Follow the Dotted Line: Composition Portfolio with Commentary.

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FOLLOW THE DOTTED LINE: COMPOSITION PORTFOLIO
WITH COMMENTARY

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This thesis is submitted to the Dublin Institute of Technology, Conservatory of Music and
Drama in the College of Arts and Tourism for the degree of Doctor in Philosophy

November 2013

Head of Academic Studies: Dr. Kerry Houston

Research Supervisor: Dr. Gráinne Mulvey
Declaration

I certify that this thesis which I now submit for examination for the award of PhD in Composition, is entirely my own work and has not been taken from the work of others, save and to the extent that such work has been cited and acknowledged within the text of my work.

This thesis was prepared according to the regulations for postgraduate study by research of the Dublin Institute of Technology and has not been submitted in whole or in part for another award in any other third level institution.

The work reported on in this thesis conforms to the principles and requirements of the DIT's guidelines for ethics in research.

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Candidate

David Bremner
ABSTRACT

This research consists of a portfolio of original musical compositions, accompanied by a commentary which examines the aesthetic and technical aspects of each piece and of the body of work as a whole. It traces the development of a mature and original compositional style.

The works presented share a focus on the concept of line. This concept is explored in a range of diverse instrumentations (orchestra, choral, solo instrument/voice, chamber ensemble, electronics) and diverse compositional methods (fully-notated scores, graphic scores, devised improvised schemes). The emphasis is on lines that are constrained within a particular pitch register, while being explored fully with regard to other parameters such as rhythm, timbre, and harmony. Another constant is an interest in mathematical structures and how they can be used to create original musical structures. This draws particularly upon the work of Xenakis and Johnson.

The original impetus for my research was my analysis of selected works by Feldman and Birtwistle. I will show how these influences helped form my compositional style, and how the style builds upon and departs from these influences. At first, the response to these influences was to compose with an 'absurdist' aesthetic, in which independent logics are juxtaposed, each of which is internally consistent, but at odds with each other. Over the development of my work during the research process, the emphasis has moved away from a overt consciousness of the absurdist elements and towards a more integrated approach which features a multiplicity of means in which logical lines can be juxtaposed.

The discussion of each work begins with a description of the stylistic terrain/field of action
within which the work occurs, and an exploration of the musical ideas being explored, then moves on to show how these ideas interact over the course of the work.
ACKNOWLEDGEMENTS

There are a number of people without whom this thesis could not have been completed. First of all I am immensely grateful to my supervisor Dr. Gráinne Mulvey, whose unerringly acute advice provided an essential outside perspective on my compositional development.

I have received assistance with regard to content and formatting from many other individuals, including Dr. Kerry Houston, Dr. David Mooney, and Joe O’Farrell. The staff of the Contemporary Music Centre and the music library staff of the Conservatory of Music and Drama have also been of assistance.

I would like to acknowledge the support of the Arts Council and Dublin City Council, from whom I have received funding enabling the composition or performance of many of these works, as well as for professional development.

Lastly I am very grateful to my girlfriend (and musical collaborator) Elizabeth Hilliard for her unfailing support and encouragement during the time it took me to complete this thesis.
LIST OF WORKS

*Composure* (bcl, 7'). First performed at the University of Ulster, Derry, April 2010, by Paul Roe. Commissioned by Roe with funding from the Arts Council.

*Dreaming in Boxes* (pf, 7'30''). Completed version first performed at DIT Conservatory of Music and Drama, Dublin, 20 January 2012, by the composer.

*Driving through the waste territories: (Winter)* (2 tpt hn trb tba, 12'30''). First performed at the National Concert Hall, Dublin, May 2012, by Vox Merus

*Mixed Circuits* (2222 2 hn 2 tpt 2 perc hp pf str, 14'). First performed at St Paul's Church, Barrow-in-Furness, UK on 16 June 2007 by Furness Chamber Orchestra, conducted by Anthea Bremner.

*nighct* (electronics, 2'30''). First performed at the Contemporary Music Centre, Dublin on 14 December 2011

*Not objects* (pf, 14'). First performed at Rosehill Theatre, Whitehaven, UK on 11 June 2007 by the composer.

*Novelette (words of one syllable)* (SSSAAATTTBBB, 10'). First performed as part of Béal Festival, Trinity College Chapel, Dublin, November 2010, by Milltown Chamber Choir conducted by Orla Flanagan.

*Out here on Cottage Grove it matters.* (vla vc db perc, 10'). First performed at the National Concert Hall, Dublin, December 2008 by Ensemble ICC.

*Pool* (Irish lever harp, 1'20''). First performed at the National Concert Hall, Dublin, June 2010, by Anne-Marie O'Farrell.

*Stream Line* (3332 4221 timp 2 perc hang/kbd hp pf str, 21'). An excerpt performed at DIT Conservatory of Music and Drama, Dublin, February 2012, by DIT Symphony Orchestra conducted by David Brophy
The bright kids (sop, 14’). First performed at the National Concert Hall, Dublin, June 2011, by Elizabeth Hilliard

CD 1

1. Not objects (performed by David Bremner)
2. Mixed Circuits (performed by Furness Chamber Orchestra, conducted by Anthea Bremner)
3. Out here on Cottage Grove it matters. (performed by Quasars Ensemble at Ostrava New Music Days)
4. nighct
5. Pool (performed by Anne-Marie O'Farrell)
6. Novelette (words of one syllable) (performed by Milltown Chamber Choir, conducted by Orla Flanagan)
7. Dreaming in Boxes (performed by David Bremner)

CD 2

1. The bright kids (logic ballad) (performed by Elizabeth Hilliard)
2. Driving through the waste territories: (Winter) (performed by Vox Merus). This performance is a shorter version with the following cuts: bars 76-88, 147-186, 206-218, 245-252.
3. Stream Line (excerpt) (performed by DIT Symphony Orchestra, conducted by David Brophy). Bars 80-247 only.
4. Composure (performed by Paul Roe)
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter I: Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Chapter II: Background and Overview of Research</td>
<td>4</td>
</tr>
<tr>
<td>2.1 Introduction</td>
<td>4</td>
</tr>
<tr>
<td>2.2 Initial and later stages of research</td>
<td>4</td>
</tr>
<tr>
<td>2.2.1 Initial stage</td>
<td>4</td>
</tr>
<tr>
<td>2.2.2 Later stage</td>
<td>5</td>
</tr>
<tr>
<td>2.3 Prime influences</td>
<td>7</td>
</tr>
<tr>
<td>2.3.1 Melodic contour in Birtwistle's <em>Secret Theatre</em></td>
<td>7</td>
</tr>
<tr>
<td>2.3.2 'Absurdist' form in Feldman's <em>Neither</em></td>
<td>9</td>
</tr>
<tr>
<td>Chapter III: <em>Not objects</em></td>
<td>16</td>
</tr>
<tr>
<td>3.1 Introduction</td>
<td>16</td>
</tr>
<tr>
<td>3.2 The field of action</td>
<td>17</td>
</tr>
<tr>
<td>3.2.1 Melodic contour</td>
<td>17</td>
</tr>
<tr>
<td>Section</td>
<td>Title</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>3.2.2</td>
<td>'Absurdist' form</td>
</tr>
<tr>
<td>3.2.3</td>
<td>Mathematical techniques of layering</td>
</tr>
<tr>
<td>3.2.4</td>
<td>Cantabile</td>
</tr>
<tr>
<td>3.3</td>
<td>The course of the work</td>
</tr>
<tr>
<td>Chapter IV: Mixed Circuits</td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Introduction</td>
</tr>
<tr>
<td>4.2</td>
<td>The field of action</td>
</tr>
<tr>
<td>4.2.1</td>
<td>Mensuration canon</td>
</tr>
<tr>
<td>4.2.1.1</td>
<td>Reason for the choice of this technique</td>
</tr>
<tr>
<td>4.2.1.2</td>
<td>Historical background of technique</td>
</tr>
<tr>
<td>4.2.1.3</td>
<td>Usages of mensuration canon in Mixed Circuits</td>
</tr>
<tr>
<td>4.2.3.4</td>
<td>Harmonic aspects of mensuration canon</td>
</tr>
<tr>
<td>4.2.2</td>
<td>Cyclic form</td>
</tr>
<tr>
<td>4.3</td>
<td>The course of the work</td>
</tr>
<tr>
<td>Chapter V: Out here on Cottage Grove it matters.</td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Introduction</td>
</tr>
<tr>
<td>5.2</td>
<td>The field of action – Improvised process music</td>
</tr>
<tr>
<td>5.2.1</td>
<td>Introduction</td>
</tr>
<tr>
<td>5.2.2</td>
<td>Examples of processes used</td>
</tr>
<tr>
<td>5.2.3</td>
<td>Employment of processes during the work</td>
</tr>
<tr>
<td>5.3</td>
<td>Realisation of the work</td>
</tr>
<tr>
<td>5.4</td>
<td>The course of the work</td>
</tr>
<tr>
<td>Chapter VI: Composure</td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>Introduction</td>
</tr>
<tr>
<td>6.2</td>
<td>Influences</td>
</tr>
</tbody>
</table>
6.3 Collaborative process 78
6.4 Construction of score 78
6.5 The influence of Cardew's *Treatise* 78
   6.5.1 Discussion of Cardew's *Treatise* 78
   6.5.2 Response in *Composure* to the influence of *Treatise* 82
   6.5.3 Points of departure from the influence of *Treatise* 83
      6.5.3.1 Non-adherence to reading convention 84
      6.5.3.2 Look of the score 84
      6.5.3.3 Use of text 85
      6.5.3.4 Format of the score 86
6.6 Pitch material 89

Chapter VII: *Novelette (words of one syllable)* 91
  7.1 Introduction 91
  7.2 The field of action 91
     7.2.1 Harmonic language 101
     7.2.2 Treatment of text 96
        7.2.2.1 Reharmonisation 96
        7.2.2.2 Cyclic fragments of text 96
        7.2.2.3 Polyphony of meaning 96
     7.2.3 Rhythm and metre 99
     7.2.4 Employment of self-similarity 103
  7.3 The course of the work 104

Chapter VIII: *Dreaming in Boxes* 107
  8.1 Introduction 107
  8.2 The field of action 108
11.1.2 The influence of Grisey's *Partiels* 145

11.2 The field of action 148

11.2.1 Harmony/Timbre 148

11.2.1.1 Introduction 148

11.2.1.2 Inversion around a pitch 149

11.2.1.3 Harmonic areas 155

11.2.1.4 Sieves 156

11.2.2 Rhythm 161

11.2.3 Coordinated versus independent tempi 166

11.2.4 Interspersing of principal line with rests 166

11.2.5 Dynamics 168

11.3 The course of the work 168

Appendix I: *nightct* 171

Appendix II: *Pool* 173

1. Introduction 173

2. Pitch material 174

3. The use of rules 175

Bibliography 180
I: INTRODUCTION

The research consists of a portfolio of original musical compositions, accompanied by this commentary. The commentary examines the aesthetic and technical aspects of each piece and of the body of work as a whole. It traces the development of a mature and original compositional style.

The works presented share a focus on the concept of line. This concept is explored in a range of diverse instrumentations (orchestra, choral, solo instrument/voice, chamber ensemble, electronics) and diverse compositional methods (fully-notated scores, graphic scores, devised improvised schemes). The emphasis is on lines that are constrained within a particular pitch register, while being explored fully with regard to other parameters such as rhythm, timbre, and harmony. Another constant is an interest in mathematical structures and how they can be used to create original musical structures.

The original impetus for the research was the analysis of selected works by Morton Feldman\(^1\) and Harrison Birtwistle.\(^2\) It will be shown how these influences helped form the compositional style, and how the style builds upon and departs from these influences. At first, the response to these influences was to compose with an ‘absurdist’ aesthetic, in which independent logics are juxtaposed, each of which is internally consistent, but at odds with each other. Over the development of the work during the research process, the emphasis has moved away from a overt consciousness of the absurdist interpretation and towards a more integrated approach


which features a multiplicity of means in which logical lines can be juxtaposed.

The discussion of most of the works takes the following form: firstly a description of the stylistic terrain/field of action within which the work occurs, and an exploration of the musical ideas being explored (ie. what \textit{can} happen in the work); then secondly a section entitled ‘\textbf{The course of the work}’ showing in order how these ideas interact during the work (ie. what \textit{does} happen).

The works to be discussed are: \textit{Not objects}$^3$ for pianoforte, \textit{Mixed Circuits}$^4$ for orchestra, \textit{Out here on Cottage Grove it matters}$^5$ for viola, cello, double bass and percussion, \textit{nighct}$^6$ for electronics, \textit{Composure}$^7$ for bass clarinet, \textit{Pool}$^8$ for Irish lever harp, \textit{Novelette (words of one syllable)}$^9$ for unaccompanied choir, \textit{Dreaming in Boxes}$^{10}$ for pianoforte, \textit{The bright kids (logic ballad)}$^{11}$ for soprano, \textit{Driving through the waste territories: (Winter)}$^{12}$ for brass quintet, and \textit{Stream Line}$^{13}$ for orchestra.

\begin{itemize}
  \item \textit{Not objects}. First performed at Rosehill Theatre, Whitehaven, UK on 11 June 2007 by the composer.
  \item \textit{Mixed Circuits}. First performed at St Paul’s Church, Barrow-in-Furness, UK on 16 June 2007 by Furness Chamber Orchestra, conducted by Anthea Bremner.
  \item \textit{Out here on Cottage Grove it matters}. First performed at the National Concert Hall, Dublin, December 2008 by Ensemble ICC.
  \item \textit{nighct}. First performed at the Contemporary Music Centre, Dublin on 14 December 2011
  \item \textit{Composure}. First performed at the University of Ulster, Derry, April 2010, by Paul Roe. Commissioned by Roe with funding from the Arts Council.
  \item \textit{Pool}. First performed at the National Concert Hall, Dublin, June 2010, by Anne-Marie O’Farrell.
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  \item \textit{Driving through the waste territories: (Winter)}. First performed at the National Concert Hall, Dublin, May 2012, by Vox Merus
  \item \textit{Stream Line}. An excerpt performed at DIT Conservatory of Music and Drama, Dublin, February 2012, by DIT Symphony Orchestra conducted by David Brophy
\end{itemize}
Throughout this commentary, Scientific Pitch Notation is used to refer to pitches. For the notation of quarter-tones, the following signs are used:

.EndsWith() = ¼ tone flat

.EndsWith() = ¾ tone flat

.EndsWith() = ¼ tone sharp

.EndsWith() = ¾ tone sharp
II: BACKGROUND AND OVERVIEW OF RESEARCH

2.1 Introduction

The works included in the portfolio show the development of a distinctive compositional voice. The primary influences prompting this stylistic development were certain works by Morton Feldman and Harrison Birtwistle, in particular Neither¹ and Secret Theatre² respectively. An analysis of the pertinent elements of these works will conclude this chapter.

2.2 Initial and later stages of research

2.2.1 Initial stage

In its initial stage, the research focused on form and rhythmic technique. The works Not objects and Mixed Circuits are examples of this stage. With regard to rhythm, the emphasis was on the creation of distinct simultaneous rhythmic layers. A particular interest was the technique of mensuration canon, which is explored in the work Mixed Circuits. With regard to form, the approaches explored were cyclic form (drawing upon the work of Birtwistle), a radically 'absurdist' approach to form, (drawing upon Feldman's use of systematic frustration of the listener's expectation), and the application of rules governing melodic contour (drawing again upon Birtwistle's work).

These approaches were chosen in order to explore what could be called an 'absurdist' aesthetic. Feldman's works from the late 1970s onwards were exemplary in this regard. It is a

response to the inviability of dialectic argument in serious music by the use of self-contradictory musical logics, rather than an abolishment of logic. Independent logics are juxtaposed, each of which is plausible in its own right, but which are in conflict either with each other, or with the perceived overall logic of the passage concerned. This explains the importance of placing the music in distinct layers, as doing so ensures that these independent logics may be perceived. Given that the aim was to have as clear as possible a disparity between the logic of a single line/layer and the anti-dialectic nature of the entire passage, a number of systematic approaches were devised in order to preserve the logical nature of the line. In this respect the style being developed diverges from the examples of Feldman and Birtwistle, both of whom place importance on the spontaneity, rather than the overt logic, of a line; it has more in common in this regard with the work of Tom Johnson,\(^3\) whose works also influenced this portfolio.

In the earlier stages of research, much attention was focused on devising a reservoir of technical resources to suit the different compositional situations that these aesthetic principles generate. These are extrapolations of the techniques used in the works that influenced the portfolio. These techniques, and how they diverge from their influences, will be discussed. It should be noted that in the composition of the works in the portfolio, there were frequent departures from a strict application of the techniques involved. This was done in order to avoid monotony: musical/performance-related considerations outweighed the demands of the logical processes in the score.

\[2.2.2 \text{ Later stage}\]

In the later stages of research, there were certain changes of emphasis. Research into harmony

\(^3\) Tom Johnson (b. 1939). Works published by Editions 75, Paris and New York.
and timbre complemented the earlier emphasis on form and rhythm. Opportunities were sought to create correspondences between small- and large-scale form. There were explorations of systematic approaches to harmony, such as sieve theory (as described by Xenakis in *Formalized Music*).\(^4\) Extended instrumental techniques were further explored. The influence of composers of the spectral school, such as Grisey,\(^5\) prompted an attempt to create a unified approach to timbre and harmony, which is best seen in the work *Stream Line*. There was further investigation of extended instrumental techniques; in many situations when extended techniques are used, the element of chaos is so high that an identical action can produce differing sonic results each time it is performed. Hence, graphic scores were explored as a means of controlling certain parameters of such works without being over-specific. Cardew's work *Treatise*\(^6\) was a particular influence in this regard.

In general, over the course of the research, the mapping-out of an aesthetic territory superseded purely technical concerns. For instance, there is less use of strict mensuration canons, yet the principle of different lines at different speeds is still present. As a more mature style came to fruition, conceptualisation of works as being explorations of an 'absurdist' aesthetic became less important, being replaced by a less interpretative, more objective description of the aesthetic characteristics of each work and of the body of work as a whole. It became apparent that the unifying stylistic feature was the focus on a line that is registrally confined, yet explored in other parameters. These parameters are: speed, timbre, form (meaning that when a number of such lines are present, attention is paid to the timing of the points at which each begins and ends), diversity of the patterns within a line, continuity of the line versus discontinuity, and reharmonisation of the same pitches with changing pitches in

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\(^5\) Gerard Grisey (1946–98). Works published by Ricordi, Milan  
other parts. Such a line is frequently treated as a developing thought-process, and presented as such in a theatrical context; this led to an interest in what is here termed 'improvised process music', which is discussed in the chapter on the work *Out here on Cottage Grove it matters*. Control of melodic contour remained an important technique, as it ensured a consistency within the line. The above aesthetic may be understood as a further exploration of an existing aesthetic of understatement. Historically this idea reaches back to works by composers such as Schumann\(^7\) and Brahms;\(^8\) in the twentieth century, examples are found in the aesthetics of minimalism, and in the work of Feldman and Birtwistle. Complementing the use of registrally-confined lines is an interest in systematically-generated lines, as they produce an evenness of development that also conforms to the aesthetic of understatement. Tom Johnson remained a model in this regard. The works presented show differing approaches to the introduction of variety into works built on this concept.

2.3 Prime influences

2.3.1 Introduction

Here follow analyses of the relevant sections of *Secret Theatre* by Birtwistle and *Neither* by Feldman, and the elements therein which most influenced the aesthetic explored in the compositions presented here. These works provided the initial stimulus for the development of this aesthetic.

2.3.2 Melodic contour in Birtwistle's *Secret Theatre*

Melodic contour, without reference to the specific pitches involved, can be used to delineate form. Birtwistle employs this technique in *Secret Theatre* to mark the difference between

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7 Robert Schumann (1810–56).
8 Johannes Brahms (1833–97).
stable and unstable passages. Stable passages contain material in which the contour is limited to a certain number of successive moves in either direction, typically three, before a change of direction may occur. For instance, study of the flute solo from the beginning as far as rehearsal number 2 reveals that no more than three successive movements in one direction occur. The first five bars are shown in Fig. 2.1:

![Fig. 2.1](image1.png)

In contrast, for unstable passages, or passages where the stability is breaking down, the above rule is not adhered to, and lines occur that contain more than three successive movements in any one direction. An extended section of stability begins at rehearsal number 15; by rehearsal number 23 this has broken down. This breakdown is marked by descending scales, first in flute, oboe and clarinet:

![Fig. 2.2](image2.png)

then piano:
This application of a rule governing contour serves both to establish a consistent style for the work, and (on the occasions where it is not followed) to delineate important structural points in the work. Following Birtwistle's example, these functions of a contour-rule are found in most of the works presented here.

2.3.3 'Absurdist' form in Feldman's *Neither*

The aesthetic of absurdism mentioned above draws in particular upon Morton Feldman's radical approach to form. For Feldman, form was a technique for confusing the listener's memory, rather than reinforcing it. Discussing the piano work *Triadic Memories* he writes (in Fafchamps, 1990):

“What Western musical forms have become is a paraphrase of memory. But memory could operate otherwise as well. In *Triadic Memories*, [...], there is a section of different types of chords where each chord is slowly repeated. One chord might be repeated three times, another, seven or eight - depending on how long I felt it should go on. Quite soon into a new chord I would forget the reiterated chord before it. I then reconstructed the entire section: rearranging its earlier progression and changing the number of times a particular chord was repeated. This way of working was a conscious attempt at "formalizing" a disorientation of memory. Chords are heard repeated without any discernible pattern. In this regularity (though there are slight gradations of tempo) there is a suggestion that what we hear is functional and directional, but we soon realize that this is an illusion...”

Feldman formalises this disorientation of memory primarily by successive reorderings of the sequence of a limited number of distinct materials. In this way, to the extent that the first time a sequence of events is heard as being in a cause-and-effect relationship, the subsequent, reordered, occurrences will create increasing doubt in the listener's mind as to the existence of this relationship; ideas that are originally heard as having an initiating or closing function will have this function brought into question. His music thus depends upon the listener's tendency to analyse what is heard in terms of cause-and-effect. Brian Kane, in his analysis of Feldman's *Piano, Violin, Viola, Cello*, focuses on several occasions during the piece when the reordering of materials creates ambiguity (Kane, pp.5–7). In one such example, a sequence of three materials, ABC, subsequently occurs in the order BAA, and the next time in the order CABAC. Both occurrences bring into question the categorisation of A as having an initiating function, and the cause-and-effect nature of the transitions A→B and B→C. He also discusses Feldman's use of different vertical juxtapositions of his materials, which brings into question cause-and-effect relationships previously assumed by the listener.

What follows is an analysis of the form of the first ten minutes of Feldman's opera *Neither*. Feldman's formal technique is largely concerned with the thwarting of expectation, and objective statements regarding listeners' expectations are problematic. Hence for this analysis the following assumptions regarding the perception of formal elements will be employed; the word 'material' is taken to mean a distinct motif, combination of motifs, or texture:

1) Listeners organise perceived structural divisions using a tree-structured hierarchy of different levels of importance.

2) The longer a type of material persists, the more significant the structural division will be at the point when it ends.

3) Listeners organise materials hierarchically, with different materials assigned primary status, secondary status and so on.

4) Within a section containing more than one material, the material that occurs first is understood to be the primary material.

5) The primary material is expected to be developed for a longer time than each of the other materials.

6) Some materials are perceived as having an initiating, or a closing, function with regard to a section; if such a function is perceived, the material is expected to retain that function.

7) The first version of a musical idea to occur is understood to be the definitive version.

8) Material which is unfamiliar will be listened to more attentively than material which is familiar.

9) A sequence of one type of material immediately following another is heard as having a cause-and-effect relationship.

Regardless of whether these assumed expectations are true, and if so whether they are biologically or culturally determined, the following analysis aims to demonstrate that Feldman composes with the aim of systematically frustrating them.

*Neither* is constructed from building-blocks each of which corresponds to a single system in
the score. The portion of the work to be analysed consists of the first 24 systems; each system is 12 bars long. The most significant material to occur has been categorised into seven distinct types of material corresponding to the letters A to G, with subcategories indicated B’, B” etc. The categories of material are as follows:

A: low, repeated-note continuum in irregular rhythms, as in Fig. 2.4 (bars 1–12)

A’: as above, with addition of marimba clusters, then tremolandi, and woodwind and piano chords

B: wind chords, consisting of clusters and expanded clusters (e.g. A₃, A₄, G₆); fluctuating dynamics

B’: as above, except in a lower register (below F₅)

B”: sustained chord consisting of semitones and minor 3rds

C: sustained timpani roll

D: cycle of three chords, consisting of expanded clusters, in divisi violins and violas, later also with woodwind.

D’ and D”: as above with pitch modifications

E: single percussion hits (on average 1 hit per bar in each instrument)

F: soprano, intoning on G₅
F: soprano, ascending phrases on F₅, G₅, A₅

G: cello harmonics, lasting 4–6 bars, with a *diminuendo*

The presence or absence of these in each system is indicated in the following table; the top row gives the system number. '0' indicates rests of an unspecified length; hence 0D means that D enters part of the way through the relevant system (rather than at the beginning) and continues to the end of it, and 0B"0 means that B" enters part of the way through the system and drops out before the end of it.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
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<td>F</td>
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In order to achieve a 'formalized disorientation of memory', Feldman plays off one of the above expectations against another, or otherwise exploits contradictions, creating a heterarchy of elided or overlapping categories in place of a hierarchy. For example, material A continues from system 1 to system 16 without break, and stops at system 17. According to assumption
2), this should indicate a very significant structural division. However the soprano (F) enters in system 13 after being silent up till then, and continues singing for most of the remainder of the 24 systems. This indicates a similarly significant structural division. In a hierarchical form, these points would coincide; the fact that they do not, undercuts the formal rhetoric of these events. Feldman is careful to keep the soprano part in system 17 similar to that in system 16 (in both, she is intoning on G₃) in order that there is no sense of a structural break after system 16.

Another technique Feldman uses frequently is to play off expectations 4) and 5) against each other. Typically he will do this by having the second material of a section last for a longer period of time than the first material. Expectation 4) defines the first material to occur as the primary material; when the second material lasts for a longer time than the first, this frustrates expectation 5). An example here would be the first three systems, in which material B lasts for one system, being then followed by two systems of material C.

An example of Feldman's frustration of expectation 6) can be seen in his treatment of material C, a sustained timpani roll. This material occurs twice in the role of closing a section, at the end of systems 8 and 12, when the timpani roll stops. Because both times the next system contains very unfamiliar material (in system 9, E [single percussion hits] and A' [addition of marimba]; in system 13, F [soprano]), C is perceived as closing the preceding sections. We expect it to continue in its function of closing sections, but in system 14 it returns after being absent for only one system. As the sections that C has been responsible for closing have previously been at least four systems long, this is too early for it to be interpreted as closing the present section. After C stops on this occasion there is no unfamiliar material.
Expectation 9) (when one material immediately follows another a cause-and-effect relationship is implied) is thwarted by either reordering or superimposing the materials. For instance in systems 12–13, when F (soprano) follows D' (strings), a causal relationship is heard between the two. Yet in the next occurrence of material of category D in system 16, F occurs at the same time, negating this causal relationship.
III: Not objects for piano

3.1 Introduction

This work was the first of the works submitted to be composed and shows the ideas being explored at an early stage of development. It is an exploration of the technique of cantabile idiomatic to the piano, where a succession of discrete notes can become perceived as a singing line. This paradox is pointed up by focusing on ways of writing and playing that highlight the sound of the piano mechanism itself. This idea is expanded to encompass the form of the piece, which is a series of panels in different registers and with different textures, so that even though the action within each panel often seems frozen, a sense of development connects them. The concern for lines that are constrained registrally, yet explored in other parameters and by combination with each other, is evident here; the solution in this work was to employ rules governing melodic contour (as mentioned in Chapter II) whereby the number of successive movements in any one direction is limited. This acts as a way of keeping each melodic line confined to a single register. Also, because such rules limit the number of contour-patterns that may occur, there are frequent repetitions of contour-patterns, which act to unify the work, both at a short-term and a long-term timeframe. Repetition of contour-pattern is favoured over repetition of pitch material, apart from on a small number of occasions (which are mentioned later). This technique, combined with changes of register, dynamics, and pitch material, is what generates the sense of development mentioned above.

The work shows the application of a technique derived from mathematics, used to create a layered structure in which the extent of rhythmic coincidence can be controlled. It also demonstrates the influence of Feldman in that the concept of 'absurdist form' is used to
determine the length of its sections.

3.2 The field of action

3.2.1 Melodic contour

The applications of the rule governing contour will now be discussed. Fig. 3.1 shows bars 13–18, a monophonic passage in which a rule governing contour is applied limiting movement to two successive movements in any one direction. This contour-limitation, and the repetition of contour-patterns (which is bound to happen when the limitation is maintained for this long a period), are what unifies the passage; pitch-based unification is mainly avoided. It can be seen that the contour-pattern of two successive upwards movements punctuates the material at irregularly-spaced time-intervals; each such occurrence of this contour-pattern is shown below by a bracket. This is a feature throughout the work.

The contour-rule is also used to relate registrally and dynamically disparate material. Bars 95–115 of Not objects illustrate this. Fig. 3.2 shows bars 94–95; the contour-limitation of two successive movements in one direction applies here to the top line of each hand. The right-
hand material breaks into *fortissimo* three-note figures of wider intervals in bar 99 (Fig. 3.3); the intervals are further expanded in the *pianissimo* slower lines that emerge after bar 105 (Fig. 3.4 shows bars 107–108). Both of these follow the same contour-limitation, which draws together these registrally and dynamically contrasted ideas.

Fig. 3.2

Fig. 3.3

Fig. 3.4
The use of the contour-rule can be combined with repetition of pitch/interval material. It can be seen that in Fig. 3.1, the first interval of the ascending three-note contour-motif is frequently a semitone. This is an instance of repetition of interval material being used to partially define a motif. In bars 32–40, each of the four lines in the polyphonic texture is limited to three pitches. Fig. 3.5 shows bars 35–36.

![Fig. 3.5](image)

The treatment of harmony here is typical of the treatment in such pitch-limited sections: there is a balance between an exploration of the different combinations possible between the four groups of three pitches, and the repetition of certain chords. The presence or absence of pitch-repetition is one of the factors used to delineate the medium-term form of the work, as will be discussed in the 'The Course of the Work' section.

The control of melodic contour can also be used to delineate long-term contrasts. For instance, bars 230–248 begin with a contour-limited section featuring the three-note ascending motif of which the first interval is a semitone:
However, in contrast to the occasions upon which this motif has been used previously, the section ends with a figure with five successive upwards intervals (shown in Fig. 3.7), breaking the contour-rule. This signals a major structural point in the work, and heralds the beginning of a new section with contrasting material. This use of the breaking of a contour-rule to punctuate the structure of the work is derived from Birtwistle's use of the same technique in *Secret Theatre*, as shown in Chapter II.

3.2.2 'Absurdist' form

Drawing on Feldman's work, the concept of 'absurdist form' was used to determine the relative length of sections. There is a mismatch between the implied significance of a particular type of musical material, and the relative length of the section it is placed in. For instance, the first 10 bars consist of two statements of a cycle on the pitches $A^#_4/B^b_4$ and
B_{4/C_{5}}, accompanied in bars 7–10 by two faster parts, one higher, one lower. The central part then continues alone for 21 bars, twice the length of the first section, using all the pitches in the range C_{#4}–D_{5}. As the material introduced in bar 7 is the newer material, it would traditionally be expected for this material to be what is developed from bar 11. As the material in bars 11–31 is seemingly less essential, and more discursive, it would be expected that the section that contains such material would be of a relatively shorter length than the first section. Repetition of musical motifs in the traditional sense is also used to articulate the form of the work, as will be shown in the 'The Course of the Work' section.

3.2.3 Mathematical techniques of layering

Part of the research process prior to composition was an investigation of how mathematical techniques could be used to differentiate musical layers. Bars 78–85 display two layers (corresponding to the two hands of the player) which are differentiated by the existence of an independent logic in each part, yet with an overall structure that avoids rhythmic coincidences between the parts, and by a clear registral separation. The aim was to find a method of guaranteeing rhythmic consistency and logic without recourse to traditional metric pulsation. The method used to achieve this will now be discussed; it resulted from an investigation into the employment of the Fibonacci and Lucas numerical sequences. (These will be described later in this chapter.)

Bars 77–98, which form the context of this passage, required a steady build-up of tension, and thus a degree of consistency in the rhythm. This requirement, as well as the fact that the entire piece was intended to focus on responding to the nature of the piano sound's quick decay with non-coinciding rhythmic lines, led to a decision to create a texture in two rhythmic parts each
of which have their own independent logic, yet never coincide rhythmically. An attempt was made to use the self-similar properties of the Fibonacci numerical series (1,1,2,3,5,8,13...) to achieve this, drawing on the work of the composer Tom Johnson. In the following equations, the subscript notation indicates the place that a number occupies in a series (for example, $F_n$ is the nth number in the Fibonacci series.)

Much of Johnson's recent work deals with what he terms self-similar melodies. He defines (1996, p. 7)\textsuperscript{1} these melodies as 'melodies constructed entirely by repeated applications of a single procedure.' He notes that 'the detailed movement from note to note is reflected in the way the melody as a whole is structured, and the larger organization reflects the details.'\textsuperscript{2} A chapter of this book deals with the use of rhythmic values governed by the Fibonacci series to create self-similar structures. One observation he makes is that:\textsuperscript{3}

\begin{equation*}
F_1 + F_2 + F_3 \ldots F_n = F_{n+2} - 1
\end{equation*}

Thus 'any sequence of Fibonacci numbers from $F_1$ to $F_n$ will just fit in under a larger Fibonacci number, $F_{n+2}.$' He gives the following musical example:

![Musical Example](image)

\textit{Fig. 3.8}

\textsuperscript{2} \textit{Ibid}, p. 7
\textsuperscript{3} \textit{Ibid}, p. 192
This led me to explore superimpositions of two Fibonacci series in such a way that there are no rhythmic coincidences. Figs. 3.9, 3.10 and 3.11 show some of these explorations:

![Fig. 3.9](image)

Fig. 3.9 is similar to the Johnson example shown above except that the lower part enumerates the same rhythmic sequence as the top part, a Fibonacci series with no subdivisions. Here a semiquaver is equivalent to a crotchet in Fig. 3.8. It can be seen that the lower part begins on F\textsubscript{6} of the upper one, that is on the note lasting eight crotchets, and that there are no rhythmic coincidences other than where the lower part begins.

As the section of Not objects concerned required a succession of similar note-lengths rather than a series of ever-increasing rhythmic values, it was decided to attempt the same thing with a series that is broken down into smaller note-values according to a generative rule. An examination of the upper part of Fig. 3.10 will show how this rule was applied. (Fig. 3.10 uses not the Fibonacci series but the Lucas series (2,1,3,4,7,11,...) in which the method for generating the next number in the series is the same (L\textsubscript{n} = L\textsubscript{n-2} + L\textsubscript{n-1}) but the numbers used to begin the sequence are 2,1 rather than 1,1).
The generative principle applied is that $L_n$, when $L_n > 4$, is changed to $(L_{n-1}, L_{n-2}, L_{n-1})$. For example the segment under the bracket consists of a length of 18 ($L_7$ in the Lucas series) which is then broken up into lengths of 7, 4, and 7, of which the 7s are then broken up into lengths of 3, 1, and 3. The progressive levels, or generations, of this process are shown by ascending height with the lowest line of the stave corresponding to the first generation. As the diagram shows, when a second sequence, identical to the first, is placed at a distance of two semiquavers, there are no rhythmic coincidences other than at the beginning (and, although this is not demonstrated on the diagram, when the sequences are separated by 5, 6, 9, 13 and certain other numbers of semiquavers). This is a consequence of there being no two lines in the original series that are separated by any of these distances.

Fig. 3.11 reflects an attempt to use a different subdivision of the basic unit, one which is related to the rhythmic motif that frequently occurs in the work, $\frac{5}{8}$.
Here, due to musical considerations, the generative rules used are more complex. This example uses the Fibonacci series, with the first subdivision using the rule \( \{ F_n \text{ changes to } F_{n-4}, F_{n-3}, F_{n-1} \} \) and all subsequent generations going through a cycle of three different rules: \( \{ F_n \text{ changes to } F_{n-2}, F_{n-1} \} \), \( \{ F_n \text{ kept} \} \) and \( \{ F_n \text{ changes to } F_{n-4}, F_{n-3}, F_{n-1} \} \). When a second identical series is placed at a distance of four semiquavers, there are no rhythmic coincidences, as there are no two lines in the original series separated by four.

A part of the eventual rhythmic sequence that was used for this section of *Not objects* is shown below:
This is the rhythm of bars 78–85; the bottom stave is that of the left hand, the top stave the right. A difference from the above examples is that the two parts are different; this was done in order to emphasise the independent logic of the two parts. The left hand uses the Lucas series with generative rules similar to those of Fig. 3.10, while the right hand follows the Fibonacci series with rules similar to, but more complex than, Fig. 3.11. It can be seen that each hand follows its own logic, yet the plan of avoiding rhythmic coincidence is in general adhered to. Exceptions were made for reasons of small-scale rhythmic flow: two notes were added in bar 78, and the first note of each Lucas number length omitted; these are marked with an x in the diagram. The resulting passage in Not objects is shown in Fig. 3.13.
This particular juxtaposition displays an additional property: that of self-similarity in the relationship between the two parts. All the articulations of the Lucas series occur at the same fraction (the golden section) of the articulations of the Fibonacci series; this means that if an early occurrence of the two series is subdivided in such a way that there are no rhythmic coincidences, so will all later occurrences. Comparison of the two boxes in Fig. 3.12 will show this.
3.2.4 Cantabile

As mentioned earlier, the prime aesthetic aim of the work was to explore the paradox of the cantabile effect, in which a succession of discrete notes becomes perceived as a singing line. Bars 33–36 show an example of this. Here the contrast between the line and the percussive nature of the piano mechanism is pointed up. The sound of the piano mechanism is highlighted by dividing the beginnings of the notes of the four voices so that no two notes begin at once, and 46 out of the 64 semiquaver durations within the four bars have a note beginning on them. The repetitiveness of the piano mechanism sound will bring it more to the foreground. This is in stark contrast to the lines themselves, in which the linearity is emphasised by the use of conjunctness and by limiting the number of pitches used. Fig. 3.14 shows the excerpt.

Fig. 3.14
### 3.3 The course of the work

<table>
<thead>
<tr>
<th>Bar number</th>
<th>Event</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Introduction of semitone motif, at first alone, then with two motoric parts. Contour-rule in use throughout work unless stated otherwise</td>
</tr>
<tr>
<td>11</td>
<td>Monodic line. The existence of the contour-rule is emphasised by the changing pitch material. Semitone motif features</td>
</tr>
<tr>
<td>32</td>
<td>Four lines, each of which limited to three pitches. Each of the four lines explores the contour-patterns introduced in the previous section</td>
</tr>
<tr>
<td>41</td>
<td>Four lines, limited to 4, 5, 7, 8 pitches respectively (top to bottom)</td>
</tr>
<tr>
<td>52</td>
<td>Return of idea from bar 1, this time in two parts</td>
</tr>
<tr>
<td>58</td>
<td>Emphasis of the sound of the piano mechanism, by the use of high register at <em>forte</em> dynamic</td>
</tr>
<tr>
<td>70</td>
<td>Contour-rule used in a different context to previously: the same chord in three octave placements. Hints at pitch material used in bar 105 (left hand)</td>
</tr>
<tr>
<td>77</td>
<td>Energetic section, which uses a mathematical technique (described above) to avoid coincidences between layers. No changes of register throughout the section, resulting in repetition of pitches. However there is no predictable pattern to the pitch repetition, meaning that the contour-pattern is the primary organisational feature</td>
</tr>
<tr>
<td>107</td>
<td>Slower section featuring three-note phrases</td>
</tr>
<tr>
<td>172</td>
<td>Rhythmic material from bars 1–7 used</td>
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<tr>
<td>176</td>
<td>Repetition of material from bar 3, except that pitches are F♯ and G rather than B♭ and C♭, and the interval is a minor ninth rather than a minor second</td>
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<tr>
<td>181</td>
<td>Passage echoing section beginning bar 32</td>
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<td>Bar</td>
<td>Description</td>
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<tr>
<td>189</td>
<td>More free section; contour-rule not applied</td>
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<tr>
<td>210</td>
<td>Section echoing contour-patterns from earlier, obscured by grace-notes and a cluster around the pitches forming the patterns</td>
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<tr>
<td>230</td>
<td>Loud section using the semitone motif at the beginning of many of its phrases. Contour rule frequently broken</td>
</tr>
<tr>
<td>257</td>
<td>Coda-like section. Long notes juxtaposed with fast rhythms, which during each of the long notes, consist of irregularly repeating patterns of unchanging pitch material</td>
</tr>
<tr>
<td>285</td>
<td>Harmonically more varied section, with pedal. The contour-rule is no longer applicable, as the music is no longer divided into separate polyphonic layers</td>
</tr>
<tr>
<td>324</td>
<td>Left hand has material similar to bar 32, while right hand plays <em>poco stacc.</em> Phrases beginning on F♯ and ending on B♭</td>
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</tbody>
</table>
IV: *Mixed Circuits*

for orchestra

4.1 Introduction

This work explores the technique of mensuration canon, which is employed in a number of contexts through the work. Its composition was preceded by a period of research into the harmonic aspects of these canons. A brief history of the technique of mensuration canon will be given, followed by the discussion of how they are employed in this composition. As will be discussed below, there are occasions upon which the use of these canons connect with the concept of 'absurdist' form (derived from the study of Feldman's work *Neither*), as described in Chapter II. The form of the work also displays the influence of Birtwistle in its employment of cyclic form. The extrapolation of this influence will be discussed.

4.2 The field of action

4.2.1 Mensuration canon

4.2.1.1 Reason for the choice of this technique

The choice of the technique of mensuration canon was driven at first by a desire to separate the music into clearly distinct rhythmic layers. This was prompted by the study of the work of Birtwistle, for whom the distribution of material between clearly separate layers has been a priority. *Secret Theatre* for 14 instruments provides a good example of Birtwistle's practice in this regard. Layering is an integral part of the dramatic unfolding of this piece, which plays off two groups of instruments, the *cantus* (linear, melodic material, played standing up) and the *continuum* (chordal, accompanimental material, played sitting down). The unfolding of the drama results from the fact that these groupings change, allowing for occurrences of role-
reversal; as Hall notes (1998, p. 30),¹ this is Birtwistle's favourite dramatic procedure.

### 4.2.1.2 Historical background of technique

Mensuration canons can be described as the simultaneous statement of the same line at different speeds in two or more voices; the relationship between the speeds can be expressed as a ratio, of which the simplest is 3:2 (2:1, which corresponds to standard augmentation as practised for example in fugue, is generally not included in this definition). It can be regarded as a structuralised approach to creating distinct rhythmic layers. The technique has been employed by composers at various stages in the history of Western art music; what follows is an outline of some of these usages.

The technique first became common in Medieval music, and was used by, amongst others, Josquin,² Ciconia³ and Ockeghem.⁴ The following example shows the Superius and Tenor parts from an excerpt of the Sanctus from Ockeghem's *Missa Prolationum* (Plamenac, 1966).⁵ It can be seen that the speeds of the two parts are at a ratio of 3:2.

![Fig. 4.1](image)

During the sixteenth century composers became gradually more influenced by Renaissance

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² Josquin des Prez (c. 1450 to 1455–1521).
³ Johannes Ciconia (c. 1335 or c. 1370–1412).
⁴ Johannes Ockeghem (c. 1410–1497).
ideals. These included a preference for formal clarity, which caused a decline in the use of mensuration canons due to their supposed obscurantism. This lasted until the twentieth century, in which composers such as Dallapiccola⁶ and Nono⁷ began again to explore the technique. The one composer to have concentrated primarily on mensuration canons, along with other innovations in polyphonic texture, is Nancarrow⁸. Out of his 51 Studies for Player Piano, most have layers in different tempi and are often strict mensuration canons, sometimes with very complex ratios. For instance, Tenney (1990, p. 27)⁹ notes that Study no. 36 consists of four canonic voices at the tempo-ratios of 17/18/19/20; the voices enter in order of their tempo (with the slowest entering first), become synchronised at the exact centre of the piece, and stop in the opposite order to which they started.

Perhaps due to Nancarrow's influence, there has been a great deal of interest in mensuration canons in recent American music, as evidenced by the work of such composers as Kyle Gann¹⁰ and Larry Polansky¹¹. Polansky's *Four Voice Canons* consist of four simultaneous statements of a line at four different speeds; the line itself is typically based on a limited number of elements, which are subjected to simple processes of permutation. In many of the canons, the identity of the elements can be varied with each performance. Polansky (2008)¹² gives the following as typical of the time structure of the canons:

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¹⁰ Kyle Gann (b. 1955). Works self-published or published by Frog Peak Music, Lebanon, NH, USA.
¹¹ Larry Polansky (b. 1954). Works published by Frog Peak Music, Lebanon, NH, USA.
A Typical Mensuration Canon (time structure) (Four Voice Canons)

<table>
<thead>
<tr>
<th>Voice 1 (1:1)</th>
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<tbody>
<tr>
<td>Voice 2 (3:2)</td>
</tr>
<tr>
<td>Voice 3 (5:3:2)</td>
</tr>
<tr>
<td>Voice 4 (8:5:3:2)</td>
</tr>
</tbody>
</table>

(duration of voice 2 = 2/3 * duration of voice 1, etc.)

Fig. 4.2

It can be seen that the ratio between the durations of each statement of the line is in inverse proportion to the ratio between their speeds.

A contrasting use of the technique is seen in the work of Aldo Clementi. Nancarrow, Gann and Polansky are interested in mensuration canons as a constructive tool, and this is often reflected in the structural simplicity of the canonic forms employed, such as the timing of the entries of the voices. Clementi, however, frequently used the technique as a type of anti-dialectic, to defuse the rhetorical and directional impact that a single statement of a line would possess. He stated that he opposed the use of a dialectic of contrasts on the basis that it would be a restoration of sonata form. His works since the late 1970s typically take diatonic fragments from the tonal repertoire, and use multiple transpositions of them to complete the total chromatic. These are employed in the original form, retrograde, inversion and retrograde inversion. Fig. 4.3 shows six out of the 36 instrumental parts of the first page of Clementi's

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15 Ibid., 163.
Berceuse for orchestra\(^\text{16}\) of 1989. The diatonic fragment in question is taken from Brahms' Trio op. 40 for violin, horn and piano; Fl.3 states the fragment twice. The other four parts state twice either the retrograde, inversion or retrograde inversion as shown. The passage forms a mensuration canon of tempo-ratio 3:4:6:8:12, as can be seen by comparison of the rhythmic values of each of the parts (that of 6 being a quaver). This statement of short fragments at different speeds is typical of Clementi’s later practice.

![Fig. 4.3](image-url)

4.2.1.3 Usages of mensuration canon in Mixed Circuits

The development of the technique of mensuration canon explored here differs from these composers in that it is centered on the possibility of fragments of logic being possible in the totality of the voices, rather than in a single voice. This is a consequence of the aesthetic of

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absurdism (as discussed in Chapter II), which, rather than calling for an abolition of dialectic, calls for the juxtaposition of conflicting logics, each of which is plausible in its own way. Mensuration canons provide an opportunity for the coexistence of a harmonic logic encompassing all the voices and the seeming independence of the individual voices. To this end I have developed methods of harmonic planning (discussed later in this chapter) applicable to mensuration canons, to provide the option of an overall logic.

Mensuration canons formed a major part of the pre-compositional planning for Mixed Circuits. This was due to the decision to write a work in which two or more layers would move at different speeds, each having its own logic. Mensuration canons were written as the underlying architecture of many sections of the piece, and were then elaborated on to varying degrees, so that the resulting work contains a range of different multi-speed usages, from strict rhythmic canon to entirely free writing. Effectively, the degree of canonic strictness is being used as a compositional parameter. The decision was made to concentrate on the tempo-ratio of 3:2, for a more clear comparison of the different approaches taken.

Some of the usages are given below, with examples:

1. Unelaborated 3:2 rhythmic canons, for example bars 210–217, cello and double bass parts (Fig. 4.4). Here the rhythm of the mensuration canon is adhered to, as is the contour of the line. The exact pitch-values were altered in places, by no more than a semitone.
2. Unelaborated 3:2 rhythmic canons with alterations, for example bars 133–139 (Fig. 4.5).

Here oboes, clarinets, and bassoons constitute one line, the strings, flute 1 and horns the other.

Fig. 4.6 shows a simplified version of the passage, with each position on the stave representing one of the chords used. Again, the contour of the lines is canonic but the pitch-values do not show an exact canonic correspondence. The pattern was chosen in order that the resulting canon would contain occurrences of inversion: these are shown by pairs of crossing lines in Fig. 4.6.

By way of example, referring to Fig. 4.7, chords A1 and A2 occupy equivalent points in the canon, as do chords B1 and B2. The first chord of bar 135, A1+B2, is 'inverted' in the first chord of bar 136 to A2+B1.

In places where the lower part has been altered, this is shown in Fig. 4.6 by dotted brackets over the section concerned.
A 3:2 rhythmic and pitch canon is used as the underlying structure, but the rhythm is elaborated upon in composition. One example of this is bars 48–65 (Fig. 4.8); the underlying mensuration canon is shown in Fig. 4.9. The top stave provided the material for the flutes (which as far as bar 56 play it in an unelaborated form), clarinets, bassoon 1 and vibraphone. The second stave provided the material for violins I (bars 48–56) then oboes, violas, cellos and trumpet 2 (bars 57–65); the third stave the basis for the rhythmic mobiles that violins I play in bars 57–65.
Fig. 4.8
Referring again to Fig. 4.9, it can be seen that the relationship between staves 1 and 2 is one of exact mensuration canon, except that a dotted minim is added to stave 2 in bar 61. The relationship between staves 2 and 3 is what I will label a repetition-pattern canon; this can be defined as follows: treating the two lines separately, if each new pitch as it occurs is labelled with a number, the pattern of numbers in stave 3 will correspond to that in stave 2 in the form of a mensuration canon; in other words that the pattern of repetitions alone is a mensuration canon. (The numbers are given below the notes in Fig. 4.9.)

Comparison with the relevant passage from Mixed Circuits (Fig. 4.8) will show how this schema was altered in composition: for instance, in violins I, bars 48–57, the notes in Fig. 4.9 are retained, and the rhythm altered only in bars 49, 51 and 55. In contrast, vibraphone and clarinet 2 use the schema as a basis for short triplet quaver phrases.

4. A 3:2 repetition-pattern canon; the items in the pattern may be chords, or pairs of notes in a horizontal line; the rhythm is elaborated upon in composition. Fig. 4.10 shows the underlying canonic structure of bars 78–84. The repetition-pattern is shown by numbers over the notes; in this instance, the items repeated are chords in stave 1 (played by clarinet 2, bassoons and
trumpets) and pairs of notes in a horizontal line in stave 2 (played by cellos). Fig. 4.11 shows the passage from the score.

Fig. 4.10
Fig. 4.11

5. The 3:2 polyrhythm is used to determine the disposition of phrases. At this level, polyrhythm is a useful method for realising an 'absurdist' approach to phrase-form, informed
by the work of Feldman. As mentioned above, what was desired was a contradiction between
the perceived overall logic and the perceived logic of the individual parts. Here, violins I and
cellos appear to be in dialogue, but are in reality each following their own logic at different
speeds. Fig. 4.12 shows the underlying schema for bars 151–174. The notes and phrase-
lengths were retained in composition, but the exact placing of notes within the phrases were
altered, and one phrase was omitted in order to achieve a clearer perception of dialogue
between the parts. Fig. 4.13 shows a further simplification in which it can be seen that the
length of the phrases (and the gaps between phrases) in vc. is 3/2 (1.5) of that of violins I; the
vertical dotted line shows where the polyrhythm repeats. The phrases were placed in such a
way as to have not only question-and-answer (rising and falling) phrases in each of the parts
(as shown in Fig. 4.13), but also to suggest dialogue between the two parts (see the dotted
lines in Fig. 4.12, which join a rising phrase to a falling phrase). The subsequent entries
(cellos in bars 157 and 172, violins I in bar 161) contradict this perception of dialogue by also
answering the previous phrase. The whole passage is shown in Fig. 4.14.
Fig. 4.12
A = rising phrase, B = falling phrase

Fig. 4.13
6. Two layers are at different speeds with no fixed ratio; repetition-pattern is the same. Bars 116–120 (Fig. 4.15) display an example of this category; the horn 1 and viola lines are moving at different speeds, and as no mensuration canon was used to regulate the placing of notes the result is more free than the examples above. However, the repetition-pattern is the same in both parts, as Fig. 4.16 shows.

Fig. 4.15
7. Two layers are moving at different speeds as a result of the difference between the two isorhythmic taleas used; repetition-pattern is the same. An example of this approach can be seen in bars 139–148 (Fig. 4.17). This is essentially an expansion of method 6: because the rhythmic values of the talea used in the violas, cellos and double basses are on average longer than those of the talea used in the flute, wood-block and solo violin, the effect is of a slower speed in the former.
Fig. 4.17
8. Two layers are at different speeds as a result of a limited number of rhythmic values being used (different in the two layers); no repetition-pattern is used. An example can be found in bars 126–131 (Fig. 4.18): the distance between the beginning of one vibraphone and clarinet motif and the next is limited to either 4 crotchets or $2\frac{2}{3}$ crotchets, and the distance between one oboe and horn chord and the next is limited to either $2\frac{1}{2}$ or $1\frac{1}{2}$ crotchets.

9. The relationship between the two layers is free with respect to both rhythm and repetition-pattern. An example is shown in Fig. 4.19 (bars 68–73), where there is no relationship between the strings layer and the woodwind/vibraphone layer.
4.2.3.4 Harmonic aspects of mensuration canon

The research process for this work included the construction of models that aid harmonic planning of loops based on mensuration canons. This can be done by constructing a diagram showing which notes occur together at any stage in the loop. The following examples refer to a loop of two parts containing the same material at a ratio of 3:2; the repeated unit of 10 quavers/dotted quavers occurs three times in the upper part and two times in the lower (so the overall loop lasts 10x3=30 quavers). Fig. 4.20 shows this loop. Lines can then be drawn between notes which occur together (not including notes that only coincide for a semiquaver). For example, there is a line between 2 and 8, as the 2nd and 8th notes occur together on the 18th quaver. However, the 10th and 4th notes only coincide for a semiquaver (on the 20th quaver), so there is no line connecting 10 and 4.

These lines can then be reorganised to form Fig. 4.21. The loops at the ends of the diagram indicate that each of numbers 1 and 10 coincides with itself.
Thus, a line between any two numbers on the diagram indicates that they occur together at some point in the sequence. A simple application of this model is shown in Figs. 4.22 and 4.23. Here the aim is to create a 3:2 polyrhythmic looping canon in which no dissonant interval should occur for longer than a semiquaver (treating an augmented 2nd as consonant).

Hence when allotting notes to the diagram of Fig. 4.21, it was done in such a way that the lines would only connect consonant intervals. Fig. 4.22 shows the resulting diagram, and Fig. 4.23 shows the 3:2 polyrhythmic looping canon generated.
Similar diagrams can also be used in the planning of two-layered harmonic shifts. For instance, in Fig. 4.24, two alternatives are given for each point in the diagram, of which the composer can choose either one or the other. Fig. 4.25 shows one possible realisation.
Diagrams such as these provide a useful tool for planning and executing harmony in passages containing parts fixed at different speeds, and can expand rhythmic cells into larger harmonic phrases. Conceivably they could also be used for planning harmonic shifts on a structural level.

Returning to loops consisting of mensuration canons, one interesting harmonic feature displayed is the appearance of points of inversion. For 3:2 canons, these always occur in two sets of pairs, one at one-fifth and four-fifths of the complete loop, the other at two-fifths and three-fifths. This can be seen in Fig. 4.23: the first dyad of bar five is the inversion of the first dyad of bar two, and the first dyad of bar four is the inversion of the first dyad of bar three.

The passage between rehearsal letters A and B of \textit{Mixed Circuits} demonstrates the use of these techniques. The aim was to create a passage employing the same material (which uses the total chromatic) moving in two parts at different speeds, in which the same pitch-class never occurs in both parts at once. To do this, the total chromatic was divided into three tetrachords, I (the notes B, C, F\#, G), II (C\#, D\#, G\#, A) and III (D, E, F, B\flat), which were allotted to the diagram of Fig. 4.24 as follows:

![Diagram](image)

**Fig. 4.26**
(X in the diagrams represents a percussive sonority).

This results in the following mensuration canon:

Note-values were lengthened, and the registers of the pitches were allocated, to give the following. The corresponding bar numbers in *Mixed Circuits* are shown at the start of each system.
This was used as a basis which specified which harmonic areas were to be used at any time; the detailed writing was left to intuition. As marked, the canon starts on the third beat of bar 14, though at first many of the harmonic areas are replaced by rests. The upper part is taken by solo violin and violins 1, and the lower by cellos and clarinet. The occurrences of X are
given to viola, solo cellos and double basses all playing *col legno battuto* repeated-note figures. The appearances of the inversion points are highlighted by the addition of two-note figures for violin 2 and bowed vibraphone. The two sets of pairs occur in bars 19 and 25 (one-fifth and four-fifths of the way through the cycle), and bars 21 and 23 (two-fifths and three-fifths of the way through the cycle.) The inversion points occur on the third beat of each of these bars. The passage from the score is shown in Fig. 4.29.
4.2.2 Cyclic form

With regard to form, *Mixed Circuits* is a response to the combination of cyclic and linear formal processes found in Birtwistle's *Secret Theatre*. Previous to the mid-eighties, Birtwistle's emphasis had been on cyclic processes; Hall notes (1998, p. 21)\(^{17}\) that:

> “Like most composers of his generation in the fifties, he had been searching for a form which expressed a sense of ‘being’ rather than ‘becoming’.”

However in works such as *Still Movement*,\(^{18}\) *Yan Tan Tethera*\(^{19}\) and *Secret Theatre*, he began to counterbalance the cyclic element with a linear, dramatic narrative. As discussed with regard to the layering aspect of *Secret Theatre*, the ensemble is divided into *cantus* and *continuum* groups of instruments; these groupings change over the course of the piece. Because each instrument is allotted a dramatic character (in the preface to the score, the instruments are listed as ‘*dramatis personae*’), the changes to the *cantus* reflect an unfolding drama.

Opposed to this linear process is a cyclic process which emphasises the repetitive nature of the drama. This is done by repetition of large-scale formal elements in a cycle, which consists of a *cantus* melody that begins tentatively, a long build-up to a climax, followed by a break in the form. These breaks may be signalled by pauses (for example the bar before rehearsal number 15 and the fourth bar of 23), piano tremolandi (for example the fourth bar of 19 and the bar before 23), three-note figures of large intervals such as Fig. 4.30 (three bars before 14) and Fig. 4.31 (six bars before 43):

---

or descending scalic figures such as Fig 32 (third and fourth bar before rehearsal number 23):

In *Mixed Circuits* a similar cyclic scheme is employed. It is active for the majority of the time span of the piece. A ritual gesture, consisting of a theme that varies but is always contained within the range F♯4–B♭4, is employed, the first two times in violin I, and the third in solo violin. It occurs in bars 73, 114 and 148. The second occurrence is shown below:
This gesture comes each time at the end of long sections exploring the simultaneous presentation of material developing at different speeds; it acts as punctuation and delineates the long-term form. These long sections start with a small number of instruments playing; instruments are gradually added, concluding with a denser texture. Following the third occurrence of the gesture, a section follows which develops the material of the gesture itself.

4.3 The course of the work

In terms of the degree of strictness by which the mensuration canon structure is adhered to, there is an overall progression of strict → less strict.

<table>
<thead>
<tr>
<th>Bar number</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction. Juxtaposed motifs (C₆-D₅-B₅-C₆ (solo vln. I, fl. 1) and D♯₅-E₅-C♯₅-D♯₅ (vln. II, ob. 2)). Introduces idea of logics at different speeds</td>
</tr>
<tr>
<td>14</td>
<td>Passage using technique described in 4.2.3.4 Harmonic aspects of mensuration canon: 3:2 canon using total chromatic, with rhythms elaborated upon. Repetition-pattern canon rather than pitch-canon</td>
</tr>
<tr>
<td>28</td>
<td>Extended passage for hns, hp and prepared pno. Contour-pattern hints at ritual gesture</td>
</tr>
</tbody>
</table>
Section with gradual build-up of instrumental forces. 3:2 pitch-canon with rhythms elaborated on. Pitches hint at previous section, but G₄ changed to G₅.

As above, but with addition of vln. I line in repetition-pattern canon with the above.

Reduction of forces, and the beginning of another build-up section. Two layers, with no canon (rhythmic, pitch or repetition-pattern).

Ritual gesture in vln. I concludes the section. Interval content derives from motifs from bars 1-5.

Section with gradual build-up of instrumental forces. Repetition-pattern canon with rhythms elaborated upon.

Rhythmic canon (8:9:12) between fl. 1, ob. 1, vla., solo vc., cb. In fl. 1, the first note in each phrase is the relevant pitch. In vla. and solo vc., the relevant pitch occurs every triplet semibreve (starting at the beginning of bar 89). Canon is inexact in terms of pitch as there are frequent alterations. Cb. is transposed down a perfect 4th.

Passage using interval material from motifs in bars 1-5. Tpts. use pitch material of ritual gesture, thus immediately juxtaposing the motifs and making explicit their connection.

Ritual gesture in vln. I concludes the section; this time it is accompanied by repeated-note motoric material.

Section with gradual build-up of instrumental forces. Two lines at different speeds, in free rhythm (ie. there is no rhythmic canon). Pitches in each have the same repetition-pattern.

Two layers (layer 1: obs., hns; layer 2: cls., vib.). These layers are at different
speeds; this is a result of allotting each a limited number of note-values. No pitch or repetition-pattern canon

Rhythmic canon (3:2), rhythm unelaborated. No pitch canon, but the melodic contour of pitches are in canon

Two layers at different speeds, a result of the fact that a different isorhythmic talea is used for each layer. Three pairs of parts, each in repetition-pattern canon (fl. 2 & vc.; vln. I & solo vc.; woodblocks & cb.) Accompanied by repeated notes in the same two rhythms

Ritual gesture occurs in solo vln. I, concluding section. Accompanied by repeated notes

Section exploring ritual gesture, which is in vln. I. Rhythmic canon (3:2) used to determine placement and length of phrases in vln. I and vc. As there is an apparent dialogue between these parts, yet they are rhythmically independent, this is an example of 'absurdist' form

Highly condensed version of section beginning in bar 151. Rhythmic proportions of phrase placement and length remain the same; phrases reduced to a length of two notes

More energetic section (due to the presence of rhythms in a more consistent metre). Rhythmic canon (3:2) used to determine phrase-lengths in Vln. I and II

Build-up (of dynamics and instrumental forces). Unelaborated rhythmic and pitch canon in bar 210 in vc. and cb. (though there are occasional alterations of pitch from the strict pitch canon)

Climax. Juxtaposed motifs idea from bars 1-5 is present, this time at a higher number of simultaneous different speeds than in bars 1-5. Vla has C-D♭-B-C
motif

225 This latter motif used for a section descending in register

230 Introduction of more energetic material, which overlaps with, then succeeds the previous descending material. This at first uses repeated notes, then non-repeating notes
V: Out here on Cottage Grove it matters.
for viola, cello, double bass and percussion

5.1 Introduction

In this work the objective was to explore an original form of performance practice, rather than simply create a once-off artwork. As the technique used is new, the research process included the rehearsal and performance of the work as well as its composition. The technique used in the piece will be termed improvised process music.

The work is influenced by the philosophy behind much of minimalism, that the eradication of distractions allows increased focus on a particular chosen facet of the music. In the minimalist aesthetic, employed by composers such as Reich and Glass, processes of gradual change occur within highly reduced fields of possibility. These composers were also keen that the process be clearly perceptible to the listener. Using the term process music rather than minimalism emphasises the aspect of logical progression in the music rather than the factor of reduced means; this is why the term is being used here. An extreme development in this strand of minimalism is to be found in the work of Tom Johnson, who has incorporated into minimalism an interest in music as sounding mathematics. Developing further the concept of audible process, Johnson prefers that his processes be not only audible but predictable, a concern which is very unusual in the field of contemporary music. The following is an excerpt from Rational Melodies:

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The process here is that notes are added or subtracted from the beginnings or ends of phrases so that a rotation occurs around the five pitches. The sixth note of the second system is the start of the second part of the rotation. The predictable nature of works such as this makes it possible that they be performed by memory, something that Johnson encourages for some of his pieces. This influenced Out here on Cottage Grove it matters, as it suggested that if these permutational processes can be memorised, then they could also be internalised by performers to be used as methods of improvisation. It was decided to use a succession of short phrases separated by rests; each phrase would be derived from the previous phrase by one of eight simple permutational processes. The information required to perform the work was presented to the performers by three items: a lattice from which pitches are taken; a set of processes; and a score showing only the process that is to be used at any time, register, dynamics and speed. Sections employing this technique would be alternated with more static sections, which would have the function of giving a break to the performers from the difficulty of calculating the permutational processes. The latter sections often feature self-similar structures (structures that exhibit the same patterns at different scales); such structures are a simplified version of the ones used in the rest of the work.
5.2 The field of action – Improvised process music

5.2.1 Introduction

Within the context of contemporary improvised music, improvised process music differs from those traditions of improvisation in which a harmonic or rhythmic basis is provided for elaboration upon, or where performers are permitted to choose when to move on from one repeated figure to another. The approach here is aimed at giving the performer some choice at the basic level of construction of the pitch material, using simple permutational processes to create very systematic lines. The emphasis on linearity is in keeping with the general aesthetic being explored in the works presented in this portfolio, which is a focus on the line, particularly on registrally-constrained, often systematically produced lines, with more than one line used simultaneously.

The permutational processes specify how to rearrange the notes of one phrase to form the next phrase. Each performer is given two or three processes, which are to be memorised and used in conjunction with the pitch lattice and the score. They can be played fast or slow as instructed in the score, and are either fixed to a particular band of pitches, or are to gradually ascend or descend in register.

5.2.2 Examples of processes used

Out of the eight types of process employed in the piece, three are shown below: firstly, the double bass's Process 1, in which the player moves through the lattice by means of omitting zero, one, or two notes from the beginning of the previous phrase, and adding one or two notes to the end of the previous phrase. The direction taken through the lattice is left to the performer's choice.
The viola's Process 3 is limited to 4 pitches which are recycled, either using the permutation 3421, or 1432. (The latter means that the four notes from the previous phrase are replayed in the order 1st note, 4th, 3rd, 2nd). In the example, the permutation is shown above the phrase.

In the cello's Process 1, a new phrase consists of the third note of the previous phrase, then the first note of the previous phrase, then a new note of the player's choice (out of those adjacent on the lattice).

As mentioned above, the pitch material to which these processes are applied is given to the performers in the form of a pitch lattice. The use of lattices creates a sonic identity for the work. Each column of the lattice is a sieve, as described by Xenakis in *Formalized Music* (1992, p. 270). Sieves were used in order to guarantee a chromatic sound-world with a high degree of intervallic variety. Here is the lattice given to the viola:

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It can be seen that, of the leftmost column, the notes on adjacent odd-numbered staves are a major 7th apart, and those on adjacent even-numbered staves are a minor 7th apart.
5.2.3 Employment of processes during the work

The score specifies when these processes are to be applied during the work, the speed at which they should be played, and whether the pitch material should be fixed to a particular band of pitches, or should gradually ascend or descend in register. Due to the fact that the choices made by the players are independent of each other, the four parts are independent in terms of pitch material and rhythm.

The distinctions between the processes and the different combinations in which they can be superimposed provide the aesthetic focus of the work. This can be regarded as a development of the above-mentioned principle of the elimination of distraction, by which the perception of small differences becomes magnified when the field of action is reduced. The two types of superimposition being explored are the superimposition of processes at slow and fast speeds, and whether two processes being superimposed can be categorised as similar or 'opposite'. What is meant here by 'opposite' can be demonstrated by an excerpt from the score (at rehearsal number 6):

Fig. 5.6
Here the double bass is given Process 1, in which each new phrase omits notes from the beginning and adds notes to the end of the previous phrase. In the process used by the viola, the opposite occurs: notes are added to the beginning and omitted from the end to create each new phrase. Thus the viola's process can be seen as the reverse of the double bass's.

Regarding the other processes, processes in which the new note occurs at the end of the phrase are regarded as being opposite to phrases in which it occurs in the middle (and the final note is one that has been heard in the previous phrase.)

The speed relationship here between the instruments is also an inverse one, the viola slowing down and the double bass speeding up.

This can be compared with occasions when the same, rather than opposite, process is employed (still at different speeds), for example at rehearsal number 4:

![Fig. 5.7](image_url)
Due to the fact that the score specifies that the processes should occur at the natural speed of thought, in each performance the music is being thought up on the spot, thereby creating a theatrically rich situation.

5.3 Realisation of the work

Regarding the realisation of the work, the main performance issue encountered during rehearsal was the unfamiliarity of the performance techniques; this meant that much more time needed to be spent on discussing the techniques than would be usual in a rehearsal. It became apparent that the processes vary in the ease with which they can be assimilated by performers. Simultaneous reading of the lattice and the score proved easier than anticipated, although it was necessary to emphasise the fact that the lattice was intended simply as a guideline to provide pitch material. Due to the necessary simplicity of the score it was not possible to address the possibility of timbral variations in the score, so this was an issue that had to be addressed in rehearsal.

5.4 The course of the work

<table>
<thead>
<tr>
<th>Rehearsal number</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction, then section fixed on whichever three pitches have been reached, with written-out patterns and rhythms</td>
</tr>
<tr>
<td>2</td>
<td>Opposite processes at opposite speeds</td>
</tr>
<tr>
<td>3</td>
<td>Viola's Process 3 (a slow four-note process used at the same time as fast three-note processes)</td>
</tr>
<tr>
<td>4</td>
<td>Same processes at opposite speeds, followed by a section fixed on</td>
</tr>
</tbody>
</table>
whichever three pitches have been reached, with written-out patterns and rhythms

5  Sustained section

6  Opposite processes, with speeds in the progression opposite-same-opposite

7  Section with a greater-than-previous variety of combinations of same/opposite processes and speeds

8  Sustained section, with self-similarity

9  Another section with a considerable variety of combinations of same/opposite processes and speeds (as 7)

10 Sustained section, with self-similarity; slower yet more complex than previously

11 Sustained section, with self-similarity; slower again and more complex than 9
VI: *Composure*

graphic score for bass clarinet

6.1 Introduction

*Composure* develops the concepts being explored in the other works presented, but in the form of a A0-sized graphic score. It incorporates elements of traditional musical notation, but these elements are also treated as graphic motifs that can be altered purely graphically. The focus is, again, on the line that is registrally-bounded; this is rendered graphically by a preponderance of horizontal lines. These lines are developed by the various contexts they are placed in, being broken, or altered in colour or thickness. Regarding any vertical movements that occur, it is suggested (by means to be explained later in this chapter) that they are inflections of a horizontal line (for instance, an alteration of the timbre of a tone by varying its spectral components or by the introduction of a higher white noise component), rather than a registral expansion of the line. The relationship to the aesthetic of the other works submitted can also be seen in the pitched material, which uses the technique of reharmonisation of an unchanging pitch (as in *Novelette (words of one syllable)* and *Stream Line*). Part of the aim was to create a work with a considerable scope of freedom for the performer, but where the visual form of the work would elicit an interesting musical form in performance.

6.2 Influences

The composition of the work was preceded by the study of a number of graphic scores: particularly significant were works by Bogusław Schaeffer,¹ *Bird Gong Game*² by Barry Guy, and *Treatise*³ by Cardew. The influence of Schaeffer is demonstrated in the use of multiple

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¹ Bogusław Schaeffer (b. 1929). Works published by Ariadne, Vienna.
materials to construct the score, and that of *Bird Gong Game* in the inclusion of material which can be treated as being in standard musical notation as well as graphic elements, and in its approach to form, where the score is treated as a map of musical form, but without specifying a single path between sections. (*Bird Gong Game* contains sections labelled with such titles as 'The Way Out', 'Wild Card', and 'Maybe'). *Treatise* was the most significant influence, both in its use of graphic alteration of existing musical notation, and in its use of notation which is ambiguous and yet, due to the variety of ways in which its elements interact, implies precision and a disciplined approach by the performer. Also significant, as will be discussed, is its elision of the boundary between graphic elements suggesting an environment, and elements suggesting events within that environment.

### 6.3 Collaborative process

The work was composed in collaboration with the performer Paul Roe. Composition took place over a 1½-year period, which included, towards the beginning, two workshops with Roe. The first workshop was in order to explore extended techniques on the bass-clarinet, to determine Roe's interests as a player at that point, and to discuss graphic scores. Roe expressed an interest in the production of tones rich in higher partials by means of extreme over-blowing, multiphonics, breath sounds, and the incorporation of noise into the instrument's tone; these techniques would be used alone and in combination with each other. It was agreed that a graphic score would be a more effective method of exploring these techniques than a conventional score. This is because when these techniques are used, there is a high degree of indeterminacy; the same action will produce a different sonic result when repeated, due to the chaotic nature of what is happening in the instrument when these techniques are employed. For the second workshop, sketches in graphic notation were
composed, and Roe interpreted them, exploring a number of different interpretations for each sketch. This was in order that the compositional process would include the imagination of what the likely sonic result of any graphic element employed would be. These workshops and the entire compositional process were documented in a journal format.

6.4 Construction of score

The score was constructed on an A0-sized sheet, most of which was covered with blotting paper. Various pens were used to write on the blotting paper, then water was dropped onto the paper to create a chromatograph of the ink used. Alternatively, water was dropped onto the paper first and then written on. In some sections, normal paper was used and water was not used. The work also incorporates some musical notation which has been typeset on computer, and then printed over a second time in order to create a blurred effect.

6.5 The influence of Cardew's Treatise

6.5.1 Discussion of Cardew's Treatise

As has been mentioned, the primary influence upon the work is Cornelius Cardew's graphic score *Treatise* (1963–1967). This work will now be discussed; following that, *Composure* will be discussed. Both its points in common with *Treatise* and its points of departure from this model will be examined.

*Treatise* was selected as a suitable influence due to the importance of the horizontal line in it. There is a thick central horizontal line which is present throughout its 193 pages, albeit sometimes broken by blank space or occluded by other graphic elements. It can be seen in the examples below. There are many more horizontal lines present than vertical. It uses the
standard musical symbols (staves, notes, rests, numbers etc) as its material but transforms them graphically (often into each other). Clearly this is ambiguous in itself, but there is an added layer of ambiguity as a result of the deliberate elision of the boundary between graphic elements that suggest an environment, and elements that suggest events within that environment. For instance, a stave conventionally represents a pitch and time environment (the vertical axis representing pitch-space and the horizontal, time). If an object resembling a stave occurs as a once-off event (as happens on pg. 155 (see Fig. 6.1)) this creates an ambiguity as to its interpretation. Treatise also contains many lines or curves that are broken by space. These suggest a connection (what type of connection is unspecified) between graphic elements that are spatially separate. Page 4 (see Fig. 6.2) contains examples of both broken curves and lines. If one object breaks another, this implies an interaction between them.
Despite its ambiguity, the variety of ways in which the elements are graphically developed and interact with each other seem to demand from the performer a disciplined interpretation in order to attain a similar level of variety in the performance. Although the work was published with no notes on how to perform it, Cardew later added some (non-binding) comments in *Treatise: Working Notes.* One such comment is as follows (1971, p. iii):

“63
Interpreter! Remember that no meaning is as yet attached to the symbols. They are however to be interpreted in the context of their role in the whole. Distinguish symbols

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that enclose space (circle, etc.); those that have a characteristic feature. What symbols are for sounding and what for orientation. Example: The horizontal central bar is the main and most constant orientation; what happens when it ceases (or bends)? Do you go out of tune (eg)?”

6.5.2 Response in *Composure* to the influence of *Treatise*

In *Composure*, elements of standard musical notation are altered after the manner of *Treatise*. Staves are altered primarily by tapering the leftmost end of the stave so that they appear to be emerging from a distance, as is shown in Fig. 6.3:

![Fig. 6.3](image)

Staves likewise often appear as events themselves, rather than as an unchanging environment. As mentioned, this creates ambiguity regarding which graphic represents the event, and which the environment. This is also the case with single, straight, lines, a prominent motif in the work; an example is shown in Fig. 6.4. These lines always have a clear 'effect' on their surroundings. Lines broken by space are also used, to indicate either a rest within a continuous line, or an unspecified connection between two parts of the work.
Notes are altered so that they seem to fragment, often seemingly as a result of being accented:

This example also shows that a horizontal line continues to the right of the lowest note, implying that the upwards curve should represent a change in the timbre of the note, rather than indicating a change of pitch. Such changes of timbre would be based on overblowing or multiphonics, or a combination of the these. Thus the process of collaboration with Roe means that an informal agreement between composer and performer (regarding how certain graphic elements would most likely be interpreted) has affected the composer's conception and execution of the work. The convention that music is read horizontally from left to right, with changes in parameters being indicated vertically, is mostly adhered to, as in Treatise. There are exceptions to this, as mentioned below.

6.5.3 Points of departure from the example of Treatise

Points of departure from Treatise include the suggestions of directions of movement other than left-to-right; a very different look and means of construction; a greater use of text; and
the format of the score, which is in portrait format, rather than a sequence of landscape-format pages.

6.5.3.1 Non-adherence to reading convention

There are frequent occasions in Composure where the convention previously mentioned (that music is read horizontally from left to right) is not adhered to, and there is a suggested line that uses both vertical and horizontal movement, including right-to-left horizontal movement:

![Fig. 6.6](image)

This allows the degree of curvature to also be interpretable as a possible indicator of a change of parameter.

6.5.3.2 Look of the score

The different look of the score is a result of the use of coloured inks, and the use of blotting paper and water to create chromatographs, which create a more blurred, softer-edged visual aesthetic, as the following example demonstrates:

![Image](image)
6.5.3.3 Use of text

The use of text was intended to heighten the interpretational ambiguity, as the words used mainly take the form of performance instructions, while not having a completely clear meaning. Some examples are shown below:

Fig. 6.8             Fig. 6.9                         Fig. 6.10                              Fig. 6.11

Fig. 6.12

Fig. 6.10 shows that the use of words can imply a text 'set' by each note; Fig. 6.11 shows that the words can be treated as graphics and altered accordingly. Fig. 6.12 specifies how notes should be thought about, rather than specifying a precise duration in performance of each note.
There are also 'performance instructions' in a non-verbal format:

![Fig. 6.13](image)

This usage of performance instructions is intended to elide the hierarchical divisions between the instruction and the material that the instruction applies to, due to the fact that each instruction can also be understood as a musical event. The concept behind this approach is that the idea of precision should be suggested to the performer, even though the work is ambiguous as to its interpretation.

**6.5.3.4 Format of the score**

It was mentioned earlier that one aim of the piece was to devise strategies where an interesting and varied form for an interpretation of the work is suggested by the structure of the work itself (no matter which moment-to-moment choices are made by the performer), rather than putting the responsibility for this entirely with the performer. This was done by the control of density of material in different areas of the work in order to ensure variety of density, by ensuring parametric independence in the graphic parameters used, the use of broken lines to create junctions where more than one direction may be taken, and by the use of ambiguity regarding the vertical system-layout of the work.

Control of density was obtained by filling the A0-sized space of the work according to the following scheme:
The proportions of each of those rectangles which have an apex at the focal point (where the lines bisecting the rectangle horizontally and vertically cross) are the same (except for the right-bottom rectangle). This is because the 'A' series of page-sizes is used to govern the proportions. In this series, the ratio between length and width of a page size is $1:\sqrt{2}$, with the result that when (for example) two A4 pages are placed side-by-side to create an A3 page, the A3 page has the same length-to-width ratio as the A4. Roughly the same amount of material was used for each rectangle, meaning that the density increases as the rectangles become smaller, as they spiral around the point where the lines cross. In performance, this means that, whatever path is taken through the work, there will be a great variety of density of events.
Also, similar shapes and directions of lines were used for each rectangle (the orientations of
the rectangles are shown by the diagonal lines above) meaning that there is a preponderance
of lines pointing towards the point where the lines cross.

Parametric independence between the graphic elements was employed, in order to suggest
that the musical parameters in performance should be independent some of the time. For
example, in the following section, the vertical displacement of the highest line is independent
of the density within the compartments formed by the straight lines protruding from it.

The use of lines that wander around the page is intended to suggest a number of paths that can
be taken by the performer. Again, the idea of precision is being suggested to the performer
although the score has no clear interpretation. Broken lines are used to create junctions within
the work, where the performer has a choice between two or more different paths. If a line
stops, it will be pointing at another location on the page, and it is assumed that the performer's
eye may continue reading in the same direction. An example is shown below.
Another means of suggesting an interesting form is by the system layout of the page. Here, unlike in *Treatise* (in which there is one system per page and thus no vertical progression) there are multiple vertical layers, which could be interpreted as separate systems. However, the systems do not begin and end at the same point vertically, preventing a system-by-system reading, so the performer will trace an unpredictable path through the work, which will most likely include some repetitions of systems.

### 6.6 Pitch material

As mentioned, the pitch material is kept 'grounded' by use of spectral alterations of a single fundamental tone, by the use of expanded clusters to attain a neutral harmonic vocabulary, and by the fact that for changes of chord, the highest note is the same in both chords. Fig. 6.17 shows an excerpt from the work, and Fig. 6.18 a reduction of its two chords. As can be seen, the second chord is an expanded cluster, and the highest note of both chords is (enharmonically) the same note.
VII: Novelette (words of one syllable)  
for unaccompanied choir

7.1 Introduction

This work concentrates on the registrally constrained line as a stream of objects signifying a semantic meaning; the use of text makes this explicit, and is intended to suggest that the choice of pitches or chords in each line can also be interpreted as having a semantic meaning. The logical nature of each line is offset by the use of more than one stream of text at once. This follows up on the polyphonic practices explored in such works as Mixed Circuits, but the use of text makes explicit in verbal form the conflict or agreement between the lines.

Typically each line is formed from a limited pool of words and pitches which are recombined in different permutations; this demonstrates the influence of Tom Johnson who in works such as Rational Melodies uses permutations as the primary focus of attention for the work rather than as a background constructive technique. Another influence is Robert Ashley, who in operas such as Concrete and eL/Aficionado makes much use of polyphony of text, with simultaneous and overlapping streams of text. The desire for there to be a close relationship between the semantic meaning of the text and that of the musical pitches led to the creation of the text by the composer at the same time as the music. In contrast to this continuous textual fabric, it was desired to include some distinct textual 'set-pieces'; the poet Emily Crossland contributed these following a collaborative process of discussions with the composer.

7.2 The field of action

7.2.1 Harmonic language

First to be discussed is the harmonic language of the work. The work begins and ends in E Lydian mode (E, F♯, G♯, A♯, B, C♯, D♯). This may be reduced to a pentatonic scale (E, F♯, G♯, B, C♯) with the A♯ and D♯ appearing more rarely. For example the pitches of the opening of the work are all taken from the pentatonic pitch-class collection with A♯ and D♯ first appearing in bar 19. From bar 33 another harmonic technique features often: reharmonisation of a single pitch with different chords. The Alto 1 and 2 lines are kept on an unchanging pitch (G♭4/A♭3), while three lower parts reharmonise this pitch, frequently according to certain rules (applied from bar 37 onwards). Fig. 7.1 shows the four possible transformations from a single chord according to these rules.

![Fig. 7.1](image)

1) a second chord may be generated from the first chord by intervallic inversion around the axis of G♯/A♭ (this is equivalent to inversion around the axis of D). For instance, the E♭4 of the first chord is a semitone above D4, so in the second chord this moves to D♭4 (a semitone below D4). The F3 of the first chord is a minor 3rd below A♭3, so in the second chord this moves to C♭4 (a minor 3rd above A♭3). The B♭2 of the first chord is a major 3rd below D3, so in the second chord this moves to a G♭3 (a diminished 4th above D♭3).
For the other three transformations, the same process of intervallic inversion is used, but using as an axis the point halfway between the highest pitch and one of the other three pitches (again, this is equivalent to inversion around the pitch a tritone away from this point). The highest pitch and the other pitch chosen remain the same in the second chord (and remain unchanged in each part, whereas if the rules were applied strictly the pitches would swap between the parts.) The other two pitches change (unless one of them happens to be the same as the axis of inversion). These three transformations can also be seen in Fig. 7.1, and are detailed as follows:

2) inversion around the axis of $F_3$ (halfway between the highest and second-highest pitches in the first chord). It can be seen that the $F_3$ in the second-lowest part moves to a $Gb_3$.

3) inversion around the axis of $C_4$ (halfway between the highest and second-lowest pitches in the first chord). It can be seen that the $E_b_4$ in the second-highest part moves to a $Bb_3$.

4) inversion around the axis of $E_b$ (halfway between the highest and lowest pitches in the first chord). It can be seen that the $F_3$ in the second-lowest part moves to a $Db_3$. The $E_b_4$ in the second-highest part remains the same as it happens to be on the axis of inversion.

Using all possible combinations of transformations results in a limited group of 24 chords. The group of which Fig. 7.1 is a portion is used to generate all the chords in bars 37–43 and 51–60. In this group, every chord consists of notes from the diatonic scale of $F_{#}/Gb$ major; it is not
possible to use the above transformations to generate a chord which includes a note not in this scale. Fig. 7.2 shows a relevant portion from the score (bars 39–40):

[Image]

Fig. 7.2

On occasion the rule limiting the transformation to one of the above four types may be relaxed to allow inversion around any one or any pair of the four pitches; this allows the Alto 1 and 2 pitch to change, and means that the harmony is no longer limited to the F♯/Gb major scale. This is used as a structural device to close sections and to remind the listener of the E-based harmony found elsewhere in the work. For example, the lowest pitch is used as the axis of inversion between the two chords in bar 43, resulting in a change to G♭ in Alto 1 and 2, and meaning that the pitch-classes E and A can occur in bar 44. Bars 43–46 are shown in Fig. 7.3. The relevant chords are to be found in the A1, A2, T1, T2, B1, B2 and B3 parts.
Fig. 7.3
Similar changes occur in bar 60 (resulting again in pitch-classes of E and A) and bar 64 (resulting in pitch-classes of C and G).

Elsewhere in the work, a different starting chord is subjected to these transformations (and thus the harmony consists of chords taken from a different group of 24 chords to that previously). This occurs in bars 103–105, and in bars 105–108. The use of a different starting chord is a means of generating long-term structural contrast within the technique of reharmonisation.

7.2.2 Treatment of text

7.2.2.1 Reharmonisation

The reharmonisation of a single pitch as discussed above is used in order to respond to both qualities of the sung word: its sonic characteristics and its ability to carry meaning. The repeated notes focus attention on the line, particularly the text and its constant stream of meaning; the reharmonisation focuses attention on the word's sonic qualities, as the harmonic changes highlight the timbral changes.

7.2.2.2 Cyclic fragments of text

Fragments of texts are favoured that, while carrying potential meaning, have no starting or stopping point and can be used cyclically. Two examples can be found in bars 17–28: the Tenor 1 and 2 line and the Bass 1 line each repeat a two-bar cycle consisting of the texts “while you change for a” (Tenor) and “when you came to see you came to see that” (Bass).

7.2.2.3 Polyphony of meaning
Polyphony of meaning can be employed. Bars 51–54 show a simple example of what is meant by this. Polyphony here is managed by assigning the active parts to one of two homorhythmic groups (one sung, one spoken), interpersing the notes of each of the two groups' lines with rests, and splicing the two lines together so that the two groups never coincide rhythmically. The following shows the two lines of text from the middle of bar 51 onwards:

is that when that is when you find that if when you see that when it seems you find that when now

Fig. 7.4

Fig. 7.5 shows bars 51–54 from the score. The top line of Fig. 7.4 is to be found in the S1, A3, T3 and B1 parts; the bottom line in A1, A2, T1, T2, B2 and B3.
Reading each line individually, and also reading both lines together in left-to-right order, produces a result that makes syntactic sense at a fragmentary level (five or six words). For example, reading from the beginning of Fig. 7.4, one may read “is that when that is” (top line), “when it seems you find” (bottom line), or “is when that when it seems” (both lines in left-to-right order). This is equivalent to musical polyphony.

### 7.2.3 Rhythm and metre

This analysis will now proceed to an examination of the rhythmic and metric structure of the work. The metre is based on a unit two bars in length (the work is in the time signature 5/2). This may be divided into five semibreves, or into two durations a bar long (five minims). The conflict between these two metres creates a metric environment where the balance can shift between the two. These note-values may be subdivided into halves and quarters as follows:

![Fig. 7.6](image)

This result bears a superficial resemblance to patterns of subdivision often found in Javanese gamelan, as described by Sorrell;\(^5\) it is also the same as that termed by Tom Johnson\(^6\) the 'American ruler' sequence. This allows for a section of the work influenced by Johnson's research in this area, which will be discussed later. As well as this suggestion of a sense of

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metre by means of subdivision, one or more of the following methods may be utilised to assert one of the metres by emphasising one of its beats: 1) a leap onto a note instead of the usual stepwise motion, 2) use of a syllable that would naturally be emphasised in speech, 3) a note of longer duration than those it is surrounded by, 4) a repeated note preceded by a crescendo, 5) an entry of one of the voices after a rest, and 6) the use of articulation. Bars 21–22 (shown in Fig. 7.7) contain examples of all of these with the exception of 5):

1) tenors, on the first beat of bar 21

2) soprano, alto and tenors 1 and 2, on the first beat of bar 22

3) and 4) soprano, on the first beat of bar 22

6) on the C# in the Tenor 3 part in bars 21 and 22

Fig. 7.7
Examples of method 5) include the soprano entry in bar 48 (shown in Fig. 7.8) and the bass entry in bar 50.

Most often, the conflict between the two metres takes the following form: assertion of the semibreve metre on the first two or three semibreves of a two-bar unit, counter-assertion of the bar-long metre at the start of the second bar of the unit, reassertion of the semibreve metre on the 4th semibreve of the unit. For instance in bars 49–50, these three assertions are made by (in order), Alto 1 and 2, Basses, Sopranos. In bars 55–56, they are made by A1+A2+T1+T2+B2+B3, S2+S3, A1+A2+T1+T2+B2+B3. In bars 83–84, they are made by T1+T2, T3+basses, A3+T1+T2. These excerpts are shown in Fig. 7.9:

Fig. 7.8
7.2.4 Employment of self-similarity

The bass lines in bars 87–102 consist of a fabric influenced by the research of Tom Johnson. It was desired that the passage should consist of two independent, systematically-constructed lines using the same four pitches, and that at no time should two notes of the same pitch start at once. Johnson\(^7\) shows how a cyclic melody can be constructed whereby a derived melody consisting of every xth note of the original melody (where x is an integer which varies depending upon the structure of the melody in question) will be identical to the original melody. One of these melodies he terms the 'American ruler' sequence; in its eight-note form it is the following:

\(^7\) Ibid., 233.
He shows that a melody consisting of every third note of this continually repeating melody is identical to the melody itself. The accented notes in Fig. 7.11 demonstrate this.

In the passage in *Novelette*, Basses 2 and 3 take the original line, and Bass 1 the derived line which is the original line at a third of the tempo. Johnson’s pattern was altered by replacing by a rest every 6th note in Basses 2 and 3, and every 5th note in Bass 1, and also by moving the Bass 1 line a crotchet to the right. This latter change obtains the desired result, as because there are no consecutive identical notes in the melody, no two notes of the same pitch will start at once. Fig. 7.12 shows the Bass parts in bars 87–88:

### 7.3 The course of the work

<table>
<thead>
<tr>
<th>Bar number</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>104</td>
<td></td>
</tr>
</tbody>
</table>
1 Polyphony of texts in two layers, one spoken, the other consisting of dyads taken from the pitches F♯, G♯, B♭, C♯.

8 First occurrence of pitch-class E; used to indicate that the section is coming to a close. Completes the pentatonic pitch collection.

11 Introduction of the two-bar metrical unit with the two conflicting metrical subdivisions.

19 First occurrence of D♯ and A♯, completing the E Lydian pitch collection. Sopranos and Altos start on dyads, related to bar 1.

29 E Lydian harmony undermined by occurrence of the pitch-class D in B1.

33 First occurrences of chords reharmonising a single pitch; two streams of text with polyphony of meaning.

37 As above, but pitches limited to F♯/Gb major scale as described in analysis.

43–44 Relaxation of inversion rules leads to change of A1+A2 pitch and addition of pitch-classes E and A, signalling that the section is coming to a close.

46 Bar-long metre asserted (by A1, A2, T1, T2, basses) for the first time since bar 33.

47–50 New material: multiple speeds, featuring triplets that begin off the beat.

51 Above material ends abruptly; reprise of bar 37, but more extended, louder and with an extra line that asserts the bar-long metre (Soprano 2 and 3, beginning in bar 55).

60–64 Relaxation of inversion rules as above, with occurrence of pitch-classes C and G in bar 64.

65 Semibreve metre asserted more strongly than previously (by alto line consisting of semibreves, and S1, T3 and B2+B3 entries which are on the
semibreve beats)

69 Strong counter-assertion of bar-long metre by T1, T2, B2 and B3

73 Alto semibreve line falters, with a textual set-piece, leading to an extended reprise of material from bars 47–50

83 Return to E Lydian harmony, with material that combines the metric subdivisions of bar 11 with melodic ideas from previous section (eg A1 and A2 line in bars 81–82)

87 Above material ends abruptly; fabric as described above, with a textual set-piece in A1 and A3: Sopranos assert the bar-long metre

103 Sequence of chords reharmonising a single pitch, with different harmony to that used earlier; first occurrence of the pitch $E_2$ in bar 108

109 to end Material from bar 83 gradually rebuilt and explored; the pitch $E_2$ occurs in bars 122 and 124
8.1 Introduction

The aim of this work was to use certain rules, which apply to the pitch and rhythm content of the work, to create a predictable environment, a consistent fabric which would then be progressively undermined over the course of the work. The creation of this predictable environment was considered akin to the creation of an 'alternate reality' such as is found in some twentieth century science fiction literature. To counter this predictability, elements of nineteenth century performance practice were used to create phrasing which suggests a dialectic, a deliberate argument that the piece appears to be making. There is thus a conflict between these hints of a dialectic and the fact that the musical fabric is so harmonically and rhythmically consistent as to negate any suggestion of dialectical argument. This reflects the influence of Feldman, who typically both suggests and negates dialectic in his works. This is demonstrated by the analysis of the extract from *Neither* in Chapter II. The influence by Feldman has been adapted to my compositional style. As will be described below, there are many elements in the work that are in conflict; the aesthetic intention in the compositional process was to maintain the balance between them and ensure that any shifts in this balance were subtle and understated.

Another characteristic of the work is a focus on the 'two-handedness' of piano-playing (this term was used by Chris Dench in his introduction to *Phase Portraits* to describe a particular way of conceptualising piano writing): normally there are two dyads present, one in each

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hand, but on some occasions a third dyad is added, creating a perceived instability which results in a change of register. In terms of form, a technique used is that of the fragment of a melody being used first, followed by the melody itself, which is perceived to be an expansion on the fragment.

8.2 The field of action

8.2.1 The use of rules

8.2.1.1 Description of the rules

First to be discussed is the nature of the rules used. As stated above, these predominate towards the beginning of the work, then are applied more loosely as the work proceeds. Rules are used to govern rhythm, melodic contour, and harmony. Much of the work consists of two pairs of dyads, one in each hand, with each dyad in the right hand being preceded by one in the left hand. The rule governing rhythm is that each dyad in the left hand begins exactly two-thirds of the way through the duration of the dyad in the right hand that precedes it.

Fig. 8.1 shows bars 10–12. It can be seen that the dyad D♯–F♯ in the right hand in bar 11 has a duration of six quavers, and the next dyad in the right hand, C♯–G♯, has a duration of five
semiquavers. The left hand dyads which follow these begin, respectively, four quavers and $3\frac{1}{3}$ semiquavers after the right hand dyads they follow. These numbers are two-thirds of the durations of the right hand dyads. In order to avoid impractically complex rhythms in the left hand, the durations of the right hand dyads are controlled so that note-values (including tied notes that are part of a longer duration) smaller than a triplet semiquaver do not appear in the left hand. This means that, for instance, a note with a duration of 5 semiquavers in the right hand may begin on the first or third (as above) semiquaver of the crotchet, but not the second or fourth. This has the added effect of guaranteeing further rhythmic consistency in the durations used in the right hand.

The rule governing melodic contour is that, in each of the lines present, there may be no more than two consecutive movements in the same direction.

The rule governing harmony is that, of the left hand dyad which precedes each right hand dyad, the top note is a minor 9th below the top note of the right hand dyad, and the bottom note is a major 9th below the bottom note of the right hand dyad. There is also a looser rule governing the right hand dyads, which is that the interval between the notes of one dyad should be a small number of semitones different from the interval between the notes of the dyad that preceded it. This number is most often 1, and is seldom more than 3.

The elements of 19th-century performance practice that counter this consistent environment are set out in the notes for performance:
2. A 19th century-style rubato should be employed: tempo should pick up as the phrase proceeds, easing off as the phrase comes to an end.

3. In general, the longer the duration of a note, the louder the dynamic. Also there should be a crescendo from the beginning to the middle of each phrase, then a diminuendo to the end.

Both these elements will create a phrase structure that suggest a dialectic argument. Other than the consistency of the fabric, there are other elements that challenge this dialectic argument: the use of overlapping phrases, eg. in bar 101–102:

At first the note-values used confirm the phrase structure, for example, the long note at the end of the phrase in bar 10:
However the note-values used are frequently at odds with the phrase structure, as witnessed by the use of rests and long note-values in the middle of phrases in bars 16 and 21 respectively:
These are intended to contribute to the sense of information overload that is being created. Having said this, there are occasions on which ends of phrases do coincide with an overall descent in register, thus creating agreement between the phrasing and the pitch content. The descent in bars 45–46 is an example of this.

8.2.1.2 Application of rules during the work

As the work progresses, it changes in two separate ways: in parts where the rules are (partially or completely) adhered to, there is an exploration of some of the available parameters that would differentiate it from the material at the beginning; and there is a loosening of the rules themselves.

The parameter changes that the musical fabric is subjected to become more extreme as the work proceeds. The changes are:

– the increased use of short and long rhythmic values of notes and rests:

![Fig. 8.6](image-url)
the use of the higher register, and quicker changes of register:

increased dynamic range: see Figs. 8.7 and 8.8 above.

and increased use of repetitive rhythms of equal rhythmic values:
The rules are used more loosely as the piece proceeds. The rule governing contour is the rule most strictly adhered to; it is broken on only three occasions (not including the grace notes starting in bar 156): bar 81, bar 107 and bar 129. Fig. 8.10 shows the second of these:

![Fig. 8.10](image)

The first occasion on which the rules are not adhered to is a passage starting in bar 66. Here the rule governing rhythm is adhered to, but the rule governing harmony is not. Fig. 8.11 shows bars 67–69:

![Fig. 8.9](image)
The rule governing harmony is often broken in a way that favours octave doublings. This is in order to create contrast with the 9th-based harmony occurring towards the start of the work.

Figs. 8.12 and 8.13 show two examples of this:
Bars 113–115 (shown in Fig. 8.14) contain two occasions on which the rule governing rhythm is not adhered to:

It can be seen that the last notes in the left hand of bars 113 and 114 occur earlier than they would, were the rule being adhered to.

This loosening of the rules reaches its culmination in the coda, which begins in bar 156. It contains material that appears somewhat unrelated to that which has occurred previously. A line consisting of single notes, then dyads, is present in the middle register. It is periodically interrupted by a spread chord that is the same on each occasion. This section relates to the previous material in that the rule governing contour is adhered to in the line. There is also ambiguity of phrasing present, as has occurred previously: the spread chords imply a punctuating effect that would delineate material for the construction of a musical argument, but the phrasing implied by the pitches and dynamics of the line conflicts with this
interpretation. There is a further contrast between the repetitiveness of the spread chord, and the lack of exact repetition in the line.

8.2.2 'Two-handedness'

Regarding the concept of 'two-handedness', Fig. 8.15 shows an occasion on which a third dyad is added to the two already present, creating a perceived instability. A change of register follows in which the line of dyads that was introduced remains, and the lowest line of dyads drops out.

The top line here can be understood as an expansion of the fragment introduced in bars 34–35:
### 8.3 The course of the work

<table>
<thead>
<tr>
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<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Short single-line introduction</td>
</tr>
<tr>
<td>5</td>
<td>Pairs of dyads. Rules apply from bar 6</td>
</tr>
<tr>
<td>10</td>
<td>End of phrase coincides with a long note-value in order to reinforce phrasing</td>
</tr>
<tr>
<td>31</td>
<td>Highest note of all phrases so far. Followed by a descent in register towards the end of the phrase</td>
</tr>
<tr>
<td>34–35</td>
<td>End of the phrase, introduction of a fragment of a line of dyads in a higher register</td>
</tr>
<tr>
<td>36</td>
<td>Beginning of next phrase</td>
</tr>
<tr>
<td>38</td>
<td>Highest note before bar 47, followed by an overall descent in register</td>
</tr>
<tr>
<td>47</td>
<td>Introduction of a line of dyads in a higher register, which continues on this occasion, in contrast with bar 35</td>
</tr>
<tr>
<td>51</td>
<td>Higher line of dyads drops out, lower line of dyads re-enters. After this stage this swapping between registers has become a regular and hence predictable feature of the work, and so will not be mentioned further</td>
</tr>
<tr>
<td>66</td>
<td>First occasion on which the rules are not adhered to</td>
</tr>
<tr>
<td>73–80</td>
<td>Passage with louder dynamics, more use of the higher register, quicker changes of register, and shorter note-values</td>
</tr>
<tr>
<td>94–99</td>
<td>Passage with repetitive rhythms of equal rhythmic values</td>
</tr>
<tr>
<td>100</td>
<td>Resumption of material similar to bar 49</td>
</tr>
<tr>
<td>105–116</td>
<td>Passage with louder dynamics, more use of the higher register, quicker changes of register, and shorter note-values</td>
</tr>
</tbody>
</table>
116–126 Material of long note-values separated by long rests. Extremely quiet dynamic level

126–131 Interruption of the above by material similar to bar 105

132 Resumption of material from bar 123

145 Expansion of material from bar 45 (i.e., the material immediately preceding the appearance of the first continuous line of dyads in the higher register)

151 Appearance of line of dyads in higher register, as in bar 47

155 This is broken off, rather than a line of dyads appearing in the lower register, as occurred in bar 51

156 Coda, as described above
IX: *The bright kids (logic ballad)*
for soprano

9.1 Introduction

A monodrama for solo soprano in which a registrally-bounded line is treated as a developing thought-process, or Joycean stream-of-consciousness, and presented as such in a theatrical context.¹ The line is developed from within by the reordering of a small number of pitches by means of mathematical permutations. However to act as a counterbalance to this logic, the text is in the form of a series of fragments, that, while carrying potential meaning, are open-ended and can change depending on the context. The influence of Tom Johnson can be seen in the idea of making the simple permutation the foreground rather than in the background as a compositional aid. Another influence were formal poetic schemes such as the villanelle² and the pantoum³ in which some lines from one verse recur in the next, with permutational schemes governing where these repetitions occur. These two influences are complementary as a consistent use of permutations will create complex quasi-rhyming schemes in the resulting patterns.

The text was composed alongside the music in order that the semantic meaning of the text would function as an integral part of the composition; thus, because the work is centered on patterns, the text is a part of the information flow. An aesthetic aim of the use of permutations was that a unit may have different functions from one phrase to the next depending on which units it is next to. The balance in the compositional process between the rules and the element

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¹ 'Stream of consciousness': a literary technique in which the text is intended to match as faithfully as possible the flow of thoughts in a character’s mind.
² A poetic form, in which the final line of each stanza alternates between two refrains, which only occur together in the first and final stanzas.
³ A poetic form, in which the second and fourth lines of each stanza recur as the first and third lines of the next stanza.
of choice regarding which permutation can be used, as well as the ramifications of these rules and choices, will be discussed below. Pitchwise it was decided to use a very limited palette of pitches, but one which would permit ambiguity in the harmonic interpretation of some pitches. This was in order to allow some permutational changes to have a 'telling' effect, which would heighten the potential dramatic interpretation of the work. The approach to the text ranges from singing to singing in speech rhythm to spoken text.

9.2 The field of action

9.2.1 The use of permutations

The study of the permutations used will examine both the relationship between one phrase to the next, and within groups of up to four phrases, as the repetition-patterns in the latter caused by the permutations were a factor in the compositional process.

9.2.1.1 Permutations used

Regarding the permutations used, the work can be divided into two sections, bars 8–52 and bars 52–192. In the first section each phrase is a bar long and consists of three notes; each phrase is related to the previous by a permutation termed X12, meaning that the new phrase consists of three notes, the first of which is not to be found in the previous phrase, and the second and third of which are identical to the first and second notes respectively of the previous phrase. Bars 19 and 20 are an example of this permutation; the second and third notes of bar 20 are the same as the first and second notes of bar 19:

![Fig. 9.1](image-url)
In bars 52–192, each phrase is four bars long, and consists of four units, each of which takes up a bar, and which may be a note or a sub-phrase. Each phrase is related to the previous phrase either by the permutation 2X41, by the permutation 3X41, or by the permutation 3X21. The only exceptions to this are bars 73–76, bars 133–136 and bars 161–164, where, because an obvious section-change was desired, no units from the previous phrase were used. The name of the permutation specifies four units in any phrase in the order in which they occur. The numbers indicate their position in the previous phrase, and X indicates a new unit which did not occur in the previous phrase. By way of example, Bars 57–60 are related to bars 53–56 by permutation 2X41, and bars 61–64 to bars 57–60 by permutation 3X21.

The dotted lines demonstrate the changes in position of a unit from one line to the next.

9.2.1.2 Repetition-patterns created by permutations

These permutational schemes by their nature create repetition patterns over more than two phrases; this factor was taken into account in the compositional process. For instance two
applications of permutation X12 over three phrases will mean that the first note of the first phrase will recur as the third note of the third phrase. Another example is that two applications of permutation 2X41 (shown below with a different letter representing each unit) results in the first and second units of the first phrase recurring as the third and fourth units of the third phrase. This is shown below; the letters a and b represent the relevant units.

abcd
beda
efab

Bars 85–96 (shown in Fig. 9.3) provide an example from the work. It can be seen that the material from bars 85–86 recurs in bars 95–96.

A further compositional manipulation of the inbuilt properties of the permutation schemes can be seen at bar 106. Permutation 3X41 has the property that a new unit introduced in one phrase is not repeated in the next phrase. As it was desired that the note D₄ in bar 106 should only occur once, this permutation was chosen. Bars 101–112 are shown below:

Fig. 9.3
Permutation 3X21 allows a foregrounding of the change in the functions of the units. This is because the first two units of a phrase are reversed in the next phrase. This property was used to create situations where the combination of the texts of the units makes sense in both orders. For example, bars 153–154 contain the text 'across the hotel lobby (if that's what it is)'. This recurs in bars 159–160 as 'if that's what it is across the hotel lobby'.

9.2.2 Pitch material

Harmonically, the aim was to create an ambiguous environment where a limited number of pitches can have one of two harmonic interpretations depending on their context. This may be seen as an application of the aesthetic of permutation (ie. that a unit may have multiple functions depending on context) with regard to pitch. The following figures show the two harmonic areas used. Fig. 9.5 is understood as being in B♭ minor, with the seventh either raised (A♯) or not (A♭). Fig. 9.6 is understood as being in A major or D major.
As can be seen, four of the pitch-classes are enharmonic equivalents. These pitches can be interpreted as being in either area, depending on context. Principally the first area is suggested by melodic movement from either F₄ or A₄ to B♭₄, and the second area is suggested by omission of the F₄ and B♭₄. The fact that the units are in a state of constant re-juxtaposition maximises the effect of this harmonic ambiguity.

9.2.3 Notational ambiguity

The elements of the piece as described so far constitute dramatically ambiguous material that a performer and director could interpret in many different ways. Further suggestions for interpreting the different functions that a unit can have are given by notating the same unit in slightly different ways on different occasions. These are ambiguous with regard to conventional musical notation, and are thus not intended to be prescriptive. They are merely intended to suggest to the performer that a different interpretation is required on each of the different occurrences of the unit. Fig. 9.7 shows bars 62, 65, 72 and 118, which all feature the same figure, notated in slightly different ways.
### 9.3 The course of the work

<table>
<thead>
<tr>
<th>Bar number</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introductory section</td>
</tr>
<tr>
<td>8</td>
<td>3-note phrases using permutation X12. Harmonic area 1</td>
</tr>
<tr>
<td>53</td>
<td>Phrases of 4 units (each of which is a sub-phrase) using permutations 3X21 or 2X41. Harmonic area 1.</td>
</tr>
<tr>
<td>73</td>
<td>Increased use of units consisting of a single note. Movement towards harmonic area 2 (by means of decreased frequency of F and B♭).</td>
</tr>
<tr>
<td>101</td>
<td>Section in harmonic area 2, with single-note units. Permutation 3X41 used in addition to the two already in use.</td>
</tr>
<tr>
<td>118</td>
<td>Occurrence of pitch-class B♭ initiates movement back to harmonic area 1.</td>
</tr>
<tr>
<td>133</td>
<td>Section implying the dramatic crux of the work, with faster movement. Mainly in units consisting of sub-phrases, and predominantly in harmonic area 1</td>
</tr>
<tr>
<td>161</td>
<td>Reflective coda, with new pitch material</td>
</tr>
</tbody>
</table>
X: Driving through the waste territories: (Winter) for brass quintet

10.1 Introduction

This work develops the idea of the inexpansive, registrally-bounded line. The monothematic line (which predominantly occurs in the Trumpet 1 part) is given variety by being broken up with rests of different lengths and being harmonised differently each time the same material occurs. The work exhibits the influence of Tom Johnson's aesthetic of making simple and unadorned numerical patterns the central focus; over the course of the work, the typical gesture is of a florid line being gradually reduced to its bare and formulaic essentials. The work is a study in understatement, meaning here that significant changes occur at the structural level by means of a subtle and small change at the superficial level. This understatement takes two forms in this work:

1. Reharmonisation of a repeated motif: the melody line remains unchanged while harmonic shifts occur in the lower parts. Typically, the first occurrence of the motif is preceded by rests in the part that contains it, and the second occurrence is succeeded by rests, creating a situation of ambiguity where the same motif functions both as an opening and a closing gesture. In some passages (the formulaic sections mentioned above), the technique of isorhythm is used. In this technique, a rhythmic cycle (talea) is applied to the rhythm of a line while a melodic cycle (color) of a different length is used to determine the pitches. In this work, two lines are used each with its own talea and color in such a way as to create a reharmonisation of a motif when it is used for the second time.
2. Harmonic changes: a movement in one part of one semitone can lead to a significant harmonic change, where the harmonic function of the unchanged notes in the second chord is different to that in the first chord.

Other features of the work that will be mentioned in the following analysis include:

- A two-note rising semitone motif with a function that varies depending upon its context. When used at a faster speed it provides generic material, and when at a slower speed it acts to signal a change of section, or a significant harmonic change as in 2) above. In the faster material it can be used in conjunction with a rising minor third motif, which can open or close a phrase as described in 1) above.

- Harmonic features. Much of the harmonic material is derived from a collection of pitches consisting of two perfect 5ths/perfect 4ths a semitone apart, such as the following:

  ![](image)

  Fig. 10.1

  Harmonic development is often achieved by means of one part moving by a semitone to or from a chord such as this. The primary pitch centre in the bass is A, and the secondary is C#.

- Contour rule. The pitch content of each line is frequently constrained by a contour rule whereby moving by more than a certain number of consecutive moves in the same direction is not permitted.
Much use is made of heterophony, where similar lines are presented at different tempi simultaneously (whether metrically independent or written out). Rhythm is used to define and articulate the form, so it will not be analysed separately.

10.2 The field of action

10.2.1 Reharmonisation

10.2.1.1 Reharmonisation using isorhythm

First to be discussed is the use of isorhythm. Fig. 10.2 shows the talea and color pattern used most often. In this diagram, the lines of the stave indicate three or four distinct pitches. Precise pitches are not shown, as they are different each time this isorhythmic passage occurs.

![Fig. 10.2](image)

Line 1 (upper stave) has a talea of four notes and a color of three; line 2 (lower stave) has a talea of three notes and a color of four. Each iteration of the talea is indicated by a bracket over the notes. Most often, each iteration is one bar long. It can be seen that at the fourth iteration of the talea, line 1 has returned to its original melodic material, whereas line 2 has not (and is particularly different due to the absence of the first note of the color from that iteration of the talea). This provides the effect of a reharmonisation of the first iteration of the talea when it recurs as the fourth iteration. This pattern is used for three of the 'formulaic' sections, namely bars 117–120 (horn, tuba), bars 135–138 (trumpet 1, tuba), bars 195–198
(trumpet1, tuba). Bars 195–198 are shown in Fig. 10.3:

![Musical notation image]

**Fig. 10.3**

It can be seen that the trumpet 1 line in bar 195 recurs in bar 198 with different material in the tuba.
Bars 57–64 (trumpet 1, tuba) use a different pattern, shown in Fig. 10.4. On this occasion, the whole pattern is not used; only the portion to the right of the dotted line.

The corresponding excerpt from the score is shown below:
Here, unlike the previous example, the duration in between points where the beginning of the talea and color coincide is the same in both lines, meaning that the effect of reharmonisation does not occur. This pattern is also used in bars 150–153 (trumpet 2, tuba), with shorter note-values and other alterations.

### 10.2.1.2 Reharmonisation where isorhythm is not used

Fig. 10.6 shows a non-isorhythmic passage where reharmonisation is used: bars 20–24. The trumpet parts only are shown. In passages such as this (which form much of the first half of
the work), a contour-rule is applied, specifying that a movement upwards must be followed by
a movement downwards and vice versa. Movement by a semitone and a tone is more
common, with movement by a minor 3rd being more rare. Thus the minor 3rd can be used as a
structural signal. Here the rising minor 3rd motif is used both to open and close the phrase. It
can be seen that the C# and D under the brackets are reharmonised upon their second
occurrence.

Fig. 10.6

10.2.2 'Understated' harmonic change

Now follows an examination of some typical harmonic changes that exhibit the 'understated'
aesthetic. The following examples are a reduction of bars 117–120, one of the isorhythmic
passages. The first chord of Fig. 10.7 shows the pitches that occur in bar 117, the second those
that occur in bar 120. Fig. 10.8 shows the entire passage.

Fig. 10.7
Fig. 10.8
This change of harmony results from the continued repetition of isorhythmic patterns of different lengths. Figs. 10.9 and 10.10 show how this change can be interpreted as a mirror inversion around the axis of $B_\flat$. Fig. 10.9 shows the relevant pitches from Fig. 10.8, and Fig. 10.10 conflates them into one octave to show the inversion clearly.

The second bar of Fig. 10.10 is the mirror inversion of the first bar around the axis of $B_\flat$. By way of example, the $A_4$ in the first bar is a $\frac{3}{4}$-tone below $B_\flat$, and the $C_5$ in the second bar is a $\frac{3}{4}$-tone above $B_\flat$. The absence of $B_\flat$ in bar 117 and the absence of $A$ in bar 120 reinforce the interpretation of this passage as a transformation by mirror inversion.

Now follows an analysis of bars 150–154, which feature a mirror inversion around the axis of $F_\natural$. Fig. 10.11 shows the passage:
Fig. 10.12 shows the pitches that occur in bars 150 and 153, and the new pitch E₄ in bar 154 (the E₄'s and F₄'s in Tpt. 2 are not included as they are considered to be ornamentation.) Fig. 10.13, by changing some of the pitch-classes from Fig. 10.12 to a different octave placement than that in which they appear in Fig. 10.12, demonstrates how the change of harmony is a mirror inversion around the axis of Fₐ. The pitch-classes of bars 153–154 are in the top stave,
and the pitch-classes of bars 150 are in the bottom stave. The axis of inversion (F) is included in brackets. It is to be noted that many of the pitches are present in both chords, as pairs of pitch-classes were chosen that are mirror-images of each other around the axis (such as D and A). This was in order to have the minimum of change when the chords change. It is the semitone movement from B to C in the first trumpet which effects the harmonic transformation. Thus a movement of one semitone precipitates a significant harmonic change, in which the function of the unchanged notes has altered. It can also be seen that both chords in Fig. 10.13 consist of four interlocking perfect 5ths/4ths (for the first chord C#–G#, B–Gb, D–A, Bb–F). The movement to C makes this no longer the case, then the movement to Eb restores it.

Bars 226–230 display a similar mirror inversion, this time around Eb. However this time there is also a movement of one semitone to a chord consisting of three perfect 5ths. Fig. 10.14 shows the passage:
Fig. 10.14
Fig. 10.15 shows the pitches present in bars 226–227 and 230 (the A₁s in bar 230 are considered to be a hangover from the previous chord). Fig. 10.16, by altering the octave placement of some of the pitch-classes from Fig. 10.15 to a different octave, demonstrates how the change of harmony is a mirror inversion around the axis of E₄. The pitch-classes of bars 226–227 are in the top stave, and the pitch-classes of bar 230 are in the bottom stave. The axis of inversion (E₄) is included in brackets. It is to be noted that the diminished 5th B–F has been changed to the perfect 5th C♯–G♯ (the C♯ is circled in Fig. 10.16), so that the second chord consists of pairs of perfect 5ths. As stated earlier there is much use in this work of progressions to and from chords consisting of interlocking perfect 5ths; this provides a pivotal example.

These harmonic procedures are used to govern not only progressions of adjacent chords but some of the long-term harmonic structure also. For instance, bars 42 and 135 are both important structural moments in the work, and the first chord of bar 135 can be heard as being an inversion of the significant pitches which occur around the beginning of bar 42, as Fig. 10.17 shows:
The above moment in bar 42 is also related to the first chord of bar 37. Fig. 10.18 shows the relevant pitches; as can be seen in Fig. 10.19, the first chord is a transposition of the second. Thus the function of the A# within the chords is different although the pitch-class is the same.

10.3 The course of the work

The following timeline shows how the procedures are used over the course of the work, and the structural context in which they occur.

<table>
<thead>
<tr>
<th>Bar number</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–2</td>
<td>Introduction of rising semitone motif in tpt. 1 and primary and secondary pitch centres in the bass (A and C#). Hinted at by transposed version of these motifs placed side by side in tpt. 2</td>
</tr>
</tbody>
</table>
10  slow statement of theme in tpt. 1 (with application of contour-rule)
20  first statement of theme at the fast speed in tpt. 1
29  slap-tongue tba. passage hinting at tpt 1 line in bar 38–39
37  slow statement of theme in all parts, heterophonically
42  second statement of theme at the fast speed in tpt. 2
57  first strict use of isorhythmic patterns, as an interruption of the main thematic
    material. Based on bass pitch centre of C#
65  developmental section. Bars 84–86 explore further the timbral implications of
    the 'singing while playing' technique used sporadically in the tba. from bar 20
    onwards
92  slow version of theme stated heterophonically in tpt. 1 and hn.
99–104 tpt. 1 and tpt. 2 lines hint at bars 117–120 by the use of pitches G₄, A₄ and B₄
107–108 interlocking 5ths idea stated melodically in tba.
117–120 formulaic isorhythmic reduction of previous material
121  developmental section exploring heterophonic statements of theme
135  formulaic isorhythmic passage with rising semitone motif
150  isorhythmic passages, at a faster tempo than any heard previously, to signal
    movement towards the end of the work
164  digressive section which further explores 'singing while playing' technique in
    hn. and trb.
181  gradual reduction to formulaic isorhythm
195–198 formulaic isorhythmic passage, with rising semitone motif in hn.
226–230 harmonic change to a chord consisting of interlocking perfect 5ths. Movement
    from bass pitch centre of A to that of C#
simultaneous playing of decorated and simple versions of isorhythms
XI: Stream Line
for orchestra

11.1 Introduction
This work takes further the concept of the registrally-bounded line that is explored fully in all
its other parameters. The challenge was to write a work centered on a nonexpansive line (in
keeping with my aesthetic principles as outlined in the first chapter,) yet to use the full sonic
and textural resources of the orchestra.

11.1.1 Preliminary description of textural organisation
First to be examined is the textural organisation of the work. There is a principal melodic line,
which is normally in the central register (C₃–C₅) and at a loud dynamic level. There are also
subsidiary lines, which are higher or lower in register than the principal line, and are normally
at a softer dynamic level than it. Fig. 11.1 shows a typical example; in bars 204–206, the
principal line is to be found in the horns and violins I, the subsidiary lines in woodwind,
pianoforte, and other strings.
Fig. 11.1
The principal line is explored in terms of its speed, pitch content, and continuity/discontinuity; foremost, however, the line is explored spectrally.

11.1.2 The influence of Grisey's *Partiels*

The decision to explore the line spectrally was the result of an influence by Spectral music, and particularly from a study of *Partiels* by Grisey. Fig. 11.2 shows the string and trombone parts from rehearsal number 1 of *Partiels*. It can be seen that a timbre is being synthesised by means of allocating the strings pitches that correspond to partials of $E_2$, with the higher partials at a softer dynamic level. The partial numbers have been added to the example in circles. In addition, the trombone is gradually closing the Harmon mute, altering its timbre. These factors create a unified, blended timbre.

---

This unification of timbre and pitch-content is explored in *Stream Line*. Over the time-span of the work, the principal line varies timbrally by means of instrumentation, use of mutes, changes of dynamic level, and use of extended techniques. The pitches of the subsidiary lines are chosen in order to act as a timbral inflection of the principal line. They are often taken from the harmonic series of the pitch in the principal line (not necessarily at the octave at which they occur in the series). At other times, the opposite occurs: it is one of the subsidiary lines which provides the fundamental of the series, and the pitch of the principal line is taken from the harmonic series of this fundamental. Dynamics are chosen to increase timbral blending. The work differs stylistically from many previous Spectral works, in that it displays an emphasis on shorter note-values separated by rests, rather than sustained textures.

This analysis will focus first on global, unchanging attributes of the idiom of the work, in other words the field of action in which the work is situated, and then will proceed to examine the form of the work, focusing on how its ideas interact over the course of the work.

11.2 The field of action

11.2.1 Harmony/Timbre

11.2.1.1 Introduction

The most significant global attribute is the treatment of harmony and timbre, which, in the Spectral manner, is frequently treated as a single parameter. Harmony is treated in one of two ways, equal-tempered or overtone-based. These are two fundamentally opposite ways of dividing pitch-space: into equal divisions or into unequal. This is partly a matter of practicality: the microtonal inflections necessary for spectral blending are not feasible at a
faster tempo, so on these occasions 12-note equal temperament is used.

### 11.2.1.2 Inversion around a pitch

The primary means of harmonic transformation is inversion around a pitch. This can take two forms:

1. Using the pitch as a mirror: for two chords Chord 1 and Chord 2, for every note in Chord 1, a corresponding note occurs in Chord 2 which is the same interval above the mirror pitch as the original note was below it, or the same interval below the mirror pitch as the original note was above it.

2. For every note in Chord 1, a corresponding note occurs in Chord 2 which is in the same register as the original note, but with the interval between itself and the mirror pitch inverted (eg. Perfect 4\(^{th}\) changed to Perfect 5\(^{th}\)).

Using either one of these transformations by itself will result in a change of pitch-class content; using both together will result in no change of pitch-class content.

These transformations can on occasion be understood as manipulations of chords derived from the harmonic series, in which each interval in the chord is a ratio of two whole numbers. In the second type of transformation from Chord 1 to Chord 2, each interval will be inverted, and the ratio between the partial numbers will also be inverted (meaning that the new ratio = 1 divided by the previous ratio).
In each example, the bar number in which the chord occurs is shown above the chord, and the partial numbers in the same order as the chord, below. Fig. 11.3 is an example of the second type of transformation. The ratio corresponding to each pair of notes in the first chord is inverted in the second chord: \(1/(15/1) = 1/15\), \(1/(15/3) = 1/5\), \(1/(1/3) = 3 = 15/5\). In this transformation, intervals between the fundamental of a harmonic series and a partial in the same series will be changed to the inversion of that interval, and vice versa. Fig 11.4 is an example of both transformations applied together, hence there is no change of pitch-class content. Bars 265–266 are shown in Fig. 11.5:
These procedures were used in combination with a treatment of timbre based on a two-dimensional timbre map upon which all the instruments were assigned positions. It took the form

nasal   —  bright

|                |

pure   —  hollow

Unpitched noise is treated as being at the extreme right of the timbre map. Brighter sonorities are favoured whenever the chord is closer to a harmonic series in its normal form, and the other three categories when it is closer to an inverted harmonic series. The harmonic transformation can be accompanied by a similar inversion in the timbre of the instruments assigned to the notes of the chords, as is demonstrated by the following examples:
In Fig. 11.6, the second type of transformation is applied, around the pitch-classes G#/D. It can be seen that for any pitch in Chord 1, the instrument that plays it also plays the corresponding inverted pitch in Chord 2.

Fig. 11.7 represents an example of the first type of transformation; it takes place over three bars with the chords overlapping. The dotted line indicates that the two instruments connected by it are close to each other on the timbre map. It can be noted that the horn melodic line, which (because in Chord 1 it is below the mirror pitch) ascends in Chord 2 while the rest of the ensemble descends. Only the pertinent instruments are indicated above, and there is an addition to the second chord of G₁ to reinforce the bass.

In Fig. 11.8, the first type of transformation is applied around the pitch F₄. Here, as well as the inversion of instrumental timbre as shown in the figure, there is a transition between a darker sonority for the first chord, and a brighter sonority for the second. The first uses strings *sul tasto* and trombones with closed Harmon mute, and the second uses strings *ord.*, trombones with open Harmon mute, harp and piano. Fig. 11.9 shows bars 162–163 of the score.
This type of transformation was chosen because it allows a merging of the harmonic and the timbral; the harmony acts as an extension of the timbre, and is intended to emerge imperceptibly from it.

### 11.2.1.3 Harmonic areas

The most significant harmonic centres used in the work are C, E and A♭. The most frequent pitches used in the principal line are D♯⁴, E⁴, G♯⁴ and A♯⁴; these pitches can be enharmonically altered or inflected microtonally. Fig. 11.10 shows how these pitches are understood as partials of the three fundamentals; the partials are written in order next to the pitches.

![Fig. 11.10](image)

As the partial numbers are higher when C is the fundamental, this is taken to be the least stable of the three, and it is the sections where C is the fundamental that feature most use of noise, and of shorter durations.
As well as the harmonic procedures described above, which are related to the unequal
intervals found in the harmonic series, the work also contains examples of harmonic
structures based on repetitions of the same interval. These are sieves, as described by Xenakis.
He describes scales which differ from the traditional scales based on the octave, in that the
pattern of intervals in the scale repeats at an interval other than an octave, or consists of two
superimposed scales repeating at different intervals. As an example of the latter, he gives the
sieve C, D♯, E, F♯, G♯, A, C, D♯, E... This is formed by superimposing a series of ascending
minor 3rds over a series of ascending major 3rds, where both series begin on C.

On the majority of occasions in Stream Line, the second type of sieve (two superimposed
scales that repeat at different intervals) is used, and the scales used consist of a sequence of
pairs of pitches a semitone apart, and another sequences of pairs of pitches a tone apart. The
sequence of pairs a tone apart repeats at the interval of a minor 7th or minor 6th, thus using
pitch material solely from a whole-tone scale. This is in order that the sieve-derived material
relates to partials 7 to 11 of the harmonic series, and thus can be related to the overtone-based
harmony found elsewhere in the work. Xenakis describes how it is possible to transform a
sieve by changing the starting point of one of the series of repeating intervals. With regard to
his example described above, it would be possible, for instance, for the series of ascending
minor 3rds to begin on C♯ or D instead of C. In Stream Line, however, the predominant
means of transformation is to alter the repeating interval of one of the series (leaving the other
series intact). Bars 324–334 of the work, shown in Fig. 11.11, display an example of this

3 Ibid., 276.
procedure. Fig. 11.12 is a reduced version of this passage for the purpose of analysis.
In the example, the two series of intervals that together constitute the pitch material for each bar are shown separately. It can be seen that the first chord in each bar consists of a series of superimposed pairs of notes a semitone apart, with the same interval between each pair (in this case, a minor 7th); the second chord is a series of pairs of notes a tone apart, with a minor 7th between each pair. The empty noteheads show the pitches that are in common between one occurrence of a series and the previous occurrence, in other words the common pitches in the modulations. It can be seen that the modulations are effected by altering the interval between the pairs of tones or semitones. For instance, in the transformation from bar 324 to rehearsal no. 1, the series of tones remains unchanged. The interval between the pairs of semitones changes from a minor 7th to a major 7th; E₆ and F₆ are the pitches in common.

11.2.2 Rhythm

An objective in the composition of this work was to explore a rhythmic element of timbre. This is treated as another means for inflecting the principal line. The rhythmic element comes to the fore in sections where the principal line has split in two (for example, bars 27–45),
creating a difference tone between the two notes. In the work, this difference tone was selected to occur within the 'critical band' between rhythmic pulsation and pitch (10Hz–20Hz). In these cases there is a rhythmic element already perceptible in the tone (because in these cases the principal line is played by the horns (sometimes doubled by trombones), whose relatively pure tone will result in more audible difference tones.) Lines with regular rhythmic pulsation are added in the woodwind, harp, piano and percussion, with the speed of the pulsations related to the two principal line pitches, and the interval between them, as described below. This is with the aim of expanding and developing the rhythmic component already present. As already noted, the central line is treated as a series of overtones of a fundamental pitch, and the specific partials used are a factor in how the speed of the additional pulsation is calculated. In these sections, the fundamental is C, except in bars 315–320 where E is the fundamental.

The technique of relating a selection of overtones of a fundamental to a selection of rhythmic pulses at different speeds has a rich history of usage, particularly in the American experimental tradition. It was suggested by Henry Cowell in *New Musical Resources.* In these cases the norm is for the speeds of pulsation each to be relative to a partial number of a given fundamental. For example, a fundamental might generate a speed of pulsation at $\sigma = 60$, the second harmonic at $\sigma = 120$, and the third harmonic at $\sigma = 180$. Where *Stream Line* differs from this is in its use of the difference tone, as well as the partial number, to calculate the speed of pulsation, meaning that there is an audible relationship between the principal and subsidiary lines.

For each of the two pitches in the principal line, there are two methods of calculating the

---

duration of the units of the subsidiary rhythms, meaning that there can be up to four speeds of
pulsation at once. These methods take into account both the partial number of one of the
pitches, and the difference (counted in partials) between the two pitches. The methods either
divide or multiply a fixed duration. The two means of calculation are:

1. Duration of unit = \( \frac{2 \text{\( q \) x Difference tone (measured in partials))}}{\text{Partial number}} \)

2. Duration of unit = \( \frac{16 \text{\( q \)}}{\text{Partial number x Difference tone (measured in partials)}} \)

In the first method, the speed of pulsation decreases as the difference tone increases; in the
second method, it increases as the difference tone increases. The second method also produces
a relationship between two subsidiary lines that is related to the harmonicity of the principal
line dyad: the more harmonic the dyad, the more rhythmic coincidences there will be between
the subsidiary lines. In both cases, the resulting rhythm is related to both the partial number
and the difference tone. This will be demonstrated below.

Some other remarks:

1. On occasion, the calculation results in a rhythm that is so complicated as to be unfeasible in
performance. In these cases, the rhythm is simplified to a similar speed but a simpler rhythmic
relationship to the tempo.

2. Notes in the rhythmic pulsation calculated can be changed to rests.
3. The subsidiary rhythms do not start at the same time as the dyad they are derived from; rather they are delayed so as to seem to grow from the audible difference tone.

The following examples demonstrate these subsidiary rhythms. The partial number is written above the relevant notes in the central line. The points at which the difference tone is calculated are indicated by dotted lines between these numbers.

Fig. 11.13

Fig. 11.14
In Fig. 11.13, the clarinet 2 line is calculated from the 12\textsuperscript{th} partial, first with a difference of 1 partial (12-11) and then of 3 partials (15-12). The second method of calculation is employed (Duration of unit = 16\(\text{crotchets} / (\text{Partial number} \times \text{Difference tone (measured in partials))}). 16 crotchets divided by 12 results in a speed of triplet crotchets. The change to a difference of 3 partials means that the speed increases threefold.

In Fig. 11.14, the first method is employed (Duration of unit = (2\(\text{crotchets} \times \text{Difference tone (measured in partials))} / \text{Partial number}.) The flute 1 line is calculated from the 12\textsuperscript{th} partial, first with a difference of 4 partials (16-12) and then 2 partials (12-10.) 2 crotchets divided by 12 results in a speed of triplet semiquavers; multiplied by 4, this results in triplet crotchets, then multiplied by 2 results in triplet quavers.
In Fig. 11.15, the second method is used. The harp part is calculated from the 16th partial, the flute 2 part from the 20th. The difference in partials proceeds from 3 (19-16), to 4 (20-16), to 1 (20-19.) In the harp part the change from 3 to 4 results in a change from triplet quavers to semiquavers, and in the flute 2 the change from 4 to 1 results in a change from quintuplet semiquavers to quintuplet crotchets. When the 16th and 20th partials occur together, the interval is more harmonic (as the two numbers have a common factor of 4). It can be seen that if the subsidiary rhythms were allowed to continue for the full 16 crotchets, they would coincide rhythmically four times. Hence the degree of harmonicity in the dyad is reflected in the degree of rhythmic coincidence in the subsidiary lines.

11.2.3 Coordinated versus independent tempi

The instrumental lines can either be coordinated metrically by the conductor, or can be repeating mobiles in independent tempi, where the change from one mobile to the next is signalled by the conductor. An example of the latter can be seen in Fig. 11.11 above.

11.2.4 Interspersing of principal line with rests

Another way for the principal line to be varied is by the interspersing of its notes by rests. This can apply to both when the line is pure pitched notes, and when it is noise. The introduction of longer rests can formally articulate the line and is used to create closing gestures which have the function of ending sections. Bars 271–281 (shown in Fig. 11.16) display an example of the use of rests to intersperse the line. The G#s are the principal line.
11.2.5 Dynamics

*Crescendi* are used as a means of transition from the principal line on its own, to an expanded principal line where other instrumental forces are in play. The result is that the principal line is expanded rhythmically and timbrally. This is because, at a louder dynamic, the higher partials in the tone are more prominent. If the principal line is split in two, the rhythmic component produced by the difference tone is more prominent. Hence a gradual transition from a non-expanded to an expanded principal line can be achieved.

11.3 The course of the work

*Stream Line* is a large-scale single-movement work in which the ideas described above are played out, and interact with each other. The following timeline will show how they interact over the course of the work. The overall structure is that of a steady state which is periodically interrupted by passages consisting of mobiles in independent tempi, with pitch material based on sieves. As the work progresses, these passages are played by more instruments: woodwind (bar 66); woodwind, percussion and piano (bar 246); woodwind, piano, harp and strings (bar 324).

<table>
<thead>
<tr>
<th>Bar number</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Principal line occurs octave higher, broken-up and with a high noise component</td>
</tr>
<tr>
<td>21–23</td>
<td>Introduction of a longer gap into the melody, creating a closing gesture</td>
</tr>
<tr>
<td>27</td>
<td>Principal line appears sustained for the first time, in hns. Rhythmic expansion of line</td>
</tr>
<tr>
<td>47</td>
<td>Natural harmonics introduce the fundamentals C and E</td>
</tr>
</tbody>
</table>
Reprise of broken principal line from b1 with less of a noise component. Now combined with sustained principal line in hns

Rhythmic extrapolations followed by disintegration of metre, and employment of mobiles, with pitch material based on sieves. Principal line in abeyance. Acts as a transition to a more broken-up section. Instrumentation: ww.

Closing gesture in str. as in bars 21–23, but this time preceded by a penultimate gesture

Broken-up material based on fundamental of C. D♯₄, E₄, G♯₄ motif altered to C♯₄, D₄, G₄. Use of rhythmic material from bar 1 but not its pitch material

Return of principal dyad line (with rhythmic extrapolations). This time with more exploration of implied harmonies (fundamentals of C, E, A♭)

Harmonic/timbral expansions upwards and downwards of principal line (at first principal line is kept to D♯₄, E₄.) These expansions increase in range as the section proceeds. Principal line remains sustained

Timbre becomes noise-based. Line breaks up, using rhythm from bar 80

Sustained principal line interacts with the 'broken line' idea, as there are rests present. Timescale of these notes and rests is longer than previous. Also the noise-based 'broken line' idea from before continues

Mobiles, this time with the noise-based broken-up material rather than with sieves

Resumption of timbral/harmonic expansions of principal line

Modulation from A♭ to E using harmonic inversion

Timbral/harmonic expansion process becomes noise-based and broken-up

Mobiles, this time based on pitches derived from harmonic inversions.
Instrumentation: ww., perc., pf. Principal line in abeyance.

247 Penultimate gesture and closing gesture in str. as in bar 74, but this time in longer note-values and with a transition from noise to pitched sound.

258 Sustained line on a single pitch, broken up into long note values, with harmonic inversions applied with timbral alterations.

281–4 Modulation from $A_b$ to $E$ using harmonic inversion, followed by a gradual ascent and descent of the principal line, the only time it 'moves' rather than 'being expanded'.

297 Broken-up material from bar 80, this time with gradual addition of $D#$, $E$, $G#$ motif.

307 Reprise of broken principal line as in bar 53 (ie. played by str., with principal line dyads in hns., this time with no noise component in str.). Louder and more extended, with a modulation to $E$ then back to $C$.

324 Mobiles using sieve pitch material. Instrumentation: ww., pf., hp., str. Principal line in abeyance.

336 Penultimate and closing gesture from bar 74, this time played by brass, highly decorated.

344 Final section, based on fundamental of $C$, with a significant noise component. Principal line contains shorter note-values than previously. The changes in direction of the expansion of the principal line are more sudden.
Appendix I: nighct
for electronics

nighct is a miniature which was created using the programme Cubase from two samples, the
first of a violin playing a note with ricochet bowing, the second of a horn played using the
half-valve technique. The aim of the piece was to use these fragments to create a structure
that uses inexact repetitions to create unpredictability. Silence is also employed with the same
aim. Each sample was divided into two halves; these shall be termed 1/1 and 1/2 for the first
sample, and 2/1 and 2/2 for the second sample. By the predominant use of these portions of
the samples, the occasions that the sample is played all the way through act as an unforeseen
development of the portion. The following shows how the piece proceeds and the significance
of any major changes:

<table>
<thead>
<tr>
<th>Time (min:sec)</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:00</td>
<td>1/2 repeated in irregular patterns, punctuated with silences of different lengths</td>
</tr>
<tr>
<td>0:32</td>
<td>First playing of complete violin sample (1/1 + 1/2), preceded by silence, followed by 1/2 repeated in irregular patterns as before</td>
</tr>
<tr>
<td>1:10</td>
<td>Complete violin sample played, immediately preceded by 1/2</td>
</tr>
<tr>
<td>1:13</td>
<td>First occurrence of 2/2</td>
</tr>
<tr>
<td>1:24 – 1:25</td>
<td>Occurrence of 1/1, followed a second later by 2/2 (closer together than in 1:10 – 1:13)</td>
</tr>
<tr>
<td>1:29</td>
<td>Complete horn sample played (2/1 + 2/2)</td>
</tr>
</tbody>
</table>
1:36  First occurrence of 1/1 that is not followed by 1/2

1:37  Final occurrence of 2/2

1:45  From here until the end, occurrences of 1/1, punctuated with silences of different lengths. Some of these are preceded by 1/2, but none are followed by 1/2

2:24  End of piece
Appendix II: Pool
for Irish lever harp

1. Introduction

This work is a miniature which consists of a single gesture taking place over its short
duration. Its homogenous nature was guaranteed by the use of rules governing the pitches
used, as will be described. The rules chosen were sufficiently complex in their interaction
with the material as to create an apparently irregular result. Notwithstanding that, occasionally
the rules are not adhered to, in order to avoid monotony. Their function is simply to create an
overall character for how the work proceeds. The use of such rules, and the paradoxical effect
of creating a sense of irregularity and chaos, is influenced by the work and aesthetic found in
the later work of Ligeti.¹ These rules are applied to an unchanging pitch collection, from
which two voices (Voice 1 notated with upwards stems, Voice 2 with downwards) take
gradually larger, ascending phrases. The work proceeds mainly by alternating between Voice
1 and Voice 2, as the following example demonstrates:

![Fig. 1](image)

The work begins with the highest pitch, then lower pitches are added, gradually descending
through the collection in order. The phrases of Voice 1 always conclude with the highest pitch,

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A♭₄. This can be considered akin to the reharmonisation of an unchanging pitch, a technique which is found in other of the works in the portfolio. This reflects the aesthetic of the registrally-bounded line, altered in other parameters or by the context it is placed in, which is being explored in these works. Rhythm will not be discussed, because the work consists of a monophonic line of quavers, to be played in relatively free rhythm.

2. Pitch material

The decision to use an unchanging pitch collection is a response to the features of the Irish lever harp. Unlike the concert harp, where each letter-name is altered by a pedal to be either flat, natural, or sharp (this applying to all pitches of that letter-name across the range), the Irish lever harp allows individual tuning of each string by means of a lever which may be placed in one of two positions. The first position sets the strings at the pitches A♭, B♭, C, D♭, E♭, F, G; the second raises them a semitone to A, B, C♯, D, E, F♯, G♯. Because each string may be tuned individually, a chromatic pitch-vocabulary is able to be achieved simply, whereas on the concert harp it would either necessitate frequent pedal changes or would not be possible. However certain semitone combinations are not possible on the Irish lever harp: A♯–B, D♯–E, F–G♭, or their enharmonic equivalents. This was taken into account in the construction of the pitch collection.

The pitch collection is chromatic, except that pitch-classes B and D do not occur. The A♭₄ with which the work begins is reharmonised differently with the addition of each lower pitch. The perception of reharmonisation is magnified by the use of triads in close position in the pitch collection. Fig. 2 shows the pitch collection with some of these triads marked.
Although the left-most F# major triad is not in close position, the absence of the pitch-class D means that the lowest two pitches will be interpreted as part of an F# major sonority rather than Bb major, as would be the case were the D present. Thus the principal tonal areas in the order that they occur are: Db major, C major, A major, F# major, F major, F# major. The movement from F# major to F major and back has the function of closing the work. In the complete pitch collection, as is present in the final part of the work, the number of pitches present from each triad mentioned above is approximately the same, in order that the work ends balanced between these harmonic areas and that the movement to F# major is not overemphasised. There are present six pitches from the F# major triad, six from F major, six from A major, five from C major, and six from Db major.

3. The use of rules

As stated above, the descent through this pitch collection is governed by certain rules, which were chosen to be sufficiently complex in their interaction with the material as to create an apparently chaotic result. The rules were used to create an overall character for the work, and hence were overridden when their use would create an undesirably monotonous result. This
use of rules to create chaos reflects the influence of Ligeti’s work from the 1980s onwards, such as the *Études pour piano*\(^2\). In the first Étude, *Désordre*, phrases of different lengths in each hand are subjected to shortening of note-values upon each repetition of the phrase. Because the phrases are of different lengths, the interaction between the phrases in each hand changes in a quasi-chaotic manner. Below is the opening of *Désordre* (simplified by the omission of articulations, dynamics and performance instructions); it can be seen that, at the point marked with asterisks, the phrases of upwards-stemmed notes become unsynchronised.

![Fig. 3](image)

In *Pool*, the rules described below are applied until the fourth system of page 5, whereupon the alternation between the two voices becomes less frequent, creating short figures of between one and four notes in length.

The rules operate by dividing whichever portion of the complete pitch collection is currently being used into two voices containing an approximately equal number of notes. Voice 2 contains the lower section of the portion, Voice 1 the higher. As stated earlier, notes are taken from the two voices in ascending order. The pitches used alternate between the two voices,\(^2\) Ligeti, G. 1985. *Études pour piano–premier livre*. Mainz: Schott.

176
apart from the first two notes of Voice 1 between which there is no note from Voice 2. The voices grow by means of transferring notes from the end of Voice 2 to the beginning of Voice 1, and by adding notes to the beginning of Voice 2, on occasions determined by two rules:

1. When the last note of Voice 2 immediately follows the last note of Voice 1, that note is dropped from Voice 2 and added to the beginning of Voice 1 (so that Voice 1 grows by one note). An extra note is added to the beginning of Voice 2 in its next occurrence.

2. When the last note of Voice 2 immediately precedes the penultimate note of Voice 1, a note is added to the beginning of Voice 2 in its next occurrence. Voice 1 does not change in length.

In Fig. 4, the circled 1s indicate two occasions on which rule 1 has been applied; the circled 2s two occasions on which rule 2 has been applied:
The circled X in Fig. 5 indicates an occasion upon which rule 1 would normally be applied, but has not been on this occasion.

It can be seen that the compositional ideas resulting from the influence of Ligeti have been adjusted to suit the style and aesthetic being developed. It was desired that there should be an imperceptibility to the addition of notes to Voice 1 by the application of Rule 1; the fact that this was achieved is partly due to the scalar nature of the pitch collection, and partly because the note that is in both Voices (with stems in both directions) is expected to occur at that point in Voice 2. (It is only when the new note is added to the beginning of Voice 2 that it is realised that the note with stems in both directions has been transferred to Voice 1.) This is in line with the aesthetic of understatement being explored in this portfolio. The addition by Rule 2 of the new note just before the highest pitch of Voice 1 makes more explicit the reharmonisation of that note; again, this is a feature of the style being developed. Like Ligeti's *Désordre*, the work proceeds by two layers containing phrases of changing lengths which are predominantly different in each layer. Here however, the changes result from the interactions of the rules being applied with the changing musical material produced as a result of those rules, rather
than being applied as a pre-compositional scheme.
Bibliography


Commissioned for Maree (Conlan) Kelly
by Mark McCann and Nicola Kelly

Duration: 14 minutes
Year of composition: 2006

Notes for Performance

1. Barlines are for orientation only.

2. Two signs are used for the release of the Pedal: 🌟 indicates a quick release, △ or ◼ a slow release.

3. The Pedal markings given are not intended to be comprehensive; use of the Pedal is at the performer's discretion throughout, except where marked.

4. Accidentals remain in force throughout the bar.

5. Dotted or continuous straight lines are used to indicate the voice-leading.

6. 3P indicates the use of the sostenuto pedal

Programme note:

This piece was inspired by the ‘cantabile’ possible on the piano, where a succession of very discrete, block-like sounds can become a singing line. This has become so familiar through the piano repertoire that sometimes the strangeness of this (mis-)perception is forgotten. Here I've slightly accentuated, or dramatised, the block-like element in order to point up the contrast, often by looking for ways of writing and playing that highlight the sound of the piano mechanism itself.

I've also tried to expand this idea to encompass the form of the piece, so that even though the action within each section often seems frozen, a sense of hard-to-define development can be felt connecting them.
Not objects

for Maree (Conlan) Kelly

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crescendos apply only to the marked line.

\[ \text{f dry} \]
lots of \textit{fed}.
cluster from A♭ to D inclusive. When a note in the cluster recurs in the upper stave, the key is to be restruck then held.

** cluster as before, from A♭ to D inclusive. One of the notes is to be omitted from the cluster. This note is indicated in brackets.
depress pedal at the same time as the right hand note indicated
(rather than after, as for legato pedalling)
Mixed Circuits

by David Bremner

for Anthea Bremner and the Furness Chamber Orchestra

2007
INSTRUMENTATION

2 Flutes
2 Oboes
2 Clarinets in B flat
2 Bassoons
2 Horns in F
2 Trumpets in B flat

Percussion (2 players):
Timpani - pitches:

Snare Drum
Vibraphone
Crotale - pitches:

3 Wood Blocks (high, mesum & low)
Suspended Cymbal

Harp
Pianoforte

Solo Violin I
Violin I
Violin II
Viola
Solo Cello
Cello
Double Bass

DURATION - 14 mins

NOTES

1. Accidentals last for the duration of the bar.
2. Barlines are for orientation only and should not imply a stress on the first beat.
3. The piano should be prepared beforehand by sliding sheets of paper between all the dampers and the strings. The sustaining pedal will need to be pressed for this to be possible. If an upright piano is being used, at no stage should the sustaining pedal be pressed after the preparation or the paper will fall. The paper should remain in place throughout the performance.
4. In bar 185, the pianist is asked to stop the string one inch from the end with the right hand (while playing the note with the left). This is to be done by reaching inside the piano. If an upright piano is being used, the top should be left open for this purpose.
5. The sign , used in the harp part, indicates that the strings in the range covered by the line extending from the sign should be damped with an audible thud.
6. The ricochet bows in the cello and double bass from bar 210 on should be played with a downbow in which the bow is projected at the string by the hand from a distance (with a good deal of force), while moving the bow across the string normally. The bow will bounce a few times before settling on the string. The pressure should continue after the first bounce so that the timespan between each bounce decreases.
7. The clarinets in bars 16-27 should obtain a tone that is about 20% pitched note, 80% breath sound (white noise). This is done by breathing more air through the instrument than is normal.

Programme note:

The orchestral piece ‘Mixed Circuits’ is an exploration of musical thought proceeding at two or more speeds simultaneously. Melodies arise as part of cycles of different lengths, resulting in different combinations each time the melodies occur; each progresses in a natural development at its own pace. These cycles sometimes emphasise a ‘clunky’, mechanical type of movement, sometimes a more fluid one. While not imitating any particular style, the structural clarity found in some pop music has been a model for the organisation of the piece.
S. Vln. I
molto legato, poco espress.
poco espress.
molto sul tasto
molto legato, poco espress.
expansory, with a littleRubato
where the line needs it
molto legato, poco espress.
exploratory, with a little Rubato
where the line needs it
molto legato, poco espress.
motor off; dampers on; hard mallets
energico

mysterious, with muffled energy
Out here on Cottage Grove it matters.

for Viola, Cello, Double Bass and Percussion

by David Bremner
Instrumentation:

Viola
Cello
Double Bass
Percussion (vibraphone, marimba, cymbal)

Duration: 10 minutes
**NOTES**

*Out here on Cottage Grove it matters.* is an improvised process piece. Each player is given a score showing the structure of the piece, a set of processes which are called upon at various stages during the score, and a pitch lattice which can provide pitch material to be used in the processes.

**The score**

The score consists of a series of passages, indicated by rehearsal numbers. For most of the piece, the players execute the processes as specified at any point in the score; the score simply shows the range within which these are to be played, with cues and approximate timings, and some performance directions.

**The processes**

Each player is given two or three simple processes, which are to be memorised. These mostly involve rearranging the order of the notes in one phrase to form the next phrase. The processes are not intended to be played inflexibly; they should occur at the natural speed of thought, so the music is actually being thought up on the spot. A process can either be at a slow or a fast speed; a slow process is effectively a slowed-down thought. A superimposition of one instrument playing a fast process with one playing a slow process might result in the following:

![Diagram of musical notation](image)

The bowings and articulation in the example above are typical.

A process can either be fixed or mobile - this is apparent in the score. A mobile process uses the process to move through the lattice, whereas a fixed process is limited to a square of four pitches on the lattice (continually recycling the same four pitches). (For the percussionist, the processes can also be fixed or mobile, but the pitches are chosen freely). When a fixed process changes to a mobile one, the fixed-process pitches are used as the starting point for the mobile process (the indication 'MOVE' is given in the score). When a mobile process changes to either a fixed process or a written-out pattern, and the pitches reached at that point are stuck to (the indication 'FREEZE' is given in the score).

If the notes at the end of a section are to be used again at the start of the next phrase (following a rest), this is indicated by the instruction 'KEEP', then 'USE' at the phrase in which they are to be used.

**The pitch lattice**

Create phrases as specified in the processes or in the score by moving note-by-note through the lattice. Movement can be from one note to any adjacent note (left, right, up, down or diagonal movement). A suggested way of reading the fast mobile processes through the lattice is to visualise each phrase as a triangle on the lattice.
What to read

For the fixed processes using the lattice: if the pitches are not already determined, choose a square of four pitches (in the given range) from the lattice. Then apply the process (which has been memorised) to those pitches, while continuing to read from the score.

For the mobile processes using the lattice: memorise the cues in the score indicating when to start and finish (suggestions of the range to be used are also given). Then read from the lattice (using the memorised process), until the cue for finishing occurs; then return to reading from the score.

Other points

Not much indication is given with regard to timbre or dynamics. This is simply to avoid there being too much information in the score; feel free to use the full range of which the instrument is capable.

The cues given do not need to be followed to the millisecond; in fact a certain raggedness is desirable.

Timespans mean that the player to who they are given is responsible for counting them and initiating whatever action follows the timespan.
VIOLA PROCESSES

Process 1
Create a path through the lattice broken up into phrases of between three and six notes long. For each phrase, repeat the previous phrase with one, two or no notes missing from the beginning, and one or two notes added to the end.
Example (fast):

![Musical notation for Process 1](image)

Process 2
Create a path through the lattice broken up into phrases of between three and six notes long. For each phrase, repeat the previous phrase with one, two or no notes missing from the end, and one or two notes added to the beginning.
Example (slow):

![Musical notation for Process 2](image)

Process 3
Reordering of a fixed set of four pitches. Always slow. If 1 = the first note of the previous phrase, 2 = the second, etc., the next phrase can be in the order 3421 or 1432. Each time, choose between one of these options. Neither of the options should occur more than three times in a row.

It may be helpful to think of the 3421 reordering as being in pairs: the last two notes of the previous phrase are repeated immediately, then the first two played in reverse. Similarly, in the 1432 reordering, 1 and 3 stay in the same position and 2 and 4 swap.

Example:

![Musical notation for Process 3](image)
CELLO PROCESSES

Process 1

Following each 3 note phrase, play a new one consisting of the third note then the first note of the last phrase, then a new note of your choice from the notes adjoining on the lattice.

Example (fixed, fast):

Process 2

Following each 3 note phrase, play a new one consisting of the second note of the last phrase, then a new note of your choice from the notes adjoining on the lattice, then the first note of the last phrase.

Example (mobile, slow):
DOUBLE BASS PROCESSES

Process 1
Create a path through the lattice broken up into phrases of between three and six notes long. For each phrase, repeat the previous phrase with one, two or no notes missing from the beginning, and one or two notes added to the end.

Example (fast):

\[ \begin{array}{c}
\text{\textbackslash - 160} \\
\end{array} \]

\[ \begin{array}{c}
\text{\textbackslash - 160} \\
\end{array} \]

Process 2
Following each phrase, play a new one consisting of the third note of the last phrase, then one or more notes of your choice from the notes adjoining on the lattice, then the second-last note of the last phrase.

Example (fast):

\[ \begin{array}{c}
\text{\textbackslash - 160} \\
\end{array} \]

\[ \begin{array}{c}
\text{\textbackslash - 160} \\
\end{array} \]

Process 3
Following each 3 note phrase, play a new one consisting of the first note then the third note of the last phrase, then a new note of your choice. The lattice is not used.

Example (fast):

\[ \begin{array}{c}
\text{\textbackslash - 200} \\
\end{array} \]

\[ \begin{array}{c}
\text{\textbackslash - 200} \\
\end{array} \]
PERCUSSION PROCESSES

Process 1

Following each 3 note phrase, play a new one consisting of the second note of the last phrase, then a new note of your choice, then the first note of the last phrase.

Example (slow, fixed):

\[ \text{\begin{music}
\end{music}} \]

- 60

Process 2

Following each 3 note phrase, play a new one consisting of the second note of the last phrase, then a new note of your choice, then the last note of the last phrase.

Example:

\[ \text{\begin{music}
\end{music}} \]

- 200
Viola lattice
Cello lattice
Double Bass lattice
Percussion lattice
Out here on Cottage Grove it matters.
for Ensemble ICC

David Bremner

1. improvise, exploring lattice, using following rules: if cello is in high register, descend
   if cello is in low register, ascend

pp sul tasto poco cresc.

pp sul tasto poco cresc.

pp sul tasto poco cresc.

50''


= 63 poco sul pont.  USE

seamless transition

mp

= 63 poco sul pont.  USE

= 63 Cymbal (soft sticks)

pp
5

\( \text{\( \frac{3}{4} \)} = 63 \) very high note ord.

\( \text{\( \frac{3}{4} \)} = 63 \) ppp

Vlc.

\( \text{\( \frac{3}{4} \)} = 63 \) very high natural harmonic on D string arco

\( \text{\( \frac{3}{4} \)} = 63 \) ppp

Db.

\( \text{\( \frac{3}{4} \)} = 63 \) Vibraphone (soft mallets, dampers off, motor on)

Perc.

6

50''

Process 2 (fast, slowing down)

\( \text{\( \frac{3}{4} \)} \) cresc.

mf give cut-off

Process 1 (slow, speeding up)

\( \text{\( \frac{3}{4} \)} \) cresc.

Vlc.

\( \text{\( \frac{3}{4} \)} \) cresc.

mp

Db.

Cymbal (soft sticks)

Perc.

- 6 -
\[ \text{\textbf{Vla.}} \]
\[ \text{\textbf{Vlc.}} \]
\[ \text{\textbf{Db.}} \]
\[ \text{\textbf{Perc.}} \]

- \[ \text{\textbf{Vibrphone}} \text{ (motor off, dampers off, soft mallets)} \]

\[ \text{\textbf{Vibraphone}} \text{ (motor off, dampers off, soft mallets)} \]
\( \text{\textcopyright{music notation}} \)

- 10 -
Composure

for bass clarinet

Duration: 7 mins

Commissioned by The Arts Council for Paul Roe

Note for performance:

The score is to be made visible for the audience (either the score used by the performer or by projection). The score is A0 size; use of a smaller score is acceptable for perusal but not for performance.

Programme note:

This work was composed in collaboration with the bass-clarinettist Paul Roe. When experimenting with the extended techniques possible on the instrument, it became clear that many of them had indeterminate results that would best be suited to an improvisatory approach; for this reason, I opted to write a completely graphic score. The score is totally open to interpretation; there is no ‘control level’ which states how the other elements are to be interpreted. The constant elision of the gap between the verbal and the graphic brings into question whether any of the verbal information can be read as literal instructions.

The work revolves around the idea of contained energy; ‘keeping one’s composure’ implying the maintenance of a shaky cool, and its future breakdown under pressure. Thus the score contains apparently solid objects or lines that are in jeopardy due to their positioning. The score’s main motif is that of the note which breaks up into pieces, hence becoming timbral rather than pitch-oriented.

In the main, the score was created by drawing on blotting paper with different pens, and then dropping water from a pipette onto the ink to form chromatographs. It is impossible to control the exact result when doing this, so the compositional process mirrors the indeterminacy of the performance.

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Novelette (words of one syllable)

by David Bremner

text by Emily Crossland and
David Bremner

for Orla Flanagan and Milltown
Chamber Choir
Forces: SSSAAATTTBBB
Duration: 10 minutes

PERFORMANCE NOTES

1. Accidentals remain in force throughout the bar.

2. The metric structure is in groups two bars long, with the first beat of the even-numbered bars weaker than that of the odd-numbered bars. (This is akin to the relationship between the 3rd beat and 1st beat of a bar of 4/4). There is also frequently a 5/1 feel with groups of five semibreves cutting across the written barlines.

3. An expressivity is desired which results directly from the sonic qualities of the words - think of Monteverdi. To this end, long consonants (such as l, r, s, sh, zh etc.), at the beginning and end of syllables, should be held for a good bit longer than would be usual.

Programme note: Novelette plays with the relationship between the meaning and the sound of words. There is a story involved, deriving more from musical than textual changes. Fragments of logical thought suggest a driving forward movement, which is impeded by the resolutely ambiguous suspension in which they are placed, and the fact that different streams of thought are occurring simultaneously. The words are projected with an expressivity that results just from a clear enunciation of their sonic constituents (as in Monteverdi), as if all words were onomatopoeic. This approach is applied to a commonplace, down-to-earth vocabulary. In relief amidst this texture are placed two texts by the English poet Emily Crossland, with whom the piece was developed.

Texts by Emily Crossland (only a portion of the second one is used):

“Why can’t you see?!” she said.
He was mad, livid, seething,
Weeping drops seeping from eyes half closed.
Still, they supposed it would stop by the morning.

He was mad, livid, seething:
“You never said til now!” he accused
Still, she hoped he would stop by the morning,
Though the hands of the clock laughed in her face.

What if she never said til now, as accused?
Surely resolution was at hand?
Though the hands of the clock laughed in her face,
As the forlorn and yawning dawn crawled closer.

A surly resolution was at hand,
The tick of the clock like the beat of the drum,
As the forlorn and yawning dawn crawled closer,
Marking the ten strokes of nine

The tick of the clock like the beat of the drum,
Can’t they see? Shouldn’t we say
Something about the rouge of her cheek
And the weeping drops seeping from eyes half closed?

“Did you see?”
“Did they say?”
“When did it stop?” “Did it stop?”

“Do you suppose they will say what it meant?”
“Now it has stopped…”
“Now it is still…”

“Can they see?”
“Can’t you say?”
“Why has it stopped?” “Has it stopped?”

“Does he appear to be coming to stay?”
“Til it has stopped…”
“Til it is still…”

“If he sees…”
“If she says…”
“If it could stop…” “Could it stop?”

“Did you stay to see if he stopped?”
“Now if he stayed…”
“Still he could stop…”

“Now I see…”
“Now don’t say…”
“That it has stopped…” “Stop it from stopping.”

“Did she mean to stop him from staying?”
“Now it is still…”
“Now it has stopped…”
Text by David Bremner

Text assembled using permutations of the following words:

a and apparently are came can change choose claim clear close far find fly for full go have hold if is it know main mean more night now of once or see seems sky so space stay step stop sure takes than that the they thing though through to used watch way weight what where while who yeah you you're

and the following phrases (the order below is the order in which they first occur in the work):

Now I can move on
If once you see when you do
that would be when you see
it seems that once you do
if when you do, you move on
Give me something I can't get right!
the main thing is you just have to see it once
the time it takes to see
that you came round to see that once

the main take half of it for the sign
First of all who knows that when you fly, that when is more than it takes a while too to fly more than it can, is more than it seems to be

So you could hear, but was it worth
why did you follow me?

so you did hear but was it worth did you if it turns out what was it you came here for
get round who is it for
you need more than it takes to wake up
they know certainly
they know certainty for a while
Not what it takes but what takes some style
you see reliable is renewable
Never too soon apparently not to find the story, don't let it be part of you
so you could sort out whatever was never part of you
now don't let him see the story
now I am staying wherever I go for it's never too soon apparently not to find more than it takes for you to say where you are
the hardware I see that how you turn the last of it
how you turn whatever you are what you can be apparently
and turn whatever you are what you can be apparently
if you keep whatever you see there that will be whatever
you see reliable is renewable
Never too soon apparently not to find the story, don't let it be part of you
so you could sort out whatever is never part
Never too soon unhurriedly where you are now don't let him see the story
Who knows you when it's now I am staying wherever I go for it's never too soon apparently not to find more than it takes for you to say where you are
what it takes to see that is more than it seems to me
but what if when you know more than it can be for you to see is more than it can be for you to see
but if you claim you see you
now you are awake validity settles and waits for the motion to subside
Never too soon apparently not to find the same way for you to see
if you got that is more than it solely

you see you if you see you claim you see you if you see you
Say that you saw that when you recognize the pattern for the usual reason
draw close at that stage breathe then each came round to near though rare this is

is more than it can be for you to see
you see you claim you see you
if you got that is more than it solely
if you get that is more than it seems to me
follow when you know where you can follow
when you see the way to
Novelette (words of one syllable)
for Orla Flanagan and Milltown Chamber Choir

Now I can move on. If once you see when you do

spoken - bold, declarative

© David Bremner, Dublin 2010
that would be when you see simile it seems that once you do if when

once you see if that

you do, you move on Give me something I can't get right!

the full weight of the space
the main thing is you just have to see it once the time it takes takes more than once or if that takes more than once or if that takes more than once or if that

to see that you came round to see that once that once you see that once that once you see that once that once you see that once
Novelette (words of one syllable)

when you came to see

while you change for a

so that you have to choose what you have to
cresc. poco a poco
you change for 
while step stop step step stop step step stop step step stop step step stop step claim step stop step stop stop step

when you see you came to see that

to see to 
choose to see to 

simile
while you change for 

step stop step step stop step step stop step step stop step claim step stop step stop step claim step stop step stop stop step

when you came to see you came to see that

to see to 
choose to see to 

Novelette (words of one syllable)
Novelette (words of one syllable)
for the sign

for the sign

for the sign

for the sign

while you change for a

while you change for a

step stop step claim step stop step stop step stop step stop step step stop step claim step stop step stop step stop step stop step stop step

when you came to see you came to see that

to see to choose to see to

First of all who knows that when you fly

First of who knows that when is more than it

First of who knows that when is more than it

while you change for a

claim step stop step step stop step step stop step claim step stop step stop step stop step stop step stop step

when you came to see you came to see that

to see to choose to see to
takes a while too to fly more than it can

So you could hear, but was it worth why did you follow me?

while you change for a

while you change for a

through came to see that

to see to choose to see to
So you could hear, but was it worth

while you change for a

claim step stop step stop step stop stop step claim step stop step

came to see that
to see to choose to see to

so you did hear but was it worth did you if it turns out what was it you came here for

seems close

so you did hear but was it worth did you if it turns out what was it you came here for

seems close

so you did hear but was it worth did you if it turns out what was it you came here for

seems close
get's round who is it for

that when it seems you

watch though night

that when it seems you

watch though night

watch though night

that when it seems you

who is it for

that when it seems you

that when it seems you

that when it seems you
see that when you stop

you need more than it takes to wake up

unvoiced 's'

they know certainly

the main thing

you used to

unvoiced 's'

you need more than it takes to wake up

they know certainly

the main thing

you used to

unvoiced 's'

you need more than it takes to wake up

they know certainly
they know certainty for a while

they know certainty for a while

you know certainty for a while

Not what it takes but what takes some style,

Not what it takes but what takes some style, not what it takes but what takes some style

while you stay for now

while you stay for

it takes but what takes some style, not what it takes but what takes some style

while you can stay for now for
S 1
Ne- ver too soon ap- par- ent- ly not to find the

S 2, S 3
springy rhythms
Ne- ver too soon ap- par- ent- ly not to find the

A 1, A 2
you see re- li- a- ble is re- new- a- ble so that you could sort out what- ever was

A 3
legato but rhythmic

T 1, T 2
now I am stay- ing where- ever I go for it's ne-

T 3
legato but rhythmic

B 1, B 2, B 3
now don't let him see the sto- ry

S 1
story, don't let it be part of you

S 2, S 3
story, don't let it be part of you

A 1, A 2
ne- ver part of you

A 3

T 1, T 2
ver too soon ap- par- ent- ly not to find more than it takes for you to say where you are

T 3

B 1

B 2, B 3
Na- velette (words of one syllable)
spoken, heavily emphatic on each word

does it match them is that when that is

spoken, heavily emphatic on each word

that when it seems you

spoken, heavily emphatic on each word

does it match them is that when that is

spoken, heavily emphatic on each word

that when that is

spoken, heavily emphatic on each word

does it match them is that when that is

spoken, heavily emphatic on each word

that when that is

spoken, heavily emphatic on each word

that when that is

spoken, heavily emphatic on each word

that when that is

spoken, heavily emphatic on each word

that when that is

spoken, heavily emphatic on each word

that when that is

spoken, heavily emphatic on each word

that when that is

spoken, heavily emphatic on each word

that when that is

spoken, heavily emphatic on each word

that when that is
you find that when 

it seems that

the hardware

you see that if now

you find that when 

it seems that

you find that when 

it seems that

you find that when 

it seems that

now you apparently

see that

it seems that is

is that when now you apparently

it seems that is

is that when now you apparently

it seems that is

is that when now you apparently

it seems that is

now you apparently
you can be apparently
of it and turn whatever you are what you can
that you can mean you are that is what you see
that you see that while you're sure
how you turn whatever you are what you can be apparently
you see that while you're sure
how you turn whatever you are what you can be apparently
you see that while you're sure
if you keep whatever you see there that will be whatever you see what ever
be apparently
if you keep whatever you see there that will be whatever you see what ever
be apparently
if you keep whatever you see there that will be whatever you see what ever
playful
playful
playful
playful
simile
simile
you see clear far to
you see now to
if you keep whatever you see there that will be whatever you see there
if you keep whatever you see there that will be whatever you see there
Sky so clear

Stop it from stopping.

Who knows you when it's for now

Never too soon apparently not to find the

Never too soon unhurriedly where you

you see reliable is renewable so that you could sort out whatever is

now I am staying wherever I go for it's ne-

are now don't let him see the story
story, don't let it be part of you

never part what it takes to

but what if

Never too soon apparently not to find more than it takes for you to say where you are

See that is more than it seems to me

when you know more than it can

now you are awake validity settles and waits for the motion to sub -
S 1
S 2
S 3
A 1
A 2
A 3
T 1
T 2
T 3
B 1
B 2
B 3

you see
you see
you if
you see
you if
you see
you see
you if
you see

methodical

methodical


Claim you see you claim if you see claim you see you if see you claim you see you if see you
"Why can't you see?" she said.

He was mad, livid, seething,

Still, they supposed it would stop by the morning.

Novelette (words of one syllable)
He was mad, livid, seething: Still, she hoped he would stop by the morning, 

“You never said til now!” he accused

Though the hands of the clock laughed in her face.

What if she never said til now, as accused?

Surely resolution was at hand?

As the forlorn and yawning dawn crawled closer.
A surly resolution was at hand, as the forlorn and yawning dawn crawled closer.

The tick of the clock like the beat of the drum,

And the weeping drops seeping from eyes half closed.

Can't they see? Shouldn't we say something about the rouge of her cheek

Marking the ten strokes of nine.

As the forlorn and yawning dawn crawled closer.
draw close at that stage

breathe then each came round to
near though rare this is

cresc. poco a poco al fine

cresc. poco a poco al fine

cresc. poco a poco al fine

cresc. poco a poco al fine

cresc. poco a poco al fine

way for you to see
if you got that
sole - ly
then

you stay that
is

way for you see

if you got that
is more than it
sole - ly

for you to see
then

and

when you stay that

way you to see
Novelette (words of one syllable)

S 1

you see you claim you see you you see you claim you see you you see you

S 2

you see you claim you see you you see you claim you see you you see you

S 3

you see you claim you see you you see you claim you see you you see you

A 1

is more than it solely

A 2

for you to see

A 3

is more than

T 1

to that

T 2

side when and

T 3

when you stay that

B 1

B 2

B 3

way for you to see
S 1

you see you claim you see you you see you claim you see you you see you

S 2

you see you claim you see you you see you claim you see you you see you

S 3

you see you claim you see you you see you claim you see you you see you

A 1

if you get that is more than it seems to me

A 2

be for you to see is more than it can

A 3

side when and to that

T 1

side when and to that

T 2

when you stay that

T 3

when you stay

B 1

follow when you know where you can

B 2

to see the way that

B 3

you see the way that
is more than it seems to me

than it seems to me

is more than it seems to be

is more than it seems to be

when you see the way to

if you get that is more than it seems to me

be for you to see is more than it can

you see the way that you
Dreaming in Boxes

for solo piano

David Bremner

2007-2012
NOTES

1. Accidentals last for the duration of the bar.

2. A 19th century-style rubato should be employed: tempo should pick up as the phrase proceeds, easing off as the phrase comes to an end.

3. In general, the longer the duration of a note, the louder the dynamic. Also there should be a crescendo from the beginning to the middle of each phrase, then a diminuendo to the end.

4. 3P = Sostenuto pedal

5. Bar-lines are for orientation only and should not imply a metric stress.

Programme note:

(some light atonal music)

***

I used certain harmonic and rhythmic rules to create a circumscribed field of action, which becomes felt as the piece's sense of reality. This grasp on reality becomes increasingly fitful and tenuous as the piece goes on. As I was finishing the piece I came to realise that this is close to what occurs in some experimental science fiction- I'm particularly reminded of Ubik by Philip K. Dick.
Pno.

\[ \sum \]

- 8 -
Slow, very freely

silently depress this cluster; while holding, depress Sost. Ped.

grace notes always \( pp \)

- 16 -
The bright kids
(logic ballad)
monodrama for soprano

David Bremner
Duration: c. 14 mins.
Text is by the composer
Props required: a chair, desk/table, several pages of A4 paper, pen, music stand. The window referred to on page 7 should be at stage left. If there is no window in the space, use a well-lit area at stage left.
First performed by Elizabeth Hilliard at the National Concert Hall, Dublin in June 2011

Text assembled using permutations of the following words:

because first hearing here if in it's just know measures now once see since state stays that they this though time to today uncovered when who why you

and the following phrases:

across the hotel lobby
but you know
if that's what it is
it's a standard feature
it seems
“keys, wallet, sense of humour”
leads, beads and steeds
of us
security wasn't a problem
tell it all is all it is
the bright kids
the main thing is you were there
they know they saw you
when you listen
when you realise
when you see that could be you
you get what you came for

Programme note:

A monodrama; the character is a school-teacher. An attempt to 'compose with words', hence the text was written along with the music, with the aim of highlighting that the expressivity of each word resides in its sonic characteristics. Simple permutational processes are employed: basic, stripped-down poetry.
The bright kids
(logic ballad)

(for Elizabeth Hilliard)

accidentals only affect the note they immediately precede

Slow but always connected

\[ \frac{\text{the school-teacher}}{\text流星}} \]

Sitting on a chair at a desk, facing the audience.
A pile of papers on the desk; these are exam papers to be marked.

Begin to mark papers. This consists of writing a series of ticks down the right hand side of each A4 page. When the bottom of the page is reached, turn over page & begin another. The ticks should on every crotchet beat. The rhythm should be clearly visible to the audience.

\[ \frac{\begin{array}{c}
\text{Begin to mark papers. This consists of writing a series of ticks down the right hand side of each A4 page. When the bottom of the page is reached, turn over page & begin another. The ticks should on every crotchet beat. The rhythm should be clearly visible to the audience.}
\end{array}}}{\text{Begin to mark papers. This consists of writing a series of ticks down the right hand side of each A4 page. When the bottom of the page is reached, turn over page & begin another. The ticks should on every crotchet beat. The rhythm should be clearly visible to the audience.}} \]
once you if that once you (the bright kids) see that once they see if they see to if they

when to if that when to know that when you know that once you know that once you just that once

leads, beads and steeds it's just that when it's just

that when it's you that when it's you that see it's you you see it's when you see that when you

see that when you see that once you see that once you if that once see if that see if

spoken, as before broken up, shell-shocked

once to see that once to see that once (the bright kids) you just
That you just know that you know that once you know that once you it's that once.

Gaining momentum a little; from now on in clear four-bar phrases

Fast speech-rhythm

Once you know when you see that could be you it's that once you know that

More reflective

[All such comparisons are with the previous occurrence of the same phrase, not with the phrase immediately preceding]

Spoken, anecdotesly

When you see that could be you "keys, wallet, sense of humour" you know that once you know

Spoken, more routinely

You know that it's a standard feature: keys, wallet, sense of humour when you see that could be you

It's a standard feature they know they saw you when you see that could be you you know that

When you see that could be you because: they know they saw you it's a standard feature.
notes/phrases are like icebergs floating, colliding at random
the long notes are definitive statements of that pitch in your voice

but you know when hearing it's a standard feature
stand up and move to music stand; in a reverie

when tempo very flexible
when time measures hearing

when time of us hearing when

of us it seems when time

of us it seems since time of us
slowly walk over to window

it seems

since

first

uncovered

look out of window

the pitch extremely clear

you

uncovered

since

return to music stand

but you know

since

you

gradually coming out of reverie

you

it’s a standard feature

first

since
first it seems it's a standard feature you

emphatic, fast it's a standard feature security wasn't a problem it seems first

gathering pace now until bar 146

emphatic, fast They know they saw you Security wasn't a problem since when you see that could be you

...yet...

since when you realise security wasn't a problem they know they saw you

afraid

when you realise the main thing is you were there they know they saw you since
they know they saw you across the hotel lobby

the main thing is you were there when you realise

becoming more relaxed

the main thing is you were there why?

across the hotel lobby

(if that's what it is)

why you get what you came for if that's what it is across the hotel lobby...

floating objects again, jetsam

mezza voce, light, skimmy

If that's what it is though 
tell it all is all it is why

though
today

why

if that's what it is
to-day
who
if that's what it is
though

who
stays
though
to-day

simile
mezza voce, light, skimmy

though
tell it all is all it is
stays
who

simile
stays
to-day
tell it all is all it is
though

to-day
here
though
stays

here
though
stays
to-day?
Driving through the waste territories: (Winter)

for brass quintet

David Bremner
Instrumentation:

Trumpet in B♭ 1, Trumpet in B♭ 2, Horn in F, Trombone, Tuba

Trumpet 1 requires practice mute, Trumpet 2 requires straight and cup mutes

Duration: 12'30"

PERFORMANCE NOTES:

1. Accidentals apply only to the note they precede, except in the case of repeated notes, where the accidental remains in force.
2. The score is in concert pitch. Parts are transposed.
3. oooooooooooo indicates the technique of half-valve, where the valves are not depressed fully. The valves are to be waggled producing a 'burbling' sustained tone.
4. INDEP. TEMPO indicates that the player should play their line as notated but without coordinating it rhythmically with the other players. This is cancelled by COORD. TEMPO, which indicates a return to coordinated playing. At bar 209, the line following the repeat indicates that the mobile contained within the repeat signs should be repeated until the signal is given.
5. Triangular noteheads indicate that that pitch should be sung through the instrument. This usually occurs while a different pitch is being played.

Programme note: The piece is essentially a study in understatement. The tune is resolutely deadpan and a sense of change is only got by varying the lower parts. The aesthetic is 'cheap and cheerful', a celebration of the scrappy and leftover, so its focal points occur when the musical ideas are reduced to their most bare and formulaic.
Driving through the waste territories: (Winter)

David Bremner

Trumpet in B♭

Steady, persistent

Trumpet in B♭

Steady, persistent

Horn in F

Steady, persistent

Trombone

Steady, persistent

Tuba

Steady, persistent
1. Tpt. 1
   \[\text{9} \quad \text{senza sord.} \quad \text{firmly} \quad \text{fluttertongue} \quad (1\text{st quaver only})\]

2. Tpt. 2
   \[\text{9} \quad \text{half-valve, waggling valves}\]

3. Hn.
   \[\text{12} \quad \text{abrupt (dramatic silences between notes)}\]

4. Tbn.
   \[\text{12} \quad \text{abrupt (dramatic silences between notes)}\]

5. Tba.
   \[\text{12} \quad \text{abrupt (dramatic silences between notes)}\]

6. Tpt. 1
   \[\text{9} \quad \text{simile}\]

7. Hn.
   \[\text{12} \quad \text{abrupt (dramatic silences between notes)}\]

8. Tbn.
   \[\text{12} \quad \text{abrupt (dramatic silences between notes)}\]

   \[\text{12} \quad \text{abrupt (dramatic silences between notes)}\]
resuming the story
chunky triangular noteheads indicate that note to be sung through instrument
fluttertongue (1st crotchet only)

triangular noteheads indicate that note to be sung through instrument
surprise entry!
con sord. (practice mute)
(continued from further notice)

Tpt. 1

Tpt. 2

Hn.

Tbn.

Tba.

simile

sung through instrument

- 18 -
triangular noteheads to be sung (pitch approx.)

normal noteheads are to be played

like cracks in ice

highest possible note

triangular noteheads to be sung (pitch approx.)

normal noteheads are to be played

highest possible note
with chaotic, unpredictable rhythms

triangular noteheads to be sung (pitch approx.)

normal noteheads to be played

a tempo
abrupt (dramatic gaps between notes)

half-valve, waggling valves (pitch approx.)

- 23 -
(fragile, but with confidence)
with slide in position indicated
breathe through instrument,
con sord. (cup mute)
Tpt. 1

Tpt. 2

Hn.

Tbn.

Tba.

half-valve, as before

abrupt

triangular noteheads to be sung

- 26 -
Tpt. 1

Tpt. 2

Hn.

Tbn.

Tba.

Tpt. 1

Tpt. 2

Hn.

Tbn.

Tba.

- 33 -
increasingly boisterous & cacophonous

cresc.

triangular noteheads to be sung
(pitch approx.)

cresc.

- 41 -
triangular noteheads to be sung

168 (pitch approx.)

senza sord.
triangular noteheads to be sung
(pitch indicated is approx.)
repeat until Tpt2 gives signal
proceed to next bar

wait for the time specified
give signal

repeat until Tpt2 gives signal
proceed to next bar

repeat until Tpt2 gives signal
proceed to next bar

repeat until Tpt2 gives signal
proceed to next bar

219
delicate, tidily

219
a slowly-unfolding melody

pp
Stream Line

for orchestra

by David Bremner
INSTRUMENTATION:

Piccolo
2 Flutes
2 Oboes
English Horn
2 Clarinets in B flat
Bass Clarinet
2 Bassoons

4 Horns in F
2 Trumpets in B flat
2 Trombones
Tuba

Timpani
2 Percussion
Hang

Harp
Pianoforte

Violin I
Violin II
Viola
Cello I
Cello II
Contrabass

Percussion instruments are as follows:

Player 1:

Vibraphone, Snare Drum, Xylophone, Glockenspiel, Woodblocks
Player 1 can also play the Timpani part

Player 2:

Glockenspiel, Woodblocks, Marimba, Crotales, Suspended Cymbal, Low tom-tom, Bass Drum

As can be seen, both players play the Glockenspiel and Woodblocks, so these should be positioned where both players can access them.

The Hang is played by another player (this can also be played on a keyboard set to a Steel Drum sound).

DURATION: 21 minutes
CONDUCTOR: circled numbers represent signals to be given to the orchestra. The timings before/between signals is also given (when it isn't defined anyway by the tempo)

When given the signal to move to next mobile, complete the current mobile and then proceed to the next.
INDEP. TEMPI

Play these figures, which are separated by the vertical lines, as fast as possible, in any order (different order each repeat)
short phrases of jagged rhythms

When given the signal to move to next mobile, complete the current mobile and then proceed to the next.

Notes and 2- or 3-note chords using only the following pitches:

- Fl
- Oboe
- Clarinet
- Bassoon
- Horn
- Trumpet
- Trombone
- Violin
- Viola
- Cello
- Bass
- Piano

Play these crotchet-length figures, as fast as possible, in any order.

(a different order each repeat)
Different each repeat

rhythm and contour as a guide; keep following the bars

pluck notes from the given range on A and E strings,
col legno tratto

Different)- use rhythm and contour given;
notes within the given range (each repeat

Different)- use rhythm and contour given;

Different)- use rhythm and contour given;

Different)- use rhythm and contour given;

Different)- use rhythm and contour given;
Pool

for Irish lever harp

David Bremner

2010
Instrumentation: Irish Harp in A flat
Duration: 1'20"

NOTES for PERFORMANCE

1. Accidentals apply only to the notes they immediately precede.
2. fn = plucked with fingernail
3. The beams are intended to imply phrasing (they can be considered equivalent to slurs.)
   Employ rubato to suggest the phrasing in places where beams overlap.
Pool
for Anne-Marie O'Farrell

Tuning of strings:

Freely, $\frac{3}{4} = c. 240$

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