, the problem of replicability also emerges, but in some senses even more drastically. Since different flutes will produce different underblown structures, this means that the pitch structures in both the flute part and other parts would also need to be changed to suit the pitches of the new flute in Group I. On the other hand, since this extreme of the parameter was already problematic when transferred to other instruments, this may not be worth changing in the score, since the overall effect will remain the same.

The parameter of dynamics also contained a structural flaw. Specifically, at fast tempos—generally in very short sections—the crescendos and decrescendos were generally not possible on each division, for instance, where each division had a duration of less than half a second. In this context, the structure whereby each division manifest a decrescendo was usually broken, and instead crescendos were applied to groups of divisions. For example, in Group IV in Region 17 there should be a crescendo for every two demisemiquavers, according to the temporal divisions of that Group, but instead crescendos take place at much larger groupings.

Another element that became clear as the compositional process progressed was that the intermediate values of the parameters were generally poorly defined. In the case of register, since the maximum and minimum values were already very broad, this meant that from section to section the groups occupying these extremes had to focus on specific registers within these overall compasses so that intermediate values could be established on an ad hoc basis. In the case of pitch, the problem lay in the fact that no method was created for moving from one extreme to the other, and as such the realisation of intermediate values changed from section to section. The intermediate dynamic values were also quite fuzzy and ultimately

fell to intuition at each moment. While this lack of clear definition did not fundamentally undo the logic of identity differentiation, it did reduce its effectiveness somewhat, and in future works, more attentiveness in the precompositional stage to intermediate parametric values would be useful. On the other hand, a completely defined structure for each intermediate value is probably neither possible nor desirable.

One further issue with the use of parameters in the work was that an unanticipated hierarchy emerged. Upon listening to the work, it was apparent that the registral placement of objects was primary in their differentiation, followed by temporal division, then pitch, and finally dynamic contour. This was a logical weakness in the work, and suggests that the idea of musical ‘space’ needs a nuanced interpretation, where dimensions are not assumed to be equal.

### **Region structure.**

The region structure was very successful in allowing a high degree of control over which sets of identity relations were to be foregrounded at any moment in the work. However, one significant limitation of the work is that each group is too subordinated to the formal divisions. While groups are often temporally dissociated within regions, and while each has a different number and order of regions they play in, each group takes as its starting point the common division of the work’s total duration. A few transitions cut against this, for example the piano and percussion prefigurations before Regions 7 and 23, respectively, and the transition between Regions 13 and 14, where the piano slowly reduces its trills preparing for the material in the new section. Overall, however, section changes are very evident in each group. This reduces the independence of the voices on a macro scale, undermining the thoroughness of the counterpoint, since this dimension of the identity of parts is not controlled. By being subordinated to these temporal divisions, the musical objects all have a higher degree of identity with each other than intended. Maintaining the clarity of the formal approach in *braneworlds* while increasing the macro-level independence between parts will be a focus of future compositional research (see Epilogue).

### **Local interactions between groups.**

The attempt to provide points of gestural contact between groups in different tempos was not particularly successful in the first performance. While the performers were all still in a process of becoming familiar with their parts and the clicktrack, little attempt could be made to try to pay close attention to their local-level dynamic shapes. Also, without a full score to refer to, musicians could not see when they should pay specific attention to unified gestures. This meant that these planned points of gestural unity generally did not emerge, and when they did the gestures lacked clarity and impact. This did not significantly affect the interest of the regions, which nonetheless maintained their macro-identity relations, but in many sections groups appeared to be completely oblivious to the material of other groups. In the recording, more of these local interaction emerge successfully, adding a new layer to the work, in particular: Region 5, where the accented upward arpeggios in Group IV connect with stronger attacks in Group II; Region 6, where the metric structures and tempos between Groups I and II are totally different, but where the phrases begin and end at roughly the same points; and Region 14, where the piano and flute have clear connecting gestures. Interestingly, near-synchronised attacks between groups are often perceived as rhythmic unisons because they within sufficient proximity. This led to a refinement of the way of thinking about temporal proportion, as noted in my blog post after the recording:

This is a good argument for working with slightly simpler temporal ratios (rather than always prime numbers) in future works, since rhythmic unisons are going to be present anyway in the perceived work, they may as well be written into the work in a more controlled manner. (BP February 8, 2017)

### **Technical issues.**

There were also several technical issues in the work that required some resolution in the rehearsal and recording processes. The first of these was the fact that, as in *warped passages*, a number of regions in Group I were too fast to allow sufficient time for Hannah to securely sound the underblown pitches. Since the tempo could not be changed as it could be in the solo work, this was generally

resolved either by simply reducing the number of notes or the speed of the tuplets in each bar. Another issue that came up was that of balance. The recording circumvents the issue of ensemble balance by being able to independently manipulate the dynamic of each group. However, for future performances, various sections will need careful attention to bring about a greater ensemble balance and textural clarity, for instance Region 8, in which all parts should be equally present, is dominated primarily by the bass clarinet and flute due to their positions in their tessituras. There was also sometimes an imbalance within particular groups. Group II's soli moment at Region 15 is one such occasion: the unpitched percussion almost completely overwhelms the underblown flute part. Another issue is the dissimilarity between the amplified guitar and the acoustic cello timbre in Group IV. This is particularly evident in Region 5, where the cello line is in its middle, and more murky, register, and tends to get lost in the texture. This may require the guitarist to modify their sound for these sections.

### **Rehearsal and performance.**

The fact of being a performer in my own composition was in some senses a breakthrough in my understanding of the role of the composer, and how I wish to make music. As I wrote in the first set of reflections after the performance of *braneworlds*:

Being less exterior to the work, I felt I was more able to treat the performance as a performance, and less as a score to be represented. In this scenario, the 'simplest' parameters of dynamic definition and balance, and cleanliness of entrances and exits of sections, became the most important elements, rather than the pitch and rhythm elements internal to the sections, for example. (BP October 9a, 2016)

Another result of performing my own piece meant that I felt more confident to suggest things to other performers, since some of the composer–performer hierarchy was reduced.

The rehearsal process was also quite profoundly affected by the use of the clicktrack. On the one hand, a large amount of time was spent on my part preparing the clicktracks, laptops, network, and Max patches; on the other hand, the rehearsals

were in fact quite short and few. Surprisingly, the work came together quite easily, compared to some of my previous works. While *braneworlds* is an ambitious work, the different clicktracks allowed me to simplify the internal rhythm of the individual groups, since a highly complicated rhythm in each group would negate the perceptibility of the temporal dissociation between groups. This meant that, despite their difficulty, each instrumental part was often simpler than in earlier pieces with a common tempo and time signature. Reflecting on the rehearsals, I wrote:

I really enjoyed the confidence that the clicktrack lent to the performance. It meant that entrances were (almost) always completely bang on target, and people were able to play with a lot of confidence in some essential aspects of the work, and could therefore stress more about getting their own parts right, and getting more clarity to gestures, etc. We don't have to worry about who is cueing whom, and we don't have to have a conductor. (BP October 9a, 2016)

Since, in rehearsals, musicians were quite focussed on their own parts and listening to their clicktracks, it was difficult for us to have an outside view of the work in order to check balance, overall shape, etc. (although a colleague Annie Larsen did attend some rehearsals and offered a few thoughts). We did, however, record the rehearsals, and after each rehearsal I listened back with headphones, and wrote a list of things that needed corrected or altered in performance. This proved a very effective rehearsal method.

As with *desert*, the use of the clicktrack undermines the 'chamber music' dimension of the performance, with considerably less communication taking place between performers. This would have represented a major aesthetic problem in the work earlier in the research. Instead, according to the aesthetics described in Chapter 2, the clicktrack can instead be seen as simply one resource amongst others for the exploration of contrapuntal systems, making certain relations possible, while limiting other aspects. It is also likely that with further rehearsal and familiarity, musicians could have a lot broader awareness of their ensemble context and thus reintroduce more of sense of 'chamber music' to the counterpoint

One final technical issue with the clicktrack was that when parts featured whole bar tuplets or 'irrational' values, a clicktrack that beats each pulse can make

it more difficult for the musician to feel the tuplet, since it is often not conceived of as a direct polyrhythm, but more of a local-level tempo change. This was particularly problematic in material such as the flute part in Group II in Region 12, which not only has irrational tuplets, but also numerous grace notes (see Figure 9.17). In future works that employ clicktracks more attention will need to be paid to the types of beat patterns in these bars that helps the feeling of the polyrhythm.

*Figure 9.17: Group II, Region 12, featuring whole-bar tuplets and grace notes (bars 122–125)*

The musical score shows two staves. The top staff is for the alto flute, and the bottom staff is for the percussion. Both staves are in 16/16 time. The alto flute part starts with a dynamic *f* and includes grace notes and whole-bar tuplets. The percussion part also includes grace notes and whole-bar tuplets. The score is labeled "REGION 12" at the top left. Measure numbers 122 and 124 are indicated. Various dynamics like *f*, *p*, and *ff* are used, along with performance instructions like "with fire" and "sempre". Measure 122 ends with a fermata over the alto flute's grace note, and measure 124 begins with a dynamic *f*.

### Reflections on recording process.

On December 20–22, 2016 and January 30, 2017, Kupka's Piano recorded *braneworlds* as part of its forthcoming album. This provided a new stage for refining the work and for reflecting on it.

Since *braneworlds* is split into four groups each with their own clicktrack, it was recorded group by group (and often region by region) and then the groups were layered on top of each other. In general, groups did not need to hear each other for tuning melodic unisons or matching tones, rhythmic nuance, and so on. Thus, only in a small number of regions (such as Region 16) were different parts fed into the headphones so that the musicians could hear what was already recorded by other groups. This method ensured that the best takes of each region were used and enabled us to have maximum control over the levels of the respective groups and over the equalisation, stereo panning and spatialisation, etc. As discussed at various points above, this sharpened the identity relations between groups and resolved some of the issues of the live performance. This approach could potentially lead to

an artificial feel, especially in the transition between regions and the sense of spatial relations of the groups. This is the case with the rough mix recording submitted as part of the folio, though generally this will be corrected in further editing and mastering stages. On an aesthetic level, however, the work, with its clicktracks and highly sectional form, already has a kind of ‘artificial’ feeling about it. Moreover, the recording does not need to attempt to represent a live performance, but to give another access point to the identity configurations established in the work. In many ways, it offers a clearer way of experiencing the intended relations in the work. Yet, as I noted in a blog post:

It’s not that the recording is necessarily a more ‘correct’ representation of the work either, since while it is true that many aspects are clearer in the recording, the performance also offers ways into the relationships not offered by the recording (visual associations, unified space, etc). (BP February 8, 2017)

Future editing, mixing and mastering of the recording will allow for more exploration of the possibilities of clarifying identity relations. Future performances are also being scheduled, which will also enable Kupka’s Piano to try to resolve some of the issues of the live performance now that we all have a clearer idea of the work.

## Chapter 10: Conclusions

This chapter summarises the trajectories of the research, clarifying how conceptions of what counterpoint is, and how it can be constructed, changed across the course of the folio. These are grouped according to the basic research questions outlined in the introduction to the paper: relation of parts, form, scope of world, and compositional process. The question of aesthetics is treated in the next section of this chapter, where a statement of the fundamental principles of the contrapuntal approach conceptualised as ‘world determination’, as it stands at the end of this research process, is presented and works in the folio are evaluated from these perspectives. As an artistic research project, any conclusions that can be drawn are primarily context-dependent to my own musical practice. Nonetheless, many of the ideas and techniques developed here are sufficiently generalisable in the broader context of ‘New Music’ composition, and ultimately music making in our era in general. Finally, an epilogue will recontextualise these findings in relation to my first work after this research process, *A Book of Migrations*, suggesting new challenges and refinements for the approach developed here.

### Trajectories of the Research

#### **Relation of parts.**

##### ***Self-identity or identity-to-others.***

Across the research, the role of the parameter progressively solidified as the primary means by which parts could be contrapuntally related. Rather than lines co-evolving according to rules of dissonance–consonance or polyrhythmic relations, the idea emerged that the goal of counterpoint was to explore the range of possible relations from maximum identity to maximum difference between parts by way of different parameters of sound or performance. These parameters are not bound to the traditional four associated with integral serialism (pitch, duration, timbre, and intensity), but consist of any aspect of the perceived identity of a sound that can be controlled on a compositional level.

One important distinction explored in the research was that between structuring the self-identity of musical objects or structuring identity-to-others (that is, interrelations). *Kampflieder* attempted to structure the degree of self-identity of each group in a series of parameters, with the aim to create five different, equally internally coherent but variable and interesting groups. On the other hand, *braneworlds* takes as its basic structural element identity-to-others, aiming to define relations between parts in different regions of the work, according to four core parameters. The two approaches are similar—both use a scales of parameters to determine degrees of identity, and ultimately both produce a structure of both self-identity, and identity-to-others of each part—but there is a difference of emphasis. The difference lies in the fact that the scale of parameters in the former is relative to each group, whereas in the latter it is absolute for the entire composition. For example, while *Kampflieder* structured registral compass as a core parameter, the exact register in which a group was located was left to ad hoc decisions based on the ranges of the instruments. This means that while Group IV had a ‘range’ value of 2 (compass of 4–5 octaves) as part of its identity and Group V had a range value of 5 (compass of 1 octave), there was no principle governing whether these would be overlapping octaves or distinct octaves. In *braneworlds*, however, the register was fixed, such that a value of 5 for the register parameter always (or almost always) meant the same high 2.5-octave band, and the value of 1 always meant the same low 2.5 octaves.

Despite the fact that I have conceived of counterpoint as structuring a work both by degrees of self-identity and identity-to-others—borrowing from Badiou’s notion of ‘worlds’—it appears that a composer cannot take both principles simultaneously as a compositional starting point. Moreover, after this research, the latter approach seems to be a more systematic and fruitful means for the construction of musical identities and their counterpoint, allowing the strength of the self-identity of a part to be an ‘emergent’ parameter.

#### ***All parameters are not equal: Hierarchies and intermediate values.***

Despite the increasing emphasis on the role of the parameter, this research has not featured significant reflections on relations *between* parameters.

Conceptualising parameters as dimensions tends to imply that they are equal in terms of importance and extension—as our three spatial dimensions are. Yet, for perception, and thus for the constitution of musical identities, parameters do not appear to be equal in importance. For instance, a parameter constructed as the speed of change of complex pitch structures will not have as much of an impact on whether musical objects are considered the same or different as the parameter of registral placement from very high in the audible range to very low. This was something that I realised only after composing the final work *braneworlds*, and it will require consideration in the early stages of any future composition. Two options are apparent: either attempting to make each core structural parameter roughly equal for perception, or to take into account and formalise the hierarchy between them.

Another finding from the composition of *braneworlds* was that the intermediate values of core structural parameters are often difficult to determine. Parametric continua from minimum to maximum are more obvious and linear in some cases, and less obvious and more ‘curved’ in some cases. As I pointed out in my article ‘Composing musical branes’ (Flenady, 2017b), it is far simpler to construct a scale from minimum to maximum of the parameter of register than to do the same for ‘pitch’. One approach—taken in *braneworlds*—would be simply to accept that the translation from an assigned intermediate value in the precompositional stage to the actual composition of the material requires a substantial amount of intuition. The other extreme would be to rigorously establish the intermediate steps of each parameter in the precompositional stage, so that a more immediate translation of a value into a musical structure in the score can be made. This latter carries the danger of extinguishing spaces for intuition and responding to the sometimes inevitably unforeseeable interaction of parameters in the writing stage.

These findings indicate that the parametric approach to constructing and contrasting musical identities must be a supple one, rooted in the nature of the materials themselves rather than imposing abstract and one-size-fits-all system under which they are all subsumed.

## **Form.**

### ***Horizontal and vertical.***

Throughout the research, there has been a consistent push-and-pull between horizontal and vertical ways of structuring my music. On the one hand, many works feature a way of distributing parts in which they each pursue their own processes and unfold at different rates within large formal units, leading to various unanticipated relations and textural densities across the form. This contrasts with a method of structuring in which the parts present, and the constitution of their specific identities, at any given moment is strictly controlled by vertical logics of combination. In *desert*, *Si el clima*, and *Kampflieder*, both approaches are present at different times in the work, though the emphasis is on the former, horizontal approach. This is clear in the opening section of *desert*, in the ‘capitalism’ and ‘primitive communism’ sections of *Si el clima*, and in the first two thirds of *Kampflieder*. Sections where the vertical logic dominates are evident from bar 145 to the end in *desert*, in the ‘feudalism’ section in *Si el clima* (bars 91–160), and from bar 140 to the end in *Kampflieder*.

This changes in *warped passages*, which develops a new method of formal structuration influenced by Stockhausen’s concept of Momentform, though in this work there is no possibility for simultaneous presentation of parts. In *braneworlds*, the vertical conception is dominant. This does not mean that *within* sections there are no unanticipated relations between parts, but a) sections are now generally shorter than in earlier works and b) the development of each part is subordinated to the macro-formal scheme according to which densities of textures and the relations present therein are pre-structured. As discussed in Chapter 9, this led to a much greater control over the relations between parts, and an overall more unified and coherent structure. However, the work has a tendency towards being too ‘block-like’. This undermines the differentiation of parts since they all share the characteristic of changing their materials at the beginning of each section. This moment structure, however, does not need to be discarded, but instead refined, in order to overcome this tendency.

## **Scope of world.**

### ***From lines to structures.***

One of the most significant developments across the course of the folio was a movement from a linear paradigm to one based on the broader concept of structures. In *Trio*, the musical construction is quite explicitly based on Elliott Carter's linear style, and while *QEM2* heightened the gestural dimension, the overall approach remained linear, as it did in the case of *desert* and *Si el clima*. In these latter works, the concept of 'character' and the addition of the concept of 'polyvalence' of lines, yielding resultant surface structures, began to point in a direction of more 'statistical' or 'mass' structures, even if it was not yet conceived of in this way. In *Kampflieder*, this more 'statistical' approach began to replace the linear conception as part of the fundamental shift in my idea of counterpoint from the relative independence and autonomy of lines to the relative identity and difference of simultaneous structures. By *braneworlds*, the conception is fundamentally that of 'polymorphic counterpoint', in which parts are defined primarily in terms of core parametric identity structures, which permit both linear and non-linear materials.

This entails a shift from a temporal-developmental formal approach to a spatial-logical one. The atemporal conception of 'music space' (or the concept of the work as a 'world') began to take root as a touchstone of my overall contrapuntal conception allowed a considerable expansion of what could be set in counterpoint and how this counterpoint operated. Likewise, the shift from 'character' to 'identity' implies an expansion from the 'human' time-scale and traditional attributes of subjectivity to much broader possibilities in terms of structure and affect.

This does not mean that my music no longer has a linear quality. It is obvious in both *warped passages* and *braneworlds* that my approach is still able to produce linear structures. What has changed is that the fundamental conception is no longer that of lines, and linearity is but one potential parameter with which to structure identity and difference. While these last two works of the folio are still substantially linear, future compositional research will examine how effective my approach is in creating counterpoints of non-linear musical objects.

***From stylistic consistency to (post-)modern pluralism.***

Another clear trajectory of the research concern the stylistic heterogeneity assumed necessary for a work. While at the start of the research, *Trio* and *QEM2* maintain a consistent atonal linear style, the works from *desert* were concerned with problematising this stylistic homogeneity through the introduction of popular folk materials. While this was partly justified for political reasons, its purpose of introducing a greater degree of ‘tension’ was perhaps more important. By the time of composing *braneworlds*, the political motivation for folk material had receded, as had the emphasis on ‘tension’, and was replaced by an emphasis on creating an expansive parametric space. Thus, the work combines major–minor triadic harmonic sequences with an atonal quarter-tone pitch sequence. While this could be seen as a ‘postmodern’ gesture of polystylism, it does so within a framework that is indebted to modernist directives of integration and exteriority from dominant structures, and is thus not a ‘mere’ pitting of different styles against each other.

Beyond this, my current idea of counterpoint no longer assumes a particular stylistic or institutional context. In line with the idea of an ‘n-dimensional modernism’ (Harper, 2010, p. 5), counterpoint can be applied to any context or music space, ‘thinking’ the world it creates and finding new intensities of difference within it. As such, my new work *A Book of Migrations* will attempt to show how the Uilleann Pipes, their techniques as well as affective and historical associations, can be ‘counterpointed’ by thinking through the dimensions of the world they imply. At the same time, theoretically, various popular musics could be counterpointed in this way, or different practices outside of the traditional concert hall. The extent to which the principles outlined below remain valid in these contexts would need to be tested, but there is no *a priori* reason to deny the possibility or validity of this attempt.

**Compositional process.**

***From negation-as-telos to negation-as-origin.***

In retrospect, it is clear that from the composition of *QEM2* onwards that my research maintained a relatively consistent engagement with the concept of ‘non-identity’, or that which resists the reduction of particularity to universalising logics.

Throughout the project, the particular conception of non-identity was always associated with a particular compositional method. The method in *QEM2*, under a (mis)reading of Adorno's aesthetics, posited that this non-identity, or liberation of the particularity of materials, could be achieved by an intuitive compositional method, and a focus on local-level musical construction. However, as outlined in Chapter 3, this was rejected as a path towards non-identity, since it tended to negate the very possibility of a contrapuntal logic altogether. As such, another paradigm for the production of non-identity was adopted, which was in retrospect quite close to that of Claus-Steffen Mahnkopf's 'deconstructionist' approach. In pieces such as *desert* and *Si el clima*, and to some extent also in *Kampflieder*, the goal was (at least in part) to produce figures of non-identity across the form of the work. This was to happen via the simultaneous superposition of several conflicting processes within lines, and between lines. By rigorously constructing (rather than intuiting) multiple conflicting vectors, the aim was to produce a 'resultant' structure that was freed from univocal and restricted materials.

By the time of composing *warped passages* and *braneworlds*, however, this approach was rejected as still too negative in its basic orientation. Influenced by Richard Barrett's compositional approach and Alain Badiou's philosophy, the aim is no longer to *produce* a negation of identities throughout the course of a work. Instead, the approach is to begin from a place of relative exteriority to reified sonic structures, and extend this 'liberated' space—the role of precomposition being that of elaborating that space and ensuring its coherence during the compositional process. Whereas before, both in *QEM2* and the later works, negation or 'non-identity' were seen as the *telos* or goal of the compositional process, negation is now seen as the *origin*. This position holds that if the starting point for a composition is sufficiently imaginative, sufficiently free of dominant assumptions, and the precompositional space sufficiently well conceived, then the musical form will manifest this freedom, and the role of the counterpoint is to explore this free space.

### ***Fixed and free.***

One aspect that shifted across the course of the research was the sequence in which different elements of the work were fixed. In *QEM2*, little conscious

precompositional fixing of parameters took place, and most of the decisions were made at the stage of notating itself, with the global form itself emerging relatively late in the process. In *desert* and *Si el clima*, processes in a variety of parameters were fixed in the precompositional stage, but a number of reactive parameters, in particular dynamics, were left so that intuitive decisions could be made to highlight emergent relations between parts. In *Kampflieder*, a number of ‘statistical’ methods were adopted, such that broad sets of proportions or distributions were determined, but there realisation in the score was left to randomised processes. In this work, dynamic contours were fixed by a process, but dynamic values remained free to respond to emergent local-level arrangements. Similarly, precise dynamics, melodic motion, and articulation were often left free in *braneworlds*, in order to respond to proximal downbeats across parts shown in the ‘time plots’. In this latter work, identities and relations were relatively rigorously defined on the macro level, but local-level realisation was often very intuitive. *warped passages* explored the continuum from fixed to free in terms of whether pitch or sound production techniques were determined or resultant, and for the first time introduced explicit spaces for improvisation. Finally, chamber music-style interaction was important to my early aesthetics of counterpoint, and thus the tempo markings were simply guides, free to be altered depending on the interaction of the performers. In my later approach, however, I came to see click tracks as legitimate tools for controlling complex temporal relationships, thus fixing the parameter of tempo at the compositional, rather than performance, stage.

### **Definition and Principles of Counterpoint as ‘World Determination’**

The central research question of this project asked: “What could be an artistically satisfying aesthetics and method of composing music based on rethinking counterpoint beyond its historical forms?” While the answer to this question would have to involve the works themselves, and in particular the later works *warped passages* and *braneworlds*, it is also partly found in the definition of counterpoint conceived of as ‘world determination’ presented in Chapter 2:

*Counterpoint is the exploration of a musical space via the structuring of identities and differences of simultaneously sounding musical objects, divided by*

*musical parts, in order to deliver intense experiences both of what these objects are, and also of what difference itself is.*

According to this conception, each musical work defines a space (or ‘world’) by precompositionally attributing maximum, minimum and intermediate values to a number of selected core parameters. These core parameters must be to a large extent outside dominant paradigms or styles, in order to produce a ‘liberated space’. While logically unified, this world is constitutively divided by the presence of parts that retain some core identity (even if only the instrument, performer and/or spatial position) throughout the work. Within this world, musical objects are constructed according to different values of the core parameters, they are then distributed across the parts and form of the work in sets of simultaneous identity relations, which provides a macro-framework for the creation of contrapuntal textures. Simultaneity of presentation holds a privileged position since it both foregrounds for experience the ‘determination’ of identities as well as presenting experiences of difference itself.

In March 2016, I formulated a basic set of principles to guide this contrapuntal approach (BP March 11, 2016). Though slightly rearranged and reworded, these continue to guide my work; they are presented below along with brief assessments of the works of the folio from these perspectives. The principles state that a contrapuntal work should:

1. Begin from and defend a **liberated space**
2. Define and traverse **worldly dimensions**
3. Explore intense **experiences of determination**
4. Establish an overall **equality of parts**
5. Manifest the **divisibility of parts**
6. Demonstrate the **transmutability of parts**

**1. Liberated space:** The work should base itself on a set of parameters that is exterior (at least in its basic concept) to conventional structures. This is so that the work can explore something other than what is already very present in contemporary culture, or explore it from another vantage point, and thus generate new experiences. The concept of the ‘world’ already implies this freedom, in that it

suggests a space that has a fully immanent logic. As such, the contrapuntal composer should operate ‘as if’ each of their works were ‘worlds’.

The clearest example of this approach in the folio is the flute solo *warped passages*, which starts from a rethinking of the instrument such that the commonly accepted interrelation of its parameters is suspended, and a new set of structures becomes not just possible, but necessary. To a lesser degree, a liberated space is provided by *Kampflieder’s* rethinking of the instrumentation of the chamber orchestra from the point of view of a logic of self-identity. On one level, *braneworlds* defines a liberated space via its multi-temporal clicktrack, which provides a new way of relating and dissociating materials. However, some of the other elements of the work, for instance the harmonic material of Group III, derive very clearly from prevalent structures in Western music (e.g. major–minor triad sequences). This manifests as a tension in the work between an integral, world-defining, logic, and an eclecticism.

**2. Worldly dimensions:** The work should define and traverse the full scope from minimal to maximal values of its chosen parameters, each musical ‘object’ reciprocally determining each other within the field of relations. The more the parameters are clearly defined and taken to their logical extremes, the stronger the potential experiences of determination will be. The concept of the ‘world’ signifies both the logical nature of this construction and the broad scope of the materials chosen.

Early in the folio, there was a general timidity in defining and extending the dimensions of each composition. This is particularly clear in *desert*, where the presence of folk materials was presented so carefully that they were almost non-apparent in the sounding result. In *Si el clima* and *Kampflieder*, bolder, more expansive worlds, with clearer differentiations of extremes of identity, are presented (not just folk melodies, but changes of fundamental ‘character’ of material). The final two works develop a more systematic and self-conscious approach to defining their dimensions. The concept of expansiveness is relative: *warped passages* thoroughly explores the entire range of a narrow space. In *braneworlds*, on the other hand, the space is vast

and heterogeneous though also logically integrated. The exploration of intermediate values in the latter work remains somewhat inconsistent.

**3. Experience of determination:** The work should explore the intensity of appearing of the determinations of identity and difference between objects. This is primarily achieved through the simultaneous presentation of multiple musical objects, but it also extends to their horizontal placement. Within this the musical discourse is divided into ‘parts’, generally conceived of as instruments or groups of instruments, which denies the possibility of full identity ever being established in the work and thus effacing the *relational* aspect of the counterpoint. This is a twofold principle: firstly, the aim is to produce a more profound understanding of what the materials are, since they are presented alongside their differences; secondly, by doing this, profound experiences of *difference itself* will be produced.

Already in *desert* there was a loose approach to structuring similarity and difference within musical textures, conceived largely as stratification (or hierarchy) and imitation between lines. However, this was limited in part by the conception of linear character, which did not systematically determine the identity relations between lines and tended towards rigid identities, as is evident in *Si el clima* and *Kampflieder*. Another issue was the early method of distributing parts in time via long-range processes, which undermined control of identity relations over time. *braneworlds* develops a substantially new approach that puts identity and difference of musical objects at the heart of the construction, rather than as resultant phenomena, or ad hoc decisions. The new emphasis on vertical moments with particular core identity arrangements allows for a systematic exploration of the intensity of difference and similarity.

**4. Equality of parts:** All parts are potentially equal for perception, no part has an a priori significance, and a work should demonstrate this equality. This is in opposition to thematic music, which assumes as a compositional constraint the division of textures into melody and accompaniment (regardless of how elaborate this accompaniment is). If counterpoint is to explore the largest possible scope of relations in a world, it cannot permit hierarchies between parts or materials to go unchallenged. This does not preclude textures that establish hierarchies, such as

monody. However, these should not predominate, and all parts should be treated as though they are, or could be, a primary line in the texture.

This principle is relatively well adhered to in each of the works in the folio. While local-level hierarchies do emerge in each work, this is generally part of the development of the counterpoint itself. One potential exception was in *Kampflieder*, where Group V tended to dominate perception due to its dynamic imbalance with the rest of the ensemble as well as its more registrally concentrated materials. However, due to the restrictions on the rehearsal and performance, it is hard to be sure that this is an intrinsic problem of the work, or merely one born of performance circumstances. There was also a potential hierarchy in *braneworlds*, since the simplicity and familiarity of the harmonic material of Group IV could potentially make it appear as a ‘fundamental’ part that is undermined by the surrounding atonal material; however, the numerous other factors appear to mitigate this effect. Likewise, the use of voices in *Si el clima* potentially divided in the texture into text and musical accompaniment, though this was mitigated by the layering and polysemy of the texts and the thoroughgoing polyphony in the live and playback piano parts.

**5. Divisibility of parts:** Each part is itself divisible into parameters that are at least logically independent of each other. This is concomitant to Principle 2, since an object must be constructed by the core set of parametric values of the ‘world’ in question. Not all parameters are entirely separable from each other in each instrument (for instance, dynamic and register are linked closely in many wind instruments), however, each part should be constructed in such a way that they can have numerous independently manipulable parameters.

The divisibility of parts had different incarnations across the course of the research. In *Trio*, parts were divisible insofar as pitch and rhythm, in particular, were structured logically as separate elements of a line. However, this parametric independence was not explored in the work. In *desert*, along with *Si el clima*, the different parameters of a line were structured polyvalently, such that conflicts or contradictions would be produced between them. This was dissatisfying insofar as it led to uncontrollable

structures, as well as being an inefficient and time-consuming method. *warped passages* independently structures numerous, physically linked, sound production parameters. This leads to aleatoric sounding results with define overall shapes. In *braneworlds*, the parameters are structured logically independently and each section decides on different values for each of them in each part. One drawback to the approach in *braneworlds* is the fact that each core parameter changes at the start of each section, and remains constant through the section, means that their independence is somewhat reduced.

**6. Transmutability of parts:** A work should demonstrate that any part can potentially adopt the identity of another part, either partially, in only some parameters, or wholly, in practically every parameter. However, parts should maintain a ‘constitutive difference’ within the parametric space, usually by way of instruments or instrumental groups, which allows for relations of identity to be possible in the first place. Thus, parameters such as timbre and spatial placement may never be fully unified within a work. The aim is nonetheless to demonstrate the freedom of the space created, and allow for a maximal exploration of the difference and similarity of all objects created in that space.

*Trio* demonstrated this principle in embryonic form: the work progressed from division to unity of the three parts in the form of melodic unison. In *desert*, *Si el clima*, and *Kampflieder*, distinct and often relatively rigid characters or identities were constructed which entertained limited imitative relations in various parameters (such as rhythm, in the form of mensuration canons, moments of harmonic unity, fleeting motivic imitation, and especially gestures of similar dynamic contour). These imitative moments did not substantially demonstrate that two different parts could effectively adopt each other’s characters. *Si el clima* also has an unclear logic of the ‘constitutive difference’ of its parts: both the live and playback pianos share the same linear characters without a structural thematisation of how this partition takes place. In *braneworlds* the interplay of individuation and imitation becomes clarified by a common logic of identity and difference across each of the groups. This work generally succeeds in showing how each

part can adopt key identifying characteristics of another while maintaining its own identity.

### **Chapter 11: Epilogue—*A Book of Migrations***

In late 2016, Uilleann piper/percussionist Matthew Horsley and I decided on the idea of me composing him a recital-length (c. 50 mins) work for solo Uilleann pipes, potentially with electronics and spoken text. This idea rapidly took shape and we managed to successfully secure Australia Council funding for its development and composition. The process has already involved a number of workshop sessions, and composition will begin immediately after submission of this doctoral dissertation and folio. First performance is scheduled for September 2017.

The work, currently titled *A Book of Migrations* after the book of the same name by Rebecca Solnit about her travels in Ireland, in many ways follows on from the compositional approach of *warped passages*. The work adopts a “radically idiomatic” (Barrett, 2002) perspective that takes the instrument itself as the starting point for elaborating a compositional (and contrapuntal) structure. However, whereas the flute solo focussed solely on a physical aspect of the instruments’ construction, attempting to circumvent the traditional playing style of the instrument, the new work will include traditional stylistic aspects of the pipe performance in the compositional design. Unlike the concert flute, the Uilleann pipes are already de- and re-contextualised by being performed in a ‘New Music’ recital. As such, their traditional techniques are already at a point of exteriority to the expectations of this context, and form enough of a ‘liberated space’ if conceived of beyond the mere replication of stylistic elements. The aim of the work, then, is to explore the not just the physical and sonic space of this instrument, but also the stylistic and historical dimensions, including a linguistic/literary dimension, and to set these dimensions in counterpoint in order to explore the identity relations created therein. The work is still in its early planning stages, and, as such, this Epilogue simply presents the current thinking of the work as a way of demonstrating how the contrapuntal aesthetics developed in this dissertation are being applied in a new context.

#### **Idiomatic Materials**

With this in mind, there are four interlinked areas to be explored and counterpointed in *A Book of Migrations*, each with several sub-dimensions:

1. Stylistic space: from maximal to minimal alteration of ‘ornamentation techniques’ in Irish piping music. In this, various techniques (cuts and taps, rolls and crans, nipping, backstitching, etc) will be temporally expanded or contracted, repeated, varied in their pitch material, etc.
2. Melodic space: from maximal to minimal alteration of traditional Irish melodies, including temporal expansion, contraction, alteration of rhythms and pitches, etc.
3. Instrumental space: from maximal to minimal presentation of ‘non-standard’ physical aspects of the instrument, including detuning, ‘whisper tones’, pitch bends, etc.
4. Linguistic space: from text in Irish Gaelic to text in English (with various degrees of melange of the two as the intermediate values).

## **Four Parts**

The counterpoint is made up of four fundamental parts, founded on the different aspects of the instrument, plus the human voice (which is free to be explored on Uilleann pipes due to the fact that the bag is filled by a bellows, and not by blowing). Each of these has vastly different properties and capabilities in terms of the dimensions it can explore. A part is said to have ‘full’ capacity to explore a particular space if it can chart a clear maximum and minimum of at least one dimension within that space, ‘partial’ if it can move within at least one dimension of that space, but in a constrained way, and ‘nil’ if it is effectively fixed with regard to this dimension. The capabilities of each part are as follows:

1. Chanter—the melodic pipe: capable of quite freely exploring stylistic space through ornamental devices, melodic space through its full pitch range and agile nature, instrumental space through a variety of extended techniques.
2. Regulators—the keys depressed with the forearm to produce single tones or dyads (occasionally triads): capable of partially exploring melodic space (constrained by small pitch set), and fully exploring instrumental space through a variety of extended techniques.

3. Drones—three low pipes tuned in octaves: capable of partially exploring the melodic space through adjustment of pitches of drones and through long-range structural rhythms, and partially exploring the instrumental space through a variety of extended techniques.
4. Voice—spoken text by piper: capable of fully exploring the linguistic parameters, and partially exploring stylistic space through vocally imitating various traditional techniques, and melodic space by adopting melodic rhythms and imitating melodic contours.

These are summarised in Table 11.1.

*Table 11.1: Capabilities of each part*

	Space type			
	Stylistic	Melodic	Instrumental	Linguistic
Chanter	Full	Full	Full	Nil
Regulators	Nil	Partial	Full	Nil
Drones	Nil	Partial	Partial	Nil
Voice	Nil	Partial	Nil	Full

### Counterpointing a Radically Unequal Space

Given the nature of the instrument, then, the counterpoint will not be between four different but equal parts as in *braneworlds*; the chanter is historically the feature of the instrument and the construction reflects this. In particular, no other part can explore the stylistic space (that of ornamental variation), despite it being a fundamental aspect of the work. This seems to contravene the principle of the ‘equality of parts’ in the above list of principles of counterpoint. At the same time, only the voice can explore the ‘linguistic space’. These also contravene the ‘transmutability of parts’, since, for example, the drones will never be able to play a unison melody with the chanter, and the regulators will never be able to make phonemes. Nonetheless, there is still a relational space that can be explored. Obviously, the chanter and regulators can explore melodic and rhythmic similarities, and the chanter and voice can explore similarities in terms of rhythmic structures. Less directly, the drones can be in tune with the chanter or not, the regulators can be in the same metric structure to the voice (for instance, playing on

accented words/phonemes), and the regulators and the chanter can both play ‘whisper tones’.

This relational space is obviously less fully traversable than *braneworlds*, and will potentially have even more difficulty with regard to intermediate values than the septet. Yet this demonstrates that the counterpoint of a work is not an ‘ideal’ structure that is realised regardless of its instrumentation or context. On the contrary, the goal is to ‘counterpoint’ the work, using these principles to structure and explore the world that is created. No work will be able to perfectly implement all of the contrapuntal principles; the point, instead, is to try to realise them to the extent possible with the compositional resources given by the context. *A Book of Migrations* attempts to do that for the Uilleann pipes.

### **Macro-Temporal Independence**

The difference or identity between parts on a macro-temporal scale is another dimension that the work will explore and that will further create relations of identity and difference between parts. As noted above, one of the issues with *braneworlds* is that each group changes its material at the beginning of each section, thus undermining their differentiation. In *A Book of Migrations*, a more sophisticated structure will be attempted in which each group changes its basic material type (or parametric identity values) after a different number of sections. For this structure, sections (or ‘regions’ as they were called in *braneworlds* and *warped passages*) will be generally shorter in length, and there will be potentially 200 or more sections in the work. A potential distribution might involve each part changing its identity structure according to the following proportions:

- Chanter: every 1–3 sections
- Regulators: every 3–6 sections
- Drones: every 10–20 seconds
- Voice: every 6–10 seconds

This would allow for moments where all parts change simultaneously, some parts change simultaneously, or only individual parts change while the others stay the same, creating a sense of ‘multi-temporality’ with nonetheless a high degree of macro-temporal control.

## Electronics

I have not yet decided whether electronics will be included in the work. The danger is that the instrument already contains enough space to explore for a concert-length work, and any electronics added will detract from the singularity of the instrument and its logic of construction. Thus, if electronics are to be added, they will be applied in order simply to enhance or expand the sonic qualities of the instrument itself, rather than adding a heterogeneous logic to the work. As such, various sound processing patches could be drawn upon. For example, a chorus effect draws upon the common experience of the different pipes being slightly out of tune, producing phase patterns; reverb simply enhances the resonance (and the sense of nostalgia and distance) of the instrument; and various delay and looping effects can expand the repetitive cells of the ornamental materials. Nonetheless, this aspect would need to be carefully considered so as to not override parameters determined by the instrument itself.

## Revelation or Invention?

Surprisingly, this approach recalls Adorno's (1998) concept of the "tendency inherent in the material" (p. 319) that was influential in *QEM2*, but in a vastly different way. Whereas before, the tendency was a direct, linear-chronological one, averse to systems, the new approach derives a contrapuntal system out of the 'tendencies' of the different aspects of the instrument itself, in a more precompositional and spatial sense. Nonetheless, the goal remains for the counterpoint to be "completely free of anything irreducibly alien to itself or superimposed upon it" (p. 272). While this seems to imply that the purpose of counterpoint is solely to reveal latent tendencies, not to invent new systems and materials, this is not the intention, and the emphasis on material homogeneity in *warped passages* and *A Book of Migrations* may simply be a result of the solo instrumentation. Future works will employ more elaborate and heterogeneous structures with larger instrumentations, requiring more invention of the parameters of a musical space. Yet, even in these cases, once the basic idea of the music space has been established, the specific dimensions, identities, and counterpoint should emerge from the 'tendencies' inherent in this space, its

physicality, historical dimensions, and so on. Through this, counterpoint deliver intense experiences of the identity relations possible within a musical world, as well as presenting profound experiences of difference itself.

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## Selected Blog Posts

February 12, 2013. A PhD on counterpoint and... dialectics?

<https://usageandcontinuation.com/2013/02/12/a-phd-on-counterpoint-and-dialectics/>

April 30, 2013. The counterpoint in the single line.

<https://usageandcontinuation.com/2013/04/30/the-counterpoint-in-the-single-line/>

May 18, 2013. Meditations on Dian Red Kechil discussions.

<https://usageandcontinuation.com/2013/05/18/meditations-on-dian-red-kechil-discussions/>

May 23, 2013. Further meditations on DRK discussions.

<https://usageandcontinuation.com/2013/05/23/further-meditations-on-drk-discussions/>

June 18, 2013. Musique informelle, non-neutral material.

<https://usageandcontinuation.com/2013/06/28/musique-informelle-non-neutral-material/>

August 14, 2013. Adorno's 'The function of counterpoint in New Music' PART 1.

<https://usageandcontinuation.com/2013/08/15/wrangling-with-my-third-duo/>

August 15, 2013. Wrangling with my third duo.

<https://usageandcontinuation.com/2013/08/15/wrangling-with-my-third-duo/>

August 19, 2013. Adorno's 'The function of counterpoint in New Music' PART II.

<https://usageandcontinuation.com/2013/08/21/percussion-and-piano-piece-part-2/>

August 21, 2013. Percussion and piano piece part 2.

<https://usageandcontinuation.com/2013/08/21/percussion-and-piano-piece-part-2/>

September 23, 2013. Remarks on workshopping my 'Etudes'.

<https://usageandcontinuation.com/2013/09/23/remarks-on-workshopping-my-etudes/>

September 30, 2013. Conditions of counterpoint today.

<https://usageandcontinuation.com/2013/09/30/conditions-of-counterpoint-today/>

December 4, 2013. What can be learned from my ‘Material fantasies’?

<https://usageandcontinuation.com/2013/12/04/what-can-be-learned-from-my-material-fantasies/>

December 8, 2013. Lines, lines, lines.

<https://usageandcontinuation.com/2013/12/08/lines-lines-lines/>

January 18, 2014. On Mahnkopf’s ‘Theory of polyphony’.

<https://usageandcontinuation.com/2014/01/18/on-mahnkopfs-theory-of-polyphony/>

February 2, 2014. A trio named “Quite Early Morning”.

<https://usageandcontinuation.com/2014/02/02/a-trio-named-quite-early-morning/>

February 4a, 2014. Productive forces and concrete counterpoint.

<https://usageandcontinuation.com/2014/02/04/productive-forces-and-concrete-counterpoint/>

February 4b, 2014. My trio: Informal?

<https://usageandcontinuation.com/2014/02/04/my-trio-informal/>

March 9, 2014. Counterpoint, polyphony, and space.

<https://usageandcontinuation.com/2014/03/09/counterpoint-polyphony-and-space/>

March 28, 2014. “Here comes success”.

<https://usageandcontinuation.com/2014/03/28/here-comes-success/>

April 15, 2014. A few thoughts: Single lines, raw and cooked.

<https://usageandcontinuation.com/2014/04/15/a-few-thoughts-single-lines-raw-and-cooked/>

April 16, 2014. Some thoughts on counterpoint after a meeting with Johannes Schöllhorn. <https://usageandcontinuation.com/2014/04/16/some-thoughts-on-counterpoint-after-a-meeting-with-johannes-schollhorn/>

April 24, 2014. Steps towards a general theory of counterpoint.

<https://usageandcontinuation.com/2014/04/24/steps-towards-a-general-theory-of-counterpoint/>

May 31, 2014. Elements of QEM, no. 2 – Part 1.

<https://usageandcontinuation.com/2014/05/31/elements-of-qem-no-2-part-1/>

June 22, 2014. Elements of QEM, no. 2 – Part 2.

<https://usageandcontinuation.com/2014/06/22/elements-of-qem-no-2-part-2/>

July 14, 2014. Rehearsing QEM2.

<https://usageandcontinuation.com/2014/07/14/rehearsing-qem2/>

August 18a, 2014. Lessons at Darmstadt 2014.

<https://usageandcontinuation.com/2014/08/18/lessons-at-darmstadt-2014/>

August 18b, 2014. Parametric counterpoint.

<https://usageandcontinuation.com/2014/08/18/parametric-counterpoint/>

September 16, 2014. New thoughts, next steps.

<https://usageandcontinuation.com/2014/09/16/new-thoughts-next-steps/>

October 14, 2014. a new day in the desert: music in complex motion.

<https://usageandcontinuation.com/2014/10/14/a-new-day-in-the-desert-music-in-complex-motion/>

October 24a, 2014. Dynamics, register, techniques.

<https://usageandcontinuation.com/2014/10/24/dynamics-register-techniques/>

October 24b, 2014. Counterpoint: Mystifying or demystifying?

<https://usageandcontinuation.com/2014/10/24/counterpoint-mystifying-or-demystifying/>

November 11, 2014. Research outline November 2014.

<https://usageandcontinuation.com/2014/11/11/research-outline-november-2014/>

December 4, 2014. Reflections after completing ‘desert’.

<https://usageandcontinuation.com/2014/12/04/reflections-after-completing-desert/>

December 22, 2014. Questions of metre in ‘Si el clima’.

<https://usageandcontinuation.com/2014/12/22/questions-of-metre-in-si-el-clima/>

December 29, 2014. Short note on ‘invertible parametric counterpoint’.

<https://usageandcontinuation.com/2014/12/29/short-note-on-invertible-parametric-counterpoint/>

January 7, 2015. Counterpointing texts.

<https://usageandcontinuation.com/2015/01/07/counterpointing-texts/>

January 29, 2015. On “re-generalizing” polyphony.

<https://usageandcontinuation.com/2015/01/29/on-re-generalizing-polyphony/>

February 2, 2015. Thoughts after workshopping with Alex Raineri.

<https://usageandcontinuation.com/2015/02/02/thoughts-after-workshopping-with-alex-raineri/>

February 3, 2015. Polyphony or counterpoint?

<https://usageandcontinuation.com/2015/02/03/polyphony-or-counterpoint/>

February 27, 2015. Notes on lessons at impuls 2015.

<https://usageandcontinuation.com/2015/02/27/notes-on-lessons-at-impuls-2015/>

March 23, 2015. Some technical aspects of my quintet ‘a new day in the desert’.

<https://usageandcontinuation.com/2015/03/23/some-technical-aspects-of-my-quintet-a-new-day-in-the-desert/>

May 17, 2015. Beginning ‘Mirror Motets’: An initial mission statement.

<https://usageandcontinuation.com/2015/05/17/beginning-mirror-motets-an-initial-mission-statement/>

June 9, 2015. Texture types and imitation.

<https://usageandcontinuation.com/2015/06/09/texture-types-and-imitation/>

June 12, 2015. Dignity and militancy: Si el clima fuera un banco [on Kupka's Piano blog]. <https://kupkaspiano.com/2015/06/12/dignity-and-militancy-si-el-clima-fuera-un-banco/>

June 21, 2015. Parameter, arbiter, emergent?

<https://usageandcontinuation.com/2015/06/21/tension-parameter-arbiter-emergent/>

July 9, 2015. Si el clima: Quick thoughts upon listening.

<https://usageandcontinuation.com/2015/07/09/si-el-clima-quick-thoughts-upon-listening/>

July 23, 2015. Three or four methods?

<https://usageandcontinuation.com/2015/07/23/three-or-four-methods/>

July 29, 2015. Polytonality?

<https://usageandcontinuation.com/2015/07/29/polytonality/>

August 14, 2015. Mahler: Character and 'mere simultaneity'.

<https://usageandcontinuation.com/2015/08/14/mahler-character-and-mere-simultaneity/>

August 16, 2015. Initial thoughts on Kampflieder.

<https://usageandcontinuation.com/2015/08/16/initial-thoughts-on-kampflieder/>

September 9, 2015. A note to self on contingency in motet 3.

<https://usageandcontinuation.com/2015/09/09/a-note-to-self-on-contingency-in-motet-3/>

September 18, 2015. Metre and metric stratification in Kampflieder.

<https://usageandcontinuation.com/2015/09/18/metre-and-metric-stratification-in-kampflieder/>

September 27, 2015. Defining groups in Kampflieder.

<https://usageandcontinuation.com/2015/09/27/defining-groups-in-kampflieder/>

October 27a, 2015. Times in Kampflieder.

<https://usageandcontinuation.com/2015/10/27/times-in-kampflieder/>

October 27b, 2015. Liberated territories.

<https://usageandcontinuation.com/2015/10/27/liberated-territories/>

November 8, 2015. Group composition.

<https://usageandcontinuation.com/2015/11/08/group-composition/>

December 15, 2015. Penser la musique hier et aujourd’hui: Heterophony?

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### Appendix 1: Project Timeline

2013:

February–April	Compose <i>Trio for trumpet, guitar, and percussion</i>
May	Dian Red Kechil young composers' residency, Singapore: Workshops and performance of <i>Trio</i> ; lessons with Chaya Czernowin, Steven Takasugi, and Peter Edwards
July–September	Compose <i>Four Etudes</i>
September	Workshop <i>Four Etudes</i> with Ensemble Interface
September–October	Compose <i>Material Fantasies</i>
November	Workshop and performance of <i>Material Fantasies</i> with Kupka's Piano

2014:

December 2013–January 2014	Compose <i>Quite Early Morning, no. 1</i>
February	Workshop and record <i>Quite Early Morning, no. 1</i> with Kupka's Piano
March	Deliver confirmation paper 'Approaching contrapuntal composition'
April–June	Residence in Cologne, attend Acht Brücken Festival, several lessons with Johannes Schöllhorn. Compose <i>Quite Early Morning, no. 2</i>
July	Workshop and performance of <i>QEM2</i> in Brisbane with Kupka's Piano
August	Attend Darmstadt Summer Courses for New Music: Second performance of <i>QEM2</i> ; lessons with Brian Ferneyhough, Clemens Gadenstätter, Oliver Schneller, and Jorge Sanchez-Chiong.
August	Move to Brussels
October	Attend Transit Festival Leuven, meet Richard Barrett
October–December	Compose <i>a new day in the desert</i>

2015:

January–May	Composing <i>Si el clima fuera un banco</i>
January	Workshop <i>Si el clima</i> with Alex Raineri
February	Attend Impuls Academy, Graz: Lessons with Richard Barrett, Klaus Lang, Isabel Mundry; workshop <i>QEM2</i> with Ian Pace.
February	Deliver paper 'The Ideology of Polyphonic Time' at Orpheus Research Seminar. Paper 'Si el clima fuera una

	composicion' written for <i>Compositional Aesthetics and the Political</i> conference at Goldsmiths, London, but not delivered due to Visa issues.
April–February 2016	Roughly monthly lessons with Richard Barrett in The Hague.
May	Performance of <i>Si el clima fuera un banco</i> by Alex Raineri in Brisbane
May–July	Compose <i>Mirror Motets</i>
August–December	Compose <i>Kampflieder</i>
August	Attend Performing Arts Forum 'Talking Music' week in St. Erme, France. Attend 'New Perspectives on Polyphony' conference and 'Laus Polyphoniae' festival in Antwerp.
November	Attend Huddersfield Contemporary Music Festival

2016:

January	Present paper 'We Only Want the Earth' at IRCAM study day 'Musique/Politique'.
January–May	Compose <i>warped passages</i>
March	Return to Brisbane. Rehearsals and performance of <i>Kampflieder</i> with Melbourne Metropolitan Sinfonietta and Elliott Gyger.
April–May	Record new version of <i>Si el clima</i> playback part with Alex Raineri. Performance of revised version of <i>Si el clima</i> .
June–September	Compose <i>braneworlds</i>
July	Deliver presentation on <i>warped passages</i> at the Unbound Flute Festival in Brisbane.
September	Attend Bendigo International Festival of Exploratory Music, also ELISION concert 'An Ocean Beyond Earth', and the ELISION retrospective exhibition at RMIT
September–October	Rehearsal and performance of <i>braneworlds</i> with Kupka's Piano in Brisbane.
October	Revise <i>warped passages</i>
December	Weeklong residency at Bundanon Cultural Trust with Kupka's Piano to rehearse for studio recording. Record <i>braneworlds</i> and other works by Australian composers at University of Queensland.

2017:

January	Record remaining parts of <i>braneworlds</i>
January–February	Revise <i>warped passages</i> . Partial premiere of <i>warped passages</i> by Hannah Reardon-Smith at Tilde New Music Academy in Melbourne. Workshop recording of <i>warped passages</i> .
February	Publication of article ‘Composing musical branes’ in <i>Directions of New Music</i> journal.

## Appendix 2: About Kupka's Piano

My work with Kupka's Piano has played a major role in the research process. Kupka's Piano was founded in 2012, and has had a regular concert series at the Judith Wright Centre of Contemporary Arts in Brisbane since formation. The ensemble began as a classic 'Pierrot plus percussion'-style ensemble (flute, clarinet, violin, clarinet, piano, percussion) but over time has become a more flexible formation with the core instrumentation as two flutes (Hannah Reardon-Smith and Jodie Rottle), clarinet (Macarthur Clough), cello (Katherine Philp), piano (Alex Raineri), percussion (Angus Wilson), and now, increasingly, myself on guitar. I have been a co-artistic director with the group since its formation, along with several other members. The ensemble also has a cohort of closely associated composers, including myself, Jodie Rottle and Hannah Reardon-Smith, Jakob Bragg, and Michael Mathieson-Sandars. Taking its name from Bohemian painter František Kupka's iconic 1909 painting *The Piano Keys*, Kupka's Piano focusses on challenging contemporary repertoire from Australia, Europe, the USA, and Asia, with an equal focus on both established figures and repertoire and emerging voices and obscure works. My activities with Kupka's Piano during the period of the research included:

- New works premiered by Kupka's Piano: *Stars, not far off* and *Material Fantasies* (2013), *Quite Early Morning, no. 2* (2014), *Si el clima fuera un banco* (2015), and *a new day in the desert* and *braneworlds* (2016).
- Programming, research, and program notes for concert series 2013–2017.
- Rehearsal assistant for 2013 and 2016 concert series, including page turning, basic conducting, and commenting on interpretational and technical issues.
- Workshopping with Kupka's Piano and Ensemble Interface during September 2013 residency.
- Attending Darmstadt 2014 with Kupka's Piano.
- Workshops and rehearsals with Chris Dench for *Singular Vectors: A Chris Dench Portrait Concert*, including the new work *flux*.
- Recording project in December 2016 and January 2017, including residency at Bundanon Cultural Trust, including performing, conducting, and rehearsal assistance.

### **Appendix 3: Conference Paper—‘Si el clima fuera una composición’**

*Written for the conference Compositional Aesthetics and the Political at Goldsmiths, University of London on February 20–22, 2015, but not delivered due to Visa problems.*

#### **Introduction**

Firstly, an apology. The title of this paper is misleading. ‘If the climate were a composition’ is a catchy title, but I’m hardly arguing that the work I’m composing be considered an ‘ecosystem’ – such a proposition would take a lot of work to defend. Nonetheless, the possibility that the work might have anything concretely to do with the environment and the environmental struggle represents an important question of this present paper.

Instead, this paper reconstructs a logical progression of the fundamental thinking behind the piece *Si el clima fuera un banco* for piano and tape, which I’m currently writing. A piece of around 15 minutes that will be premiered in Australia in June by my good friend and colleague Alex Raineri, and is named after Hugo Chávez’s famous statement at the 2009 Copenhagen summit: “If the climate were a bank it would have been saved already”. Starting with an Adornian understanding of contrapuntal relations as formally mimicking contradictory social relations, the paper follows the work in radiating outward towards more explicit political content until arriving at the inclusion of political texts themselves. The paper is concerned with trying to come to grips with the multiple layers of politics in the work and puts the question of the limits of an Adornian formalism today.

#### **Part 1: Mimesis of social relations**

##### *Critique and utopia*

If, for Adorno (1999), music “reflects the trends and contradictions of bourgeois society as a totality”, the artform is not just this critical expression *but also, simultaneously*, the utopian image of a ‘reconciled’ life. As Adorno writes:

Music transcends society by enabling [the] contradiction [between individual and collective] to find expression and *at the same time* by

reconciling the irreconcilable in an anticipatory manner. (1999, p. 10, emphasis added)

Yet it is equally true for Adorno that the two – the critical and the utopian – cannot be absolutely distinguished, which ultimately means that the utopian is cut across with its falsehood, since “no consciousness [today] has the lofty advantage point from which this separation would be self-evident” (1997, p. 171).

### *Counterpoint*

To me, this all clearly suggests counterpoint, which for Adorno has a utopic dimension since, “[w]hile all the elements interpenetrate, they also remain distinct, and the unity comes into being only through the function each of them has and by virtue of which it influences the others. It is not an immediate unity, but a unity of opposites.” (p. 129)

Or more broadly, but still evidently suggesting counterpoint, Adorno states: “the aesthetic unity of the multiplicitous appears as though it had done no violence but had been chosen by the multiplicitous itself” (Adorno, 1997, p. 176).

The point that I take from this is that counterpoint in particular names this relationship between part and whole, relative autonomy between the two, reciprocal influence, and so on. Through counterpoint, music *anticipates* these utopian relations.

Yet, if Adorno is correct, counterpoint today also – by necessity – presents contradictory or unreconciled social relations.

### *Metre in Si el clima*

How does this abstract dialectic play itself in the construction that I’m undertaking in *Si el clima*? I want to just focus for a moment on the question of metre, as a kind of microcosm of my overall approach.

Roughly, it goes something like this:

1. Firstly, defining a meaningful metre, which I define by an internally differentiated structure that also exhibits some kind of global trajectory: gradual shortening, gradual expansion, cyclical, etc. In the example on the screen, the metre is alternating longer and shorter metres, with the shorter metres slowly contracting.
2. Secondly, defining relations or non-relations to the metre: in which there are a series of possible metric 'functions' that lines can take up:
  - a. As we can see here, the first way is to simply outline the basic beat pattern of the metre. Here, it is an alternation of groups of 2 and groups of 3.
  - b. The next way is to have, à la Ferneyhough, rhythmic sequences that are mediated by the expanding and contracting metre: for instance the second line of the 'metrically determined' which slowly accelerates 6,7,8,7,8,9 against the changing metre.
  - c. Then the same principle, more or less, is applied to what I'm calling 'hypermeasures': groups of 2 or 3 measures that the particular line takes as *one* measure and divides accordingly: producing a non-synchronisation with many barlines. For instance, the second line of the 'hypermetrically determined' here takes three bars as a

'hypermeasure' and divides this into two equal parts. This then has a simple ascending sequence in the numerator: 8, 9, 10, 11.

- d. The final relation, 'extra-metrically determined', verges on non-relation. The line takes a subdivision of the basic pulse, and builds additive or subtractive structures in relation only to itself.
  - e. Of course all of these could be varied to create a greater degree of nuance, both within and between lines.
3. Then thirdly, there is the compositional process itself: in which these possible relations are deployed over time, and different musicians (represented by 'lines') unite and diverge with each other, as well as uniting or diverging with the common metre. So, in addition to this metric construction, lines within the texture are constituted according to their own longer-range, often contradictory, parametric processes: be they durational, intervallic, timbral or other processes. These may or may not be related to equivalent global processes. So, what takes place on the metric level gets repeated on a number of other levels of the work.

In short, in this approach, the individual parts have a variety of strategies of relating or not relating to the collective structure. Yet they do not 'choose' the collective metre out of their "very multiplicity". This has a tendency all to itself: one that stands partially outside the polyphonic discourse and exerts a force on it. There is freedom, but there is also a profound lack of harmony.

### *Abstraction*

While I find this an exciting contradiction between utopia and critique, I cannot help but feel it insufficient.

Obviously, there is a feeling of political inadequacy of this approach when faced with the catastrophic reality of the climate crisis. But on the artistic side, there is a danger that conceiving of material in a purely abstract manner not only loses its tension with the world, but also its internal tension: the critical operator for counterpoint.

As Adorno (1997) himself suggests with regard to abstract painting:

In the age of total neutralization, false reconciliation has of course also paved the way in the sphere of radically abstract art: Nonrepresentational art is suitable for decorating the walls of the newly prosperous. (p. 300)

In my view, therefore, something beyond the abstract must be re-injected in order to recuperate tension. Considering the scale of the crises that we will face this century, I cannot but think this element should be a more explicit politics.

## **Part II: Concept**

### *Vanishing cause*

Despite Adorno's (1997) well-known injunction that "Society appears in [the artwork] all the more authentically the less it is the intended object" (p. 303), things are in fact not so clearcut. Adorno makes this startling statement about the theatre of Bertolt Brecht. He says:

the didacticism led him to his dramaturgical innovations, which overthrew the moribund theatre of philosophy and intrigue. In his plays, theses took on an entirely different function from the one their content [...] intended. They became constitutive; they made the drama anti-illusory and contributed to the collapse of the unitary nexus of meaning. It is this, not commitment, that defines their quality, yet their quality is inseparable from the commitment in that it becomes their mimetic element. (p. 321)

What I'm interested here is how the referential or – importantly, the 'committed' – becomes an *immanent* operator.

Regarding Michael Finnissy's use of borrowed musical materials, Ian Pace suggests:

Instead of asking 'can one hear Bruckner 5, or the Busoni Pezzo serioso at this point?' one would do better to ask 'How is Finnissy's piece *affected* by the sonic attributes which it shares with the works of Bruckner, Busoni, etc., upon which he draws?' (p. 42; my emphasis)

While the two examples are very different, point is the same: like a 'vanishing cause', the introduction of referential or non-abstract materials, is a failed one: In

Brecht's case, his political commitment is ineffectual (according to Adorno, at least), in Finnissy's case, the quotations are often unrecognisable (by design in his case). But in both cases, the attempt to put these foreign elements into the musical discourse *acts on* the work, and pushes it to do something that would not have happened without this heterogeneous element.

### *Concepts in Si el clima*

So, in *Si el clima* I draw upon a number of conceptual operators to force the abstract material to *budge*. The principle three of these are:

- Firstly, an allegory of humanity's progress towards total alienation from nature, which is taken up through a variety of means including:
  - A steady increase of the 'division of labour' between different lines in the contrapuntal texture, beginning with an indistinct and simple one, and moving towards a much more complicated one;
  - A steady increase in tempo and a shortening of metre across the course of the work, along with a reduction of the basic pulse from crotchets to quavers and then to semiquavers;
  - Manipulation of the degree to which the pianist is free from or constrained by the tape – which here represents 'nature'. This is facilitated by the pianist having a foot pedal to trigger new sections of the tape part.
- Secondly, from its own perspective, the tape part takes as its starting concept Stephen Jay Gould's theory of contingent evolution as put forward in his book *Wonderful Life*, on the fossils of the Burgess Shale.
- Thirdly, The introduction of a series of political 'folk' tunes, made more or less unrecognisable by various methods, which are to represent the figure of human universality – the only real driver for a resolution to the climate crisis. The songs are: 'We Shall Overcome' by Pete Seeger; 'An Die Nachgeborenen' by Brecht and Eisler; 'We Sing for the Future' by Cornelius Cardew; 'El Pueblo Unido Jamás Será Vencido' by Sergio Ortega; and, naturally, 'The Internationale'.

The intention is double:

Firstly, to give concrete shape to the abstract relations posited in the first part of this paper. These elements are not primarily intended to impart a particular 'message'; they are not the content of the form. Instead, it is perhaps the reverse: the metaphors are largely a way to provide an external, unique form for the allegorical dimension (social relations) already embedded in the polyphonic material, understanding that the two layers remain irreducible to each other.

Secondly, since this form will appear as pregnant with meaning, yet without the ability to say of what, it draws the listener into a search for these lost origins. This hunt for origins, perhaps exposed through program notes, papers, title, etc, provides a point, albeit limited, of the entrance of *real* politics into the work, while never allowing the work to be consumed by its 'message'.

### **Part III: Political text**

But it is out of fear that these aspects will neither produce sufficient tension in the work, nor have a concrete political dimension, that I decided that the tape part of the work will weave in a number of spoken word parts delivering texts from ecological and Marxist thinkers and figures.

These texts are:

- Wonderful Life by Stephen Jay Gould
- The Sand County Almanac by Aldo Leopold
- Marx's Ecology by John Bellamy Foster
- Chavez's Copenhagen speech from 2009

Here are some examples of the selections of text that will be used:

Gould:

Burgessia, with its oval carapace, and long tail spike (almost twice the length of the body), was not a notostracan branchiopod, as Walcott had believed, but yet another arthropod orphan of unique design (figure 3.27). Hughes declined to make a formal taxonomic place for Burgessia, because he regarded this genus as a peculiar grabbag,

combining features generally regarded as belonging to a number of separate arthropod groups.

Leopold:

Some day some patient botanist will draw a frequency curve of oak birth-years, and show that the curve humps every ten years, each hump originating from a low in the ten-year rabbit cycle. (A fauna and flora, by this very process of perpetual battle within and among species, achieve collective immortality.)

Bellamy Foster:

The domination of the earth itself, for Marx, took on a complex, dialectical meaning derived from his concept of alienation. It meant both the domination of the earth *by* those who monopolized land and hence the elemental powers of nature, and also the domination of the earth and of dead matter (representing the power of landlord and capitalist) *over* the vast majority of human beings.

Chavez:

Now the cause, what is the cause?

Let's talk about the cause, let's not evade responsibilities, and let's not evade the depth of this problem. The cause, undoubtedly, I return to the theme of this whole disastrous panorama, is the destructive metabolic system of capital and its embodied model: Capitalism.

As you can see, these texts move from the more poetic to the more didactic and propagandistic. They are not all political, but are more or less in the orbit of social and ecological politics. I intentionally avoided setting texts concerning the misery of the social and ecological situations. I did not want to make an Oxfam ad.

There will be very little manipulation of these texts, which will be spoken by ordinary people, and not voice actors (although it will be the voice of Chávez himself in that instance). They will recur at a number of points throughout the piece,

sometimes simultaneously layered so as to obscure them, but sometimes presented individually. Each of them will have a separate determination in terms of their deployment: a particular place in the stereo space, a particular type of dynamic envelope, and so on.

It is my hope that this layer, truly heterogeneous in its constitution and its aesthetic feeling, will rupture any easy unity between the conceptual dimension and the formal, monadic, dimension of the work.

### **Conclusion**

But what, ultimately, is the politics of the composition? What I'm suggesting is that *Si el clima* may ultimately fall into a kind of 'mega-Adornian' paradigm, pushing at the limits of Adorno's formalism, overextending it, but nonetheless, in the final analysis, all of this is only to *strengthen* this paradigm.

As Adorno puts it in *Aesthetic Theory*: "Artworks that unfold to contemplation and thought without any remainder are not artworks" (p. 161). Or, more playfully, "Every artwork is a picture puzzle, a puzzle to be solved, but this puzzle is constituted in such a fashion that it remains a vexation." (p. 161)

The puzzle of *Si el clima* is that of the irreconcilability of the multiple layers of political engagement. Starting from a purely formal question, that of counterpoint as the formal presentation of both utopia and social division, the strategy progressive moves out towards more *explicit* content. Firstly by means of a conceptual *torsion* of the formal materials – their shaping by way of political concepts – and then by means of the direct injection of political texts. It is important also to note that none of these three layers is univocal: none of them make a clear statement on the materials they present. There's something internally fragmented and 'cubist' about each of them.

But this is not just mere hermetic posturing. The point of *Si el clima* is that it *wants to say* something, and that each of the layers of the work maintain an estranged necessity in their relations to each other. It is not just unrelated phenomena thrown together in a 'post-modern' fashion. Moreover, it is the wager of *Si el clima* that the (partial) instrumentalisation of the music for a political end

sharpens the identity of the layers and *for this exact reason* increases the tension *between* the layers.

These layers: ciphers for social contradiction and placeholders for utopia.

#### **Appendix 4: Conference Paper—‘The Ideology of Polyphonic Time’**

*Presented at the ORCiM research seminar The Making of Musical Time on February 26, 2015 at the Orpheus Institute in Ghent, Belgium.*

##### **Part I: Ideology and Polyphony**

“Ideological consciousness is, first, the dream of an impossible universality.”  
(p. 48)

So states Etiénne Balibar in *The Philosophy of Marx* (2014). In a society riven with contradictions, not just between classes, but within classes and within an overall division of labour, a State comes to play the role of guarantor and symbol of a unrealisable harmony. The ideology of the state presents “a fictive community whose power of abstraction compensates for the real lack of community in relations between individuals.” (p. 48)

Certainly, the propagation of such ideas of ‘false universality’ is not just the purchase of the media, politicians and academics, and is not confined to the ‘state’ as such. According to Christopher Small, this idea of establishing ‘idealised’ social relations also takes place in music:

The act of musicking establishes in the place where it is happening a set of relationships, and it is in those relationships that the meaning of the act lies. ... *they model, or stand as a metaphor for, ideal relationships as the participants in the performance imagine them to be*: relationships between person and person, between individual and society, between humanity and the natural world and perhaps even the supernatural world. (1998, p. 13; my emphasis)

In fact, Small argues that music is a *privileged* site of the ‘exploration’ of social ideals, of ideology. This is because music’s relations are concentrated in time and intensity of experience (p. 96). They can deliver the ideological content not just to the mind, but to the body, as experience (*ibid.*). Perhaps most importantly, and this is a point Small consistently comes back to, unlike language, which must deal with relations “in sequential order and only one at a time,” music is much more capable of dealing with their “many-layered quicksilver nature” (p. 59).

This idea of presenting relations in their simultaneity to me immediately implies polyphony: If music is a privileged site for the transmission of social ideals (that is to say, ideology), polyphonic music, as the Western practice of simultaneity par excellence, must be a particularly strong ideological vehicle.

In such Western art music, where the audience and performers have become distinctly separated, something must take place to link the former to the latter. This, I'm beginning to think, is something along the lines of what Althusser famously called 'interpellation'. Individual listening subjects are 'hailed' by the music and identify with its internal relations, just as—simultaneously—they are identified as the subjects of the music.

The ideological dimension of counterpoint, in this sense then, is the function whereby individual listening subjects identify themselves with the set of relations embedded in the music, as ciphers for broader social relations. Given the material fact of inequality and social division, contrapuntal music tends to present itself as a *fictive community*, an *ideal* set of social relationships not possible in the real world.

(In fact, the very division between performer and audience represents the kind of social divisions that are meant to be mystified through the listener's interpellation into the fictive community of counterpoint.)

A classic example of this kind of fictive community is the neoplatonic 'harmony of the spheres' as present in the 14<sup>th</sup> Century Ars Nova practices, and relayed in the theory of the *discordia concors* or harmonious discord. Richard Taruskin (2009) has noted that – in regard to a motet by Ciconia – "the tenor layout and the mensural scheme ... in their combination of diversity and comprehensiveness ... symbolize the harmonizing of competing interests—the *discordia concours*." (p. 277)

The ideology embedded in the musical relations was that of a fixed, timeless order of society, one in which everything has its assigned place. In this sense it provides an *idealised* image of the power structures of the society in which it is created, showing them as harmonious when they were far from it, and had a political function of normalising these power structures.

## Part II: Finnissy/Ferneyhough

One of the key aspects of this ideological unity of musical elements is of course the regulation of musical time. This is a complicated matter involving all sorts of musical elements (including pitch, instrumentation, phrasing, etc), but I want to focus on one of the most simple or obvious: that of metre. In a discourse of relative independence of lines, the metre represents the common denominator of temporal flow. It unites the potentially divergent lines, and forces them to keep a common collective interest.

Under the strain of a growing alienation of music from social function across the late 19<sup>th</sup> and 20<sup>th</sup> centuries, leading to a disintegration of a common musical syntax, the pre-critical or organic relationship between metre and parts (as between other parameters) in polyphonic discourse was ripe to break down. As Adorno says at the beginning of his *Aesthetic Theory*: “It is self-evident that nothing concerning art is self-evident anymore.” This is very much the case with regard to metre.

Now I want to quickly outline the extreme poles of thinking about metre in polyphonic music now that its ‘organic’ status has been undermined, in order to frame my current compositional concerns.

### *Ives & Finnissy*

The first of these poles is that of individualism. Here the hierarchical social harmony represented by premodern counterpoint gives way, in works beginning with Ives, to a fully fledged non-relation between individual parts. An exemplary case of this is Finnissy’s work *Nobody’s Jig* from 1980-81, for which there is no score, only the four parts. *Nobody’s Jig* gives no indication of synchronisation and each realisation will result in a very different set of vertical coincidences.

While the absence of a full score in very early notated music reveals the *presence* of an unstated, common social structure underneath, Finnissy’s absence of a score reveals the opposite: *an absence* of a common structure. This absence is all the more highlighted, as Roger Redgate (1997) notes, since it subverts the iconic place the string quartet has held in terms of a representation of collective engagement (for instance, Goethe’s quote about the quartet being a conversation). (p. 139)

Of course, as Redgate notes, Finnissy mediates this individualism by way of other unifying parameters (commonalities of musical language, a sense of balance between parts playing faster and slower lines, a rough sense of overall development, etc), so to suggest that these works are fundamentally ‘individualistic’ is of course a simplification. What I’m getting at is simply that the *temporal relations* are now fully *external* and *contingent*.

### *Ferneyhough*

A more extreme and polar alternative to Finnissy’s Ivesian approach in *Nobody’s Jig* and other pieces would be to define all the lines in a polyphonic discourse in relation to the metre. We can find this approach to varying degrees in the music of Brian Ferneyhough.

As Ferneyhough says in his article ‘Duration and Rhythm as Compositional Resources’: for him, “a measure is not primarily a unit of emphasis, of agogic priorities, but a space, serving to delimit the field of operations or presence of specific sound qualities, of musical processes.” (p. 52)

In terms of rhythmic relations to the metre, Ferneyhough’s approach tends towards a domination of the individual parts towards the whole that is this metric ‘space’. While individual rhythmic lines often have their own long-range processual logic, and thus are self-constituting, such processes have to be *mediated* to a high degree by the unifying force of the each metric space that they may pass through.

For this reason, and for a number of others that I don’t have time to go into here, to me the real autonomy of lines in much of Ferneyhough’s composition remains weak, and is consistently at risk of collapsing back into a series of ‘gestalt’ gestures moving from bar to bar.

This is clearly evident in passages such as this one, from the 5<sup>th</sup> string quartet where each bar remains a discrete gestalt with internal divisions. Each new bar heralds a significant change of speed of each of the lines within it:

Now, this is a rather crude example. Ferneyhough is clearly going for a certain effect here, but this kind of metric dependence exists even in passages with a more obviously polyphonic texture, such as this, where the bar-line is obscured by a tied note:

Here, nonetheless, the rhythmic structures are defined with the overall metric structure playing a determinant function (as is most evident in the case of the whole bar tuplets). That is to say that, the self-relation of the individual is constantly constrained by its relation to the global structure.

In plain contrast to the radical liberalism of Finnissy's metric approach in "Nobody's Jig" where individuals bump into each other in a haphazard and coincidental manner, Ferneyhough's approach to metre suggests an emphasis on totalisation where individual lines all have a very micro-level dependence on a global structure. While the metre *itself* doesn't emerge, in the sense of the metre being associated with a particular pattern of stresses, it operates 'behind the scenes' as a kind of invisible hand directing the flow of traffic, or a gravitational pull that unites disparate elements...

Again, as with Finnissy, there are plenty of other parameters and structures mediating this and cutting against the dominance of the metre. Nonetheless, on this particular level, the metre is largely *constitutive* of the rhythmic content of the lines, *not constituted by them*.

*Carter...*

I wanted to talk briefly about Elliot Carter's proportional approach, but I ran out of space, so perhaps that's something that can be discussed during questions.

### **Part III: The form of the content**

In his article on the Function of Counterpoint in New Music, Adorno proposes a modern counterpoint in which:

While all the elements interpenetrate, they also remain distinct, and the unity comes into being only though the function each of them has and by virtue of which it influences the others. It is not an immediate unity, but a unity of opposites. (Adorno, 1999, p. 129)

This unity of opposites is the true image of utopia, insofar as no 'violent' external power is imposed over the individual elements in order to unify them. Unlike the preordained unifying schemas of previous contrapuntal styles, in truly modern composition the "aesthetic unity of the multiplicitous appears as though it had done no violence but had been chosen by the multiplicitous itself" (Adorno, 1997, p. 176).

As Terry Eagleton (1990) points out, this idea of the multiplicitous content so-to-speak 'electing' its formal structure is nothing other than the Marxist aesthetic project itself. He quotes Marx from an 1842 article: "Form is of no value unless it is the form of its content" (p. 210).

A metric approach that wishes to be somehow in accord with this idea would need to avoid, on the one hand, an approach to polyphony in which a predetermined metric structure provides the unassailable frame for the temporal determination of the individual parts that inhabit it; and on the other hand, the non-existence of a common metre in favour of contingent metric coincidence.

The ‘universal’ metric structure, in this case, would have to emerge from the spontaneous agreement of the multiplicitous and independent linear constructions.

#### **Part IV: My approach**

However, following Adorno, I believe that such a positive utopian image is not possible to render in music today:

Granted, the multiplicitous in the aesthetic continuum wants synthesis, yet at the same time, being determined extra-aesthetically, it withdraws from synthesis. The synthesis that is extrapolated out of multiplicity, which it has as a potential in itself, is unavoidably also the negation of this multiplicity. The equilibrium sought by form must misfire internally because externally, meta-aesthetically, it does not exist. Antagonisms that are unsolved in reality cannot be solved imaginatively either; (1997, p. 222)

More simply put, counterpoint today is perhaps by necessity both a utopian image *and* an image of the impossibility in the present, of achieving these utopian relations.

My approach, then, is a dual one. It attempts to preserve the important role of a common metre as a pre-given entity that acts as a force shaping the material within it. On the other hand, the individual lines, as alienated from this common structure, must be able to be constructed in a metrically autonomous way. Moreover, this approach aims to create possible relations between the two approaches, while maintaining the gap, signifying the impossibility, in the present, of a utopian ‘form of the content’ in polyphonic time today.

This idea could be realised in a number of ways, and draw upon numerous different notational approaches, to be sure. The approach that I’m currently taking in my next pieces – an approach that is still in its infancy and likely in need of refinement and of radicalisation – goes something like this:

Metric outline

Metrically determined

Hypermetrically determined

Extra-metrically determined

1. Firstly, defining a meaningful metre, which I define by an internally differentiated structure that also exhibits some kind of global trajectory: gradual shortening, gradual expansion, cyclical, etc. In the example on the screen, the metre is alternating longer and shorter metres, with the shorter metres slowly contracting.
2. Secondly, defining relations or non-relations to the metre: in which there are a series of possible metric 'functions' that lines can take up:
  - a. As we can see here, the first way is to simply outline the basic beat pattern of the metre. Here, it is an alternation of groups of 2 and groups of 3.
  - b. The next way is to have, à la Ferneyhough, rhythmic sequences that are mediated by the expanding and contracting metre: for instance the second line of the 'metrically determined' which slowly accelerates 6,7,8,7,8,9 against the changing metre.
  - c. Then the same principle, more or less, is applied to what I'm calling 'hypermeasures': groups of 2 or 3 measures that the particular line takes as *one* measure and divides accordingly: producing a non-synchronisation with many barlines. For instance, the second line of the 'hypermetrically determined' here takes three bars as a 'hypermeasure' and divides this into two equal parts. This then has a simple ascending sequence in the numerator: 8, 9, 10, 11.

- d. The final relation, 'extra-metrically determined', verges on non-relation. The line takes a subdivision of the basic pulse, and builds additive or subtractive structures in relation only to itself.
  - e. Of course all of these could be varied to create a greater degree of nuance, both within and between lines.
3. Then thirdly, there is the compositional process itself: in which these possible relations are deployed over time, and different musicians (represented by 'lines') unite and diverge with each other, as well as uniting or diverging with the common metre. So, in addition to this metric construction, lines within the texture are constituted according to their own longer-range, often contradictory, parametric processes: be they durational, intervallic, timbral or other processes. These may or may not be related to equivalent global processes. So, what takes place on the metric level gets repeated on a number of other levels of the work.

I'm sorry I can't give you an example of this being put into practice – this is my job over the next few months – but what I hope to have conveyed in this paper is the kind of ideological stakes involved in the composition of polyphonic music from the standpoint of metric construction. Of course ideology, like polyphony, is complex, and when metric issues are combined with other parameters and then with questions of context, and so on, things become considerably less clear. But I nonetheless feel that aiming for the most utopian and most contradictory metric structures is a good starting point for exploring issues of ideology and polyphony in new music today.

## **Appendix 5: Conference Paper—‘We Only Want the Earth’**

*Presented (in French version) at the IRCAM seminar Journée Musique et Politique on 9 January, 2016 at IRCAM in Paris.*

### **1.5 to stay alive**

We are meeting today just a month after the climate summit in this city. Where world leaders agreed to keep Earth’s warming to 1.5 degrees, but without any binding mechanism for that actually happening, without *any* confrontation of the powerful corporate interests that are profiting from the destruction of biosphere. Where the Hollande-Valls government cynically used the November 13 attacks to suppress the voice of the people demanding the necessary action to ensure the stability of our biosphere.

If the science is correct, the Earth can no longer handle any more capitalist development. As John Bellamy Foster says:

With the present rate of carbon emission, the world will break the global carbon budget—reaching the trillionth metric ton of combusted carbon and generating a 2°C increase in global average temperature—within a generation or so. Once we reach a 2°C increase, it is feared, we will be entering a world of climate feedbacks and irreversibility where humanity may no longer be able to return to the conditions that defined the Holocene epoch in which civilization developed. (2015)

As we all know, the effects of such runaway climate change will be catastrophic. Yet, for us to limit the increase in global temperature to less than 2 degrees would, according to Kevin Anderson of the Tyndall Centre for Climate Change require “revolutionary change to the political economic hegemony” (*ibid.*), including cuts in greenhouse gas emissions by Western nations of 70 percent by 2020 and 90 percent by 2030.

Do our governments know what keeping warming underneath their stipulated 1.5 degrees would entail? Yes. But they don't plan to do any of it.

What this means is not just that there will be mass devastation, disruption, and death. It also means, for music, that the horizon of musical development – a future for humanity in which advanced art is both possible and meaningful – is itself threatened, since it could trigger a chaotic collapse of the capitalist system a result of which being that “civilization is faced by a threat of self-extinction that over the long run is as great as that posed by a full nuclear exchange—and in a process that is more inexorable.” (Bellamy Foster, 2015)

### **Mondialisation sans monde**

As Zizek has pointed out, our time inhabits a specific contradiction. On the one hand, everything seems possible: any kind of pornography you like, consumer space travel, genetic engineering, 3D printed bionics are increasingly within reach, quantum computing might be functional within a decade.

On the other hand, we are told that any collective endeavour, even the old welfare state, even a slightly more democratic European superstate, is an absolute impossibility. The idea that the people might own and control the world's wealth in common – the idea of communism – this has become impossible even to *think*.

Similarly, we could say that today while a fully integrated global capitalist system is being realised – capital moves across national borders in the blink of an eye – the world as such seems ever less accessible to common humanity, and in danger of annihilation.

In this sense we could say that today there is a *mondialisation sans monde*.

The political response to this can obviously not be to simply to buy eco-friendly products, and turn off our lightbulbs more often. Market-based solutions will not be the solution, since it is the market itself that is causing the problem. Ecological primitivism, a ‘return to nature’, is also neither possible nor desirable.

The political solution will come in the form of a new political subject that links the immediate needs of the people to the long-term needs of what Marx called our ‘species-being’, uniting different sectors of the world’s population (“drawing connections among these seemingly disparate struggles” - Klein), and breaks with

the individualist logic of the capitalist system, eventually imposing a new form of collective social organisation not based on profit and accumulation. Only through this do we have a chance to build a society that can rationally regulate itself in such a way as to enact a “metabolic restoration” between labour and nature, in the words of Del Weston. (Foster)

But this is not a forum about politics as such, but about politics and music. So the question I seek to address here, is ‘how can such a politics – a politics which has the environment at its basis, but is materialist in its critique of capitalism and its emphasis on the self-organisation of people – come to condition musical (more specifically compositional) practice?’ This is not a minor issue. As I have already said, climate change threatens the very horizon of meaning of the production of art music. In this sense, I believe art music *must* respond.

### **Responses and non-responses**

But what should this response look like? In times like this it is natural to ask whether making complex art music should be undertaken at all, considering the threat is so imminent and the necessity of action so urgent.

One logical response in this direction to make didactic music: music that, through sung text or programmatic association, is supposed to teach its audience of the horrors of climate change, and (in the better pieces) who is to blame and how we can fix the situation. The movement has need of this music, but such a music would largely remain internal to the *political* process itself, and exit the domain of ‘music’ as an autonomous thinking, as François Nicolas outlines.

Another approach is an ‘ecological music’: art that, through its very form, teaches a new way of living, in harmony with the environment. According to this idea, the very idea of a work, separate from its economic and ecological context, is an affront to the ecological integration of all living things. While I see some potential in art that takes the place of its performance as a structural dimension, too often this art is an attempt to limit art’s materials as a vain substitution for a lack of movement on the political front.

Related to this in its rejection of the development of musical material is the 'new conceptualism' movement, which has become quite popular in Germany in recent years. While this movement does not respond directly to the climate crisis, il prétend - plus que la plupart de la musique contemporaine aujourd'hui - à répondre à la situation politique de nos jours.

Since this approach believes we have reached the end point of 'material progress' in music, it instead aims to find combinations of theatre, media technologies, and musical symbolism to critique aspects of Western culture: mediation and mediatisation in daily life, surveillance and self-surveillance, oppression, third-world exploitation and so on.

In my view this music fails on two fronts: When held up to the light of the urgency of the climate crisis, its politics appears weak and self-indulgent; when examined on the level of its formal thinking it comes across as vulgar and nihilistic, since it has given up trying to conceive of music as an autonomous domain of human thought.

Such an approach affirms neither the creative power of political movements, nor the creative power of music as such.

In its place, we should not fall back on dogma or surviving formulae of 'contemporary music' but begin from Badiou's proposal in his Affirmationist Manifesto:

Je propose de dire que notre force, de résistance et d'invention, exige que nous renoncions aux délices de la marge, de l'obliquité, de la déconstruction infinie, du fragment, de l'exposition tremblante à la mortalité, de la finitude et du corps. Nous devons, et donc nous pouvons, déclarer dans l'art l'existence de ce qui, pour le pauvre siècle qui s'ouvre, n'existe plus : la construction monumentale, le projet, la force créatrice des faibles, la mise à bas des Empires.

I believe that, since our epoch is one of a *mondialisation sans monde*, affirmation in music means affirming, through its very autonomous form, the possibility of a *world*.

We should affirm the words of Irish Socialist (killed 100 years ago this April): “For our demands most moderate are, we only want the Earth.”

We should affirm also Mahler’s famous statement: “A symphony must be like the world. It must contain everything.”

For the rest of this presentation I wish to test the hypothesis that by relating Badiou’s theory of worlds of appearing to serialism conceived broadly as ‘parametric composition’, we can begin to sketch a program and method for the construction of musical works as worlds.

### **Transcendental parameters**

According to Badiou’s theory, a world comprises the presentation of multiples according to relations of self-identity and identity-to-others. These relations are a matter of *degrees*. An element of a world is more-or-less self-identical when compared to an other element of this world; two elements of a world can be considered more-or-less identical to each other as compared to two other elements. The set of all of these degrees of self-identity and other-identity is called the ‘transcendental’.

These are the elementary principles of a world, and it is with these that I wish to test my hypothesis.

Badiou states the following:

Since a being, once worlded, is and is not what it is, and since it differs from those beings which, in an identical manner, are of its world, it follows that differences (and identities) in appearing are a matter of more or less. The logic of appearing necessarily regulates degrees of difference, of a being with respect to itself and of the same with respect to others. These degrees bear witness to the marking of a multiple-being by its coming-into- situation in a world. (LOW, pp. 117-118)

So first of all, self-identity. How would a musical piece, considered as a world, assign a degree of self-identity to a musical element? Stockhausen’s notion of ‘group’ composition – a precursor to his idea of ‘momentform’ – provides us with a clear answer to this question. Stockhausen defines group composition thus:

By group I mean the number of notes that can be separately distinguished at any one time, which is up to seven or eight. And they have to have at least one characteristic in common. A group with only one characteristic in common would have a fairly weak group character. It could be the timbre, it could be the dynamic: let's say for example you have a group of eight notes which are all different in duration, pitch and timbre, but they are all soft. That common characteristic makes them a group. Naturally, if all the characteristics are in common, if all of the notes are loud, high, played with trumpets, all periodic, all in the same tempo, and all accented, then the group is extremely strong, because the individual character of the eight elements is lost. (p. 40)

Initially this idea was limited to the simple building of small passages of music. Seven or eight notes, as Stockhausen says in the above quote. As Stockhausen's thought progressed, however, the idea expanded into the concept of 'Momentform', which allows a much broader handling of self-identity, across much longer periods of time:

When certain characteristics *remain constant for a while* – in musical terms, when sounds occupy a particular region, a certain register, or stay within a particular dynamic, or maintain a certain average speed – then a moment is going on: these constant characteristics determine the moment. It may be a limited number of chords in the harmonic field, of intervals between pitches in the melody domain, a limitation of durations in the rhythmic structure, or of timbres in the instrumental realisation. (p. 63; emphasis added)

From the above quotes we could then say that serialist thought assigns self-identity to a region of a musical work by way of the stability of parameters shared by the sub-elements of this region. The greater the number of stable parameters, the greater the self-identity. Conversely, the less stable parameters, the weaker the self-identity of the object in question. Self-identity could be said to then be a 'composite parameter' in the work, which can itself be structured by the composer throughout

the work, as I am currently doing in my latest chamber orchestra piece 'Kampflieder'.

Important to remember, though, is that only by *comparison* between degrees of self-identity of various elements of a piece, can a stable scale from minimum to maximum self-relation be determined. This is very important compositionally.

But what about identity to others? How is this done? I want to suggest that parameters, in serial music, are the musical thinking of the idea of the 'phenomenal component' in Badiou. This is how Badiou explains the idea of the 'phenomenal component':

*We will call 'phenomenal component' a function of a being-there-in-a-world on the transcendental of this world. If the function has degree p, as its value for an element of the being-there under consideration, this means that the element belongs 'to the p degree' to the component defined by the function. The elements that 'absolutely' compose the phenomenal component are those to which the function assigns the maximal transcendental degree. (p. 213)*

In serialist music therefore, a group will belong to the global 'component' to the extent that it exhibits that parameter to a certain degree. The higher the degree of the parameter, the greater its belonging to that component.

It is important here to note that a component is not a 'parameter' as such, but a maximal or minimal value of that parameter. We also need to recognise that maximal does not necessarily mean the most 'extreme'. Maximal means maximally identified – maximally close – to a given state, defined by the work. This means that, in the domain of pitch, 'middle C' is the maximal value in the parameter 'proximity to middle C', while the same 'middle C' only moderately belongs to the parameter 'highest pitch on the piano'.

While this broad definition means that literally anything can be a parameter, each serialist composition establishes the parameters that are central in the work, and those that are unimportant or practically not apparent. This is an important part of constructing the world.

What should be clear from all of this though is that serialist thought suggests that every perceptually demarcable region (we could call them 'groups' or

'moments') of appearing in the music belongs to multiple – in fact, potentially infinite – different 'components' of the world in question, but to varying values.

This means that the measure of identity between two 'groups' or 'moments' passes through the components to which they belong. The set of degrees of belonging to all components in the work of one group is compared to the set of degrees of belonging to all components in the work of the other group, and a synthetic determination of their relative identity is made. Although, as with self-identity, it requires that *two* such comparisons are made before a scale from 'maximally related' to 'minimally related' can be made.

### **Symmetry and non-temporality**

The next important fundamental aspect of a world in Badiou's system is its non-temporal nature. He states that an evaluation of identity between two multiples,

cannot retain any reference whatsoever to time or temporal order, for the chief reason that no time is implied in the transcendental indexing of being-there. (p. 202)

In other words, "the function of transcendental indexing is symmetrical, in that the value of identity of two beings-there is the same, whatever the order in which they are inscribed" (p. 202).

A critical question in this is whether the parametric and identity-based conception of serialism contains the quality of symmetry that Badiou ascribes to logics of worlds.

One of the more debated aspects of serialism is indeed its relationship to time. Adorno famously declared that the innovations of post-war serialism contradicted or ignored the essential aspect of music, that is, time.

Malgré de la pensée très raffinée sur la question de durée chez les sérialistes, serialism is often discussed in spatial terms, for instance, Richard Barrett summarises the essence of serialist thought in three basic principles, the second of which is: "assigning minimum and maximum values to [chosen] parameters and in doing so establishing a "space" with those dimensions" (Barrett, 2011).

Serialism's 'spatial' nature is closely linked to its rupture with the logic of thematism.

As François Nicolas has argued, the theme represented a "point d'identification pour l'auditeur" which creates a temporality by "sa puissance de devenir" which can "déformer les parcours structuraux." (*Traversée du serialisme*)

Accordingly, the logic of thematic music is the logic of linear development, which is essentially that of a particular subjective time – the time of the development of the subject as a theme that acts *through* and *against* any formal schema of the work (be it sonata form or rondo). This is, to be sure, the essence of the 'developing variation' in Brahms.

On the other hand, Grant has suggested that Serialism, "is not linear, that is, there is not a logical process of events, rather a field of relations. But neither is it an undifferentiated field – it is not white noise." (Grant, p. 158)

This non-linearity is because, according to Grant, serialism has a "tendency against the foreseeability of events" (Grant, p. 158). That is to say, this music breaks decisively with the implication-realisation model of Leonard Meyer and Eugene Namour. It disorganises those parameters (particularly pitch and rhythm) that provide maximum culturally sanctioned continuity so that perception cannot hold on to a single line of development of which a theme would be the essential bearer.

And it is due to this aesthetics of rupture with thematism, which is then replaced with the logic of identity formation through parametric construction, that the logic of serial music could be said to be 'symmetrical' in the Badiouian sense.

This is further demonstrated in the prevalence of 'open form' works in the late 50s and 60s. As Martin Iddon has argued, this movement towards open form was in no way a departure from 'strict' serial construction – often attributed to an encounter with John Cage – but instead was a logical continuation of post-war serialist thought. (Iddon 2012?)

When music permits an interchangeability of its formal components as in open form or Momentform works, its logic has become essentially spatial and symmetric in the Badiouian sense.

### **Form, determination, counterpoint**

And despite this, placement in time in the work has a profound effect on the *strength* for perception of the local identity determinations. It is not the *degree* of identity itself that is directly manipulated but the degree of *presence* to perception of this degree of identity. It is *this* that is the principle of form in a musical work considered as a world. It is a principle that I wish to call ‘counterpoint’ since it unifies vertical simultaneity and formal proximity.

By this I mean that the further apart two elements are in the global time of the work; the less strongly their mutual determination will be presented. Conversely, the closer these elements are, the more strongly is their mutual determination presented. The maximum value of this proximity would be simultaneity, where two elements are presented at the same time.

In this sense, the form of a work, its ‘counterpoint’, is based on how it demonstrates the ‘thinkability’ of the elements of the world that it is. To quote Badiou:

The thinkability of a being, if it is not the Void, follows from two things: (at least) one other being, whose being is guaranteed, and (at least) one operation which justifies thought in passing from this other being to the one whose identity needs to be established. But the operation presumes that the space in which it is exercised—the (implicit) multiple within which the operational passage takes place—is itself presentable. In other words, one can say that the identity of a being is guaranteed, always in a local sense, on the basis of that of another being. (p. 113)

The appearing of a being in a world is of course only ‘stabilised’ by the entire field of relations between objects of a given world (p. 113). So it requires the ‘closure’ of this world. This, however, doesn’t negate the essentially *local* nature of the operations. Identities are directly compared. This is the basic formal principle.

Does this mean that the principle of counterpoint – or *form* – is something ‘hors monde’? Is it something that comes ‘after’ the world and its identity structure is already constructed? Does time, after all, have the final say?

As Badiou declares, the logic of a world does not permit such a possibility as the hors-monde.

Ultimately, this ‘contrapuntal’ operation produces higher order groups, such as vertical textures or abrupt changes, which are then ‘parametrised’: density of texture (number of voices) is certainly a parameter that can order identities in a work, abruptness of change can certainly also be parametrised. These new multiples and their parametrisation can then be ‘counterpointed’ and so on, potentially to infinity.

Which is to say that symmetry is preserved not in disregarding global temporal form, but in seeing it as logically closed, even if infinite in its possibility of groupings or ‘parametrisations’. Badiou says:

the occurrences of becoming, or what Wittgenstein calls ‘the totality of facts’, constitute the identity of the world, and by no means its change. (p. 358)

Or:

In other words, the object absorbs, as elements of the multiplicity that it is, the modifications which include it within the time of the world. (p. 359)

This is so much the case that Badiou even equates modifications over time of an object with spatially differentiated *sub-multiples* of an object. And this is precisely the point: there is no compositional element coming to ‘subjectivise’ or ‘temporalise’ the form that doesn’t immediately fall back into the ‘spatial’ arrangement of identity and difference within a closed, but infinite, ‘mundane’ transcendental of the work.

This means two important things. Firstly, that serialism as a world-builder permits no essential distinction between content and form, ou le contrepoint et ce qui est contrepointé.

And secondly, as François Nicolas already indicated in 1988: serial music is essentially ‘a-subjective’ in its form. Its form is radically a-temporal, and non-

allegorical. It does not demonstrate the temporal manifestation of a struggle between subject and object.

### **Liberated worlds?**

To conclude I'd like to dwell a little on the possibility of liberation in this worldly conception of music.

If there is no subject in the work, is there any sense that we can speak of an emancipatory dimension to the 'work as world' within an augmented serialist perspective?

Are we not simply composing worlds that are re-compositions of everything available already in the overarching '*monde-Musique*'? Are we simply playing a glass bead game with what exists musically, recombining different elements, in post-modern fashion, presenting nothing more than a shallow *mondialisation* while our *monde* is annihilated?

Badiou tells us that the subject of art is not located in any single work but in the movement from one artwork to the next in a process of thinking through the consequences of an evental appearance in the world.

So the question is not whether or not a work exhibits a subject, but whether it participates in the truth of an emancipatory thought-process.

In other words, is there still some room for freedom in an extended serialist thinking?

There are three essential ways in which this worldly conception of a work is still pertinent for musical invention today:

1. It offers a way of thinking that could help find those regions of sound that are unexplored, or could be seen anew. In the words of Adam Harper, this approach helps us in *dequantising* and *requantising* certain parameters thereby finding new resources for musical invention.
2. It provides the possibility of exploring the *extremes* of these regions of sound, finding hitherto unknown space within them. When Mahler says a symphony "must contain everything", this is how we should interpret him: not that every work would try to contain every sound possible, but that within a set

of sonic identities, a work – if it is truly to make a world – should explore their absolute limits.

3. It demands the necessity of showing the relations between these extremes and between all musical objects in a work – most importantly through an expanded idea of counterpoint as local identity-determination. Everything is related, even the most extreme contrasts can co-exist and find mediation. This also implies that no type of material is *a priori* excluded, provided that it can bring forth perceptually meaningful relations to the rest of the material of a work. In this way, not only new materials, but profoundly new relations can be found.

These three dimensions repeat in some way those identified by Richard Barrett as the essence of serial thinking itself:

- (a) identifying the parameters which are to be the focus of a composition, the “dimensions” in which it will exist;
- (b) assigning minimum and maximum values to these parameters and in doing so establishing a “space” with those dimensions;
- (c) making musically-significant movements across those parametric dimensions, or to put it another way, making a journey of discovery through the space they create.

It's not a question of relating everything to a “series” but of relating everything to everything else. (n.p.)

Such a music will obviously not halt the rise of sea levels, the destructive impact of super-storms, the mass slaughter that will result from cruel droughts. What it may do, however, is show with high intensity not only that a world is possible, but also that we should aspire to think on a worldly level, and not content ourselves with the rapid finitude of our globalised individualities.