Hidden Connections: Exploring extra-musical and existing musical materials through a portfolio of compositions

Commentary

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Submitted in partial fulfilment of the degree of
Doctor of Philosophy

Declaration of Authorship

I, Kelvin Allan Thomson hereby declare the eight musical compositions and the accompanying commentary constituting this submission are my own work and to the best of my knowledge and belief, they contain no material previously published or written by another person nor material which has been accepted for the award of any other degree or diploma of the University of London or other institution of higher education. Where I have consulted the work of others, this is always clearly stated.

Signed:

Name: Kelvin Allan Thomson

Date: 29th July 2020

Acknowledgements

I would like to thank my supervisor Mark Bowden for his support, advice and encouragement throughout the six years spent on this portfolio and his prior guidance during my postgraduate degree.

I am grateful for the commitment and enthusiasm of the many talented musicians and ensembles who have performed the pieces presented here.

I would like to extend my appreciation to my wife Joy, daughter Carmen, and my parents David and Irene for their unwavering support, and to my friends and colleagues for their patient interest and feedback throughout the eight years spent on this project.

Sadly, both my parents passed away during the course of the project, my father in 2017, and my mother recently on the 16th July 2020.

Abstract

This thesis consists of a portfolio of eight compositions, an accompanying commentary and recordings of the works on USB Stick. The portfolio comprises printed scores for a large orchestra, various small ensembles, vocal music, and a bassoon concerto for youth orchestra.

The works presented in the portfolio offer new insights into generating musical ideas by exploring extra-musical and existing musical materials as part of the compositional process. Extra-musical refers to inspiration and techniques drawn from other disciplines including poetry, mathematics, science and architecture. Existing musical refers to rethinking and or incorporating existing music of my own and of others. The compositions exhibit a gradual move from a systematic and technical approach to a freer and more instinctive method in which systems are used as starting point frameworks supporting the search for a more intuitive sonic aesthetic.

The commentary comprises a broad discussion of the creative processes undertaken and how the portfolio relates to some movements and developments in current contemporary art music. The portfolio is contextualized with references to practitioners who have influenced or resonated with my compositional output. These practitioners include: John Adams, Louis Andriessen and Alfred Schnittke, with particular regard to their incorporation and acknowledgement of popular music; Luciano Berio and György Ligeti whose music always sounds faultless in my view; and John Cage's unique aesthetic and Elliott Carter's creative longevity are provocative and stimulating. I consider all seven to be a joint nexus at the centre of my interest in post-1945 contemporary classical music. I also refer to resonances found in the work of living composers ranging from Sofia Gubaidulina (b. 1931) to Holly Harrison (b. 1988)

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oboe and piano
c. 7 mins

The Arrival of the Beat Box (2011)
soprano and speaking body-percussionist
c. 12 mins

Boojum (2012)
solo bassoon and orchestra
c. 17 mins

Babel (2014)
soprano and piano
c. 6 mins

Montage (2015)
piano trio
c. 11 mins

Bumble (2015-16)
double choir
c. 4 mins

The Shard (2016)
large orchestra
c. 12 mins

Approximate total duration 76 minutes

List of Recordings

Audio

shards of TiME

Rowland Sutherland (flute, piccolo, alto flute) and Clare O' Connell (cello)

Composition Workshop, Royal Holloway, University of London (25.10.10)

Song's Eternity

Duologue: Rachel Broadbent (oboe), Kevin Vockerodt (piano)

The Picture Gallery, Royal Holloway, University of London (7.3.11)

The Arrival of the Beat Box

Danae Eleni (soprano), Enrico Bertelli (speaking body-percussion)

The Second Athens Performer/Composer Conference, Athens, Greece (15.10.11)

Boojum

Joshua Wilson (solo bassoon), Philip Colman (conductor)

Enfield Young Symphony Orchestra, Enfield Grammar School (9.7.12)

Babel

Tami Tal (soprano), Kelvin Thomson (piano)

St John's Friern Barnet, North London (8.11.14)

Montage

The Fidelio Trio: Darragh Morgan (violin), Adi Tal (cello), Mary Dullea (piano)

Piano Trio Concert, The Boilerhouse, Royal Holloway, Egham (27.1.15)

Bumble

Danae Eleni (soprano), Emelye Moulton (Mezzo), Karl Gietzmann (alto), Miles D'Cruz (tenor), Fraser Moyle (high baritone), Ralph Warman (bass)

Carleton Studios, Mill Hill, North London (8.9.19)

The Shard

Midi realisation, Sibelius Ultimate, NotePerformer playback

Video

The Arrival of the Beat Box
Danae Eleni (soprano), Enrico Bertelli (speaking body-percussion)
The Second Athens Performer/Composer Conference, Athens, Greece (15.10.11)

All recordings mastered by Mark Warman and supplied on USB Stick.

Introduction

> A hidden connection is stronger than an obvious one
>
> *Heraclitus* [1]

Back in 2010, while drafting my PhD research proposal, a mystifying large black and white reverse type poster in London Bridge station advertising 'The Shard' attracted my attention. The only clue was its accompanying sketch, a tall, irregular, elongated pyramid-shaped object on a base, like a metronome or a graphic score.[2] The Shard would become Europe's highest building and boast the world's most advanced technology. The sketch was architect Renzo Piano's napkin sketch, drawn during a dinner with the commissioning property developer. I considered translating the sketch into music and wondered what its rendered music might sound like. The Shard's emergence alongside my research project as synchronous events was appealing.

This project has involved creating contemporary classical music by exploring extra-musical and existing musical materials as part of the compositional process. Extra-musical means inspiration and techniques drawn from other disciplines including poetry, mathematics, science and architecture. Existing musical means rethinking and or incorporating my own or music by others. It follows on from my master's degree studies (2008-09) and is the culmination of a lifelong tendency toward an inclusive musical aesthetic and a slow journey towards creative expression. I will begin by defining the central research questions driving the project, and acknowledging some composers who have influenced me. Then I will embed the portfolio works within the research questions, contextualised alongside other related works.

Research questions and influences

Composing is a creative process involving the production of new musical works, following extensive contemplating, exploring and problem-solving. Each completed work therefore embodies many answers to questions arising throughout the process. I create works from revealing or making musical connections hidden in a range of stimuli. Exploring new ways to do this this by uncovering new stimuli has been the central research question pervading this portfolio. Music is hidden everywhere and I believe most things can be turned into music. The OED defines 'connection' as 'the

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[1] Heraclitus, Hippolytus, *Refutatio* vol. 9, bk. 9, sect. 5.

[2] See Fig. 5.1, p. 78.

condition of being related to something else by a bond of interdependence, causality, logical sequence, coherence, or the like; relation between things one of which is bound up with, or involved in, the other'. My research task therefore has been to establish new ways of relating things to each other through music.

Considering von Schelling and Goethe's well-known metaphor 'architecture is frozen music' made me ask what The Shard's frozen music would sound like if it was 'defrosted' and released? And what things other than architecture might contain music? This is all metaphorical, conceptual and impossible, however Berio encapsulated this attitude with his claim: 'Music is everything we listen to with the intention of listening to music, and anything can *become* music.[3]

My music ranges from gentle tonal consonance to harsh atonal dissonance, from flowing to fragmented, or from minimalist to complex. I don't feel attached to any particular 'school' or approach, although my popular music career background must also influence my creative decisions. My works emerge from exploring and bringing together connections hidden in various stimuli. I don't expect audiences to understand or distil the underlying compositional materials from listening, however I consider programme notes or pre-concert talks to be desirable and helpful links between composer and audience.

Composers whose music has influenced the works in this portfolio include John Adams, Louis Andriessen and Alfred Schnittke, who incorporate(d) and acknowledge(d) popular music. Luciano Berio and György Ligeti are always inspirational as their music always sounds faultless in my view – no doubt due to the ever-present clear intention and technical mastery. John Cage's unique aesthetic and Elliott Carter's creative longevity are both provocative and stimulating. All seven are central to my interest in post-1945 contemporary classical music. My own relocation from South Africa to London in 1981 helps me to empathise with Schnittke and Ligeti as exiles, and even Carter, who struggled as an American composer with European sensibilities. I discuss resonances found in particular works written by living composers ranging from Sofia Gubaidulina (b. 1931) to Holly Harrison (b. 1988), and consider the critical relationship between those pieces and the ones in my portfolio. I will now introduce the portfolio works with some brief contextual background.

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[3] Luciano Berio, 'Translating Music' in *Remembering the Future* (Cambridge, Mass: Harvard University Press, 2006), p. 49.

Exploring extra-musical material

Music, poetry, bees and text. Sylvia Plath's poem 'The Arrival of the Bee Box' generated a 'bee' trilogy within the portfolio. *Song's Eternity* (2011) for oboe and piano, and *The Arrival of the Beat Box* (2011) for soprano and speaking body-percussionist, emerged from the poem's dark narrative and contextual significance within Plath's own work. It further motivated my interest in the science behind bumblebee decline, leading to *Bumble* (2016) for double choir. The textual disguise developed for *The Arrival of the Beat Box* recalls Berio's similar experiments in the 1960s, as in *Sequenza III* (1965) for mezzo-soprano. Other poetic inspiration included T.S Eliot's 'Burnt Norton' from *Four Quartets*, and Lewis Carroll's nonsensical *The Hunting of the Snark* (1874-6), a poem I came to know while working as keyboard player on Mike Batt's West End musical (1991).[4]

Music, numbers and images. shards of TiME (2010) contains musical realisations of a number grid and a compelling quilt-like diagram drawn from mathematician Steven H. Cullinane's 'Diamond Theorem.'[5] Other numerical compositional tools came from a snark, a connected bridgeless cubic graph in mathematical graph theory, and a magic cube.[6] This follows Peter Maxwell Davies' use of magic squares to transform plainchants for *Ave Maris Stella* (1975). Many composers have used numbers in their compositional process, from Bach's interest in numerology to Ligeti's interest in fractal mathematics to name but a few.[7]

Music and science. The ideas for *Bumble* emerged while collaborating on a science opera with bumblebee decline expert, biologist Professor Mark Brown. The text for *Bumble* was derived from the DNA sequencing letters G, A, T, C. Recent arts funding cuts and removing music from the English Baccalaureate are two reasons to be worried about music's future. Therefor I strongly believe in a need to rebalance scientific and musical development for example by investigating how science can produce artistic results and demonstrating new ways in which scientific research can be used to express musical ideas. Michael Zev Gordon has used choral singers' DNA to generate pitch material in *Allele* (2010), a collaborative research project supported by the Wellcome

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[4] Mike Batt, *The Hunting of the Snark*, Prince Edward Theatre, London West End, (1991).
[5] Steven H. Cullinane, 'The Diamond Theorem' (1979) <http://diamondtheorem.com> and 'Geometry of the I Ching' (1989) <http://finitegeometry.org/sc/64/iching.html> [accessed 6 May 2019]
[6] See Figures 3.1 and 3.3, p. 47 and p. 49.
[7] Paul Griffiths, 'From 1900.' in Ruth Tatlow and Paul Griffiths, *Numbers and Music* (2001), chapter 5 Grove Music Online. Oxford Music Online. Oxford University Press. <https://doi-org.ezproxy01.rhul.ac.uk/10.1093/gmo/9781561592630.article.44483>

Trust.[8] Ligeti's *Clocks and Clouds* (1972-3), inspired by philosopher Karl Popper's paper on reconciling determinism and indeterminism, is a similar but alternative approach to bringing together science and art.[9] Clocks can also be cloudy (inaccurate to a degree) and clouds could also be like clocks as long as their particle movement is understood. Ligeti used these concepts to create smooth gliding transitions from ostinato driven clockiness to haze-like cloudiness.

Music and architecture. Architecture is behind the final portfolio piece *The Shard* (2016), an orchestral response to The Shard. Buildings have always inspired composers and housed music including Beethoven's *Consecration of the House* (1822) and Britten's *The Building of the House* (1967). But Xenakis' pioneering *Metastasis* (1953-4) actually embodies a unique compositional aesthetic and theories developed from an architectural and engineering background. As he explained in his essay 'Les Métastassis': 'The sonorities of the orchestra are building materials, like brick, stone and wood … The subtle structures of orchestral sound masses represent a reality that promises much'.[10] Alternatively the Imperial War Museum North seemed to 'commission' Simon Bainbridge's *Music Space Reflection* (2007). His intention was 'to create a fluid, modular type of construction, where each of the musical "building blocks" corresponds to a recurring aspect of [Daniel] Libeskind's architectural vision.'[11] The work has been described as 'a collection of shards, vertical fragments (…) that Bainbridge compares to the differently angled "mental snapshots" one takes on entering a new space.'[12] Despite the wide-ranging extra-musical stimuli discussed above, they are unified by my interest in the curious, the codified, or the ecological.

Exploring existing musical material

Music about my music and music about music. Most of the portfolio works incorporate various types of borrowing from my own music or from music of others. *shards of TiME* was trialled in *PRESENT TiME*, an earlier prototype, which in turn borrowed from traditional music, electronic dance music and Bach. *Song's Eternity* and *The*

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[8] Andrew Morley et al., Music from the Genome (2010) / <http://www.musicfromthegenome.org.uk/members.html> [Accessed 6 May 2019]

[9] Karl Popper, Objective Knowledge: an Evolutionary Approach (London: Oxford University Press, 1972), in Richard Steinitz, György Ligeti: Music of the Imagination (London: Faber, 2003), p. 198.

[10] Iannis Xenakis, in Hoffmann, Peter. "Xenakis, Iannis." Grove Music Online. 2001; Accessed 2 Mar. 2020. https://www.oxfordmusiconline.com/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000030654.

[11] Simon Bainbridge, Music Space Reflection (2007) <http://www.musicsalesclassical.com/News/1110> [Accessed 7.9.19]

[12] Paul Driver, 'More songs about buildings and mood', Sunday Times, 6 May 2007, p. 32.

Arrival of the Beat Box were both derived from my *The Arrival of the Bee Box* (2008), while *Boojum's* borrowings come from popular and traditional music, television adverts and classical repertoire. *Montage* contains an instrumental adaptation of my song *Farewell*, alongside borrowings from Shostakovich and Ligeti. *The Shard* (2016) for orchestra evolved from my Prelude and Fugue for piano, and includes borrowings from Copland, Berio and Bach. I borrow from my own music as the various stimuli always seem to invite more interpretation than first imagined. It might lead to an improvement of the original, or it just be a pragmatic way to maximise the substantial preliminary work, just as in any recycling project. As Berio put it: 'Why this insistence on elaborating and transforming again the same material? It is, maybe, a tribute to the belief that a thing done is never finished.'[13]

I borrow from others because the source music might relate to a predetermined interpretative compositional aim, or it is quoted out of respect for the original. Or the borrowing process follows current hip-hop and remix philosophies founded on questioning the music's authorial ownership. Bach's use of Lutheran chorales, through Stravinsky's weaving in of Russian folk tunes and Pergolesi, to George Rochberg's overt quotations of Mozart and others shows borrowing as regular musical compositional practice. Berio, writing about *Sinfonia's* third movement (1968), explains his intentions: 'The Mahler movement is treated like a generator - and also as a container - within whose framework a large number of musical characters and references is proliferated; they go from Bach to Schoenberg, from Brahms to Strauss, from Beethoven to Stravinsky, from Berg to Webern, to Boulez, to Pousseur, to myself and others.'[14] *Rendering* (1989) is a 'restoration' from Schubert's sketches for an unfinished symphony (1828), and Mahler's scherzo sketch of 1876 was 'completed' by Schnittke in his Piano Quartet (1988).

Charles Ives's borrowing served as the material for James Peter Burkholder's extensive research and categorisation[15], setting the bar and appetite for further studies, as found in two recent editions of *Contemporary Music Review*.[16] Studies include

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[13] Luciano Berio, '*Chemins IV* (author's note)', *Centro Studi Luciano Berio*, <http://www.lucianoberio.org/node/1349?346997434=1> [accessed 6 May 2019]

[14] Berio, '*Sinfonia* (author's note)' *Centro Studi Luciano Berio* [accessed 6 May 2019]. See also David Osmond Smith, 'In ruhig fliessender Bewgung' in *Playing on Words – a guide to Luciano Berio's Sinfonia* (London: Royal Musical Association, 1985), pp. 39-71.

[15] Burkholder, James Peter, *All made of tunes: Charles Ives and the uses of musical borrowing* (New Haven, Conn. : Yale University Press, 1995)

[16] 'Recycling and Innovation in Contemporary Music', ed. by Lisa Colton and Martin Eddon, *Contemporary Music Review*, Vol. 29 (2010), Issue 3. 'Musical Borrowing and Quotation in the Twentieth and Twenty-First Centuries', ed. by Pwyll ap Siôn and Lauren Redhead in *Contemporary Music Review*, Vol. 33, (2014), Issue 2.

composers quoting from the past e.g. John Adams' adopting Hildegard von Bingen's *O quam preciosa* (c. 1140) in *El Niño* (2000), to composers producing paraphrased music for cartoons (Alf Clausen for *The Simpsons,* and Ron Jones for *Family Guy*), or remixing Mahler, or hip-hop's sampling tradition.

Conclusions

My aesthetic position and compositional process motivated by a desire to uncover hidden connections is no doubt rooted in my need to reconcile differences, inherited from my Scottish/South African heritage, and experienced later during my career as a multi-stylistic pianist-keyboardist. It is also probably why I have been influenced by the pluralistic and inclusive composers listed above, and generated this project's core research questions. Incorporating existing music by me or others, is another way to look at something from a different angle to uncover potential hidden connections. I will discuss the portfolio pieces in compositional chronology, raising issues in discussions along the way, pointing towards the final conclusion. Part I examines the first four works, explaining my compositional aesthetic and processes. Part II demonstrates the development of these processes, incorporating an intuitive element, in works five through eight. Extra-musical and existing musical influences are integral to my creative voice, but my discussions focus on each section's overarching theme. The first prioritises music made from exploring extra-musical material.

Part I

Early Explorations

'Begin as you mean to go on (…) advised the 19th century preacher Charles H. Spurgeon.[17] The four 'early' works discussed in Part I, written during the project's first half, demonstrate how I relate things to each other through music. First, I explain how extra-musical materials were employed to create *shards of TiME*. Second, I reveal the function of my own existing music materials in *Song's Eternity* and *The Arrival of the Beat Box*. Third, I show the way I used existing musical material by others to create *Boojum*. Each section begins with a detailed analysis of the portfolio piece, followed by a contextual discussion.

1. Exploring extra-musical material: revealing 'unheard music'

> The unheard music hidden in the shrubbery
> *T. S. Eliot*[18]
>
> Time present and time past
> Are both perhaps present in time future
> And time future contained in time past.
> *T. S. Eliot*[19]

What might the revealed music sound like? A musical response to Eliot's *Four Quartets* had been on my compositional to-do list for some time, due to its suggestive title, cryptic text and provocative lines such as those in the epigraphs above. The first suggesting the composer's state before starting a new piece, the second inviting almost infinite contemplation. This section focuses on how I used *Four Quartets'* first poem 'Burnt Norton' as both central expressive guide and methodological precedent. The poem's structure and language suggested a laterally-connected extra-musical material web, used to devise the structure and core pitch and durational system underlying *shards of TiME*. I begin by explaining how I first formulated the rationale for a piano quartet titled *PRESENT TiME*, followed by comments on the structure and how the system works in *shards of TiME*, and its relationship to the prototype quartet. A concluding discussion will consider similar extra-musical compositional concerns found in pieces by Kaija Saaraiaho, Sofia Gubaidulina, Louis Andriessen and John Adams.

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[17] Charles H. Spurgeon, *All of Grace* (Chicago, Moody Publishers, 2010), p. 80. Originally pub. 1894.
[18] T. S. Eliot, 'Burnt Norton', in *Four Quartets* (San Diego: Harcourt, 1943), line 29.
[19] Eliot, lines 1-3.

The laterally-connected extra-musical material web is laid out in the structural plan for the prototype piano quartet *PRESENT TiME* (Fig. 1.1), a table of five columns representing five movements over a horizontal twenty-minute target timeline. Each movement's duration corresponds proportionally to the poem's five section line counts (Table 1.1). The five rows each represent the laterally-chosen concepts: first, key zones derived from the Hebridean air 'The Sea-gull of the Land-under-Waves'; second and third, thematic notes from 'Burnt Norton'; fourth, fourteen 'Goldberg' modules; fifth, twenty-four 'Cullinane' permutations. Metronome markings at the top of the plan were taken from Mahler's Quartet for Piano and Strings (1876). The web is key to understanding the compositional strategies devised for both the quartet and *shards of TiME*.

The associative rationale for the choices is as follows: *unseen*, implicit in the Hebridean air's title 'The Sea-gull of the Land-under-Waves' links to Eliot's 'hidden music'; frequent dance references in 'Burnt Norton', for example 'So we moved and they, in a formal *pattern*', and Eliot's claim in *The Music of Poetry* [20] 'there are possibilities of *contrapuntal arrangement* of subject matter', link to Bach's *Goldberg Variations* (1741) macro-structure – theme followed by ten variable sets of dance-arabesque-canon; incorporating the main theme from Mahler's Piano Quartet, a piece *hidden* since its 1876 premiere until rediscovery in 1960, seemed appropriate. Deriving connections in this way characterises my pre-compositional work.

[20] T. S. Eliot, *The Music of Poetry* (Glasgow: Jackson, 1942), p. 28. My italics.

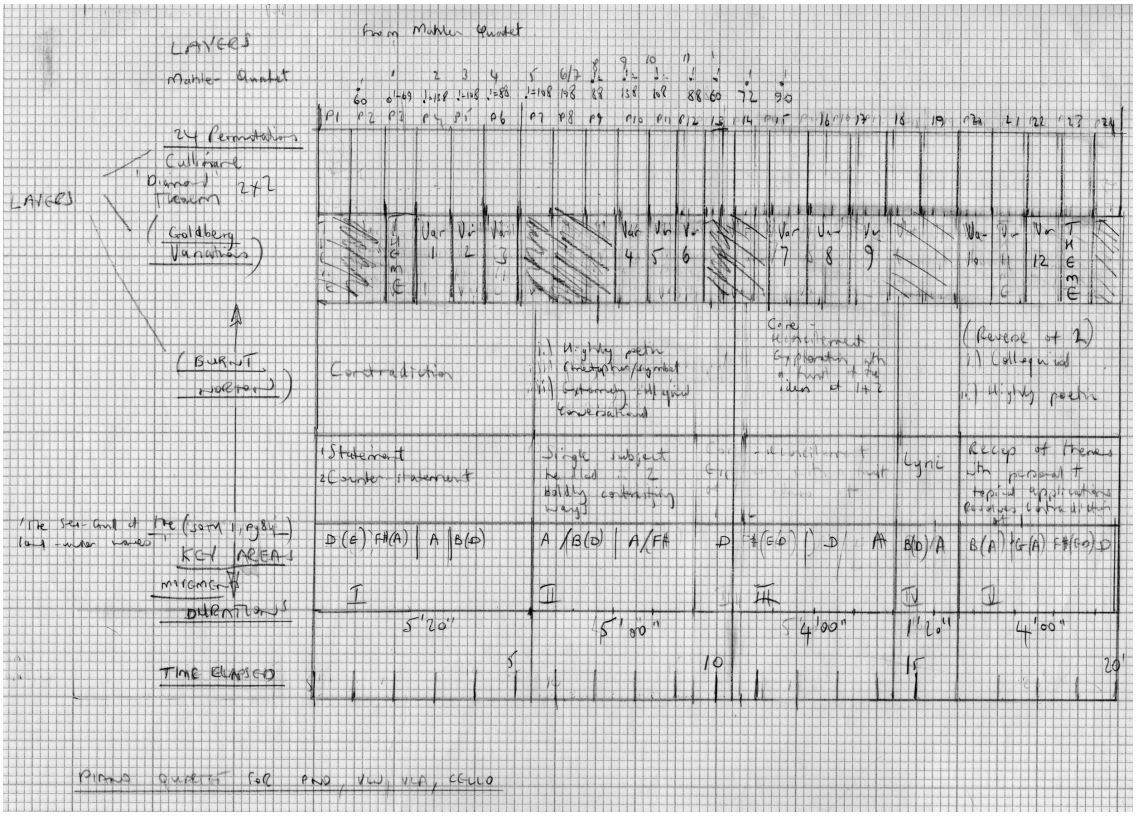


Fig. 1.1 Structural plan for the five-movement prototype, *PRESENT TiME*

'Burnt Norton' parts	Line count	% of the whole poem	Translation to seconds	Translation to minutes
I	48	27	324	5:24
II	44	25	300	5:00
III	37	21	252	4:12
IV	10	6	72	1:12
V	39	22	264	4:24

Table 1.1 Translation of Burnt Norton's proportions to musical durations

The 'Cullinane' permutations as pitch-duration choice controllers, evolved from juxtaposing two concepts (Fig. 1.2 and Table 1.2) of Eliot-inspired mathematician Steven H. Cullinane, who has acknowledged Eliot's writings on poetry as an influence on his 'Diamond Theorem'.[21] His quilt-like diagram comprising twenty-four little squares, each containing different permutations of four triangles, became the basis for the shifting and filtering mechanism to be applied to the basis for expressing pitch and duration, derived from his new arrangement of the *I Ching*'s sixty-four hexagrams. A numbered 64-note chromatic scale was used to render a sixty-four-note series

[21] Cullinane explains the relationship between his mathematical thinking and Eliot at this link: <http://finitegeometry.org/sc/ph/poetrysbones.html> (Accessed 9.3.20)

corresponding to Cullinane's number table (Exx. 1.1 and 1.2). The sixty-four numbers were then reduced to a twelve-number set by modulo 12 (Tables 1.3 and 1.4, p. 22).[22] This new set was superimposed onto the twenty-four permutation patterns, the first twelve shown at (Fig. 1.3, p. 23). Each quadrant contains one shaded and one unshaded triangle, each containing a six-number set. The set combinations vary according to each successive permutation's shading. Each quadrant was assigned to a different instrument, for example P_1 reads clockwise from top left: piano, viola, cello, violin; and instrument-quadrant assignment was rotated at each section's beginning.[23] The 'Cullinane' permutations thus controlled pitch-duration decisions made throughout the prototype.

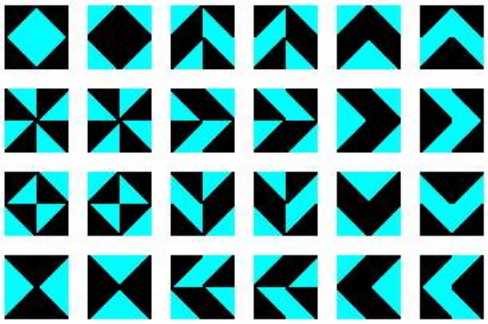


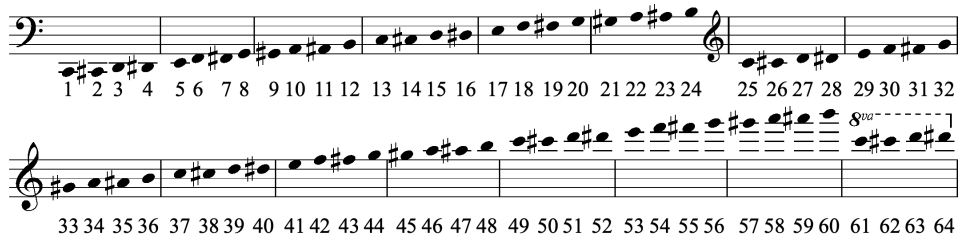
Fig. 1.2 Cullinane's diamond theorem

01	13	33	44	14	30	56	50
10	25	12	06	38	21	35	64
61	42	20	59	41	27	23	04
09	37	53	57	26	22	52	18
43	49	31	28	34	55	62	32
58	17	45	47	54	51	16	40
60	03	08	29	19	24	02	07
05	63	39	48	11	36	15	46

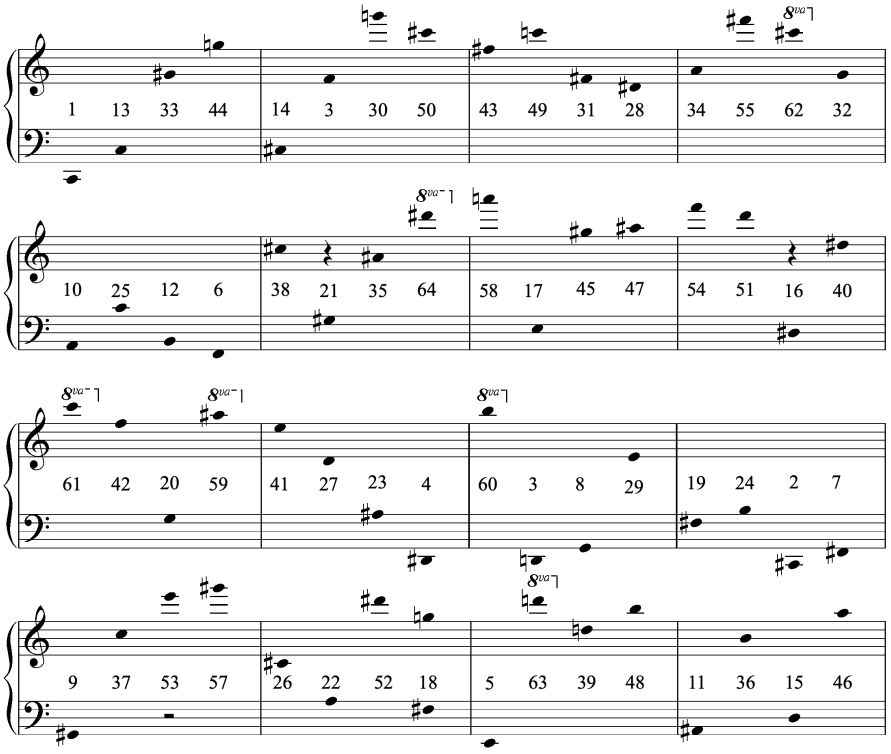
Table 1.2 Cullinane's new arrangement of the 64 hexagrams of the *I Ching*

[22] Clock-time is expressed in modulo 12: 13:00–1pm, 23:00–11pm. So the digits 1, 13, 33, 44 in the top row of Cullinane's table become 1, 1, 9, 8. See more on music and modular arithmetic in Carlton Gamer and Robin Wilson, 'Microtones and projective planes', in *Music and Mathematics*, ed. by John Fauvel, Raymond Flood and Robin Wilson (Oxford: Oxford University Press, 2003), pp. 151-52.

[23] The letter 'P' is used here as my abbreviation for permutation and not to be confused with the 'P' of pitch-class theory.



Ex. 1.1 Numbered 64-note chromatic scale



Ex. 1.2 Sixty-four note series

1	13	33	44	14	30	56	50
10	25	12	6	38	21	35	64
61	42	20	59	41	27	23	4
9	37	53	57	26	22	52	18
43	49	31	28	34	55	62	32
58	17	45	47	54	51	16	40
60	3	8	29	19	24	2	7
5	63	39	48	11	36	15	46

Table 1.3a Cullinane's new arrangement of the *I Ching*

1	1	9	8	2	6	8	2
10	1	12	6	2	9	11	4
1	6	8	11	5	3	11	4
9	1	5	9	2	10	4	6
7	1	7	4	10	7	2	8
5	3	8	5	7	2	2	7
5	3	8	5	7	2	2	7
5	3	3	4	11	3	3	10

Table 1.3b Converted by modulo 12

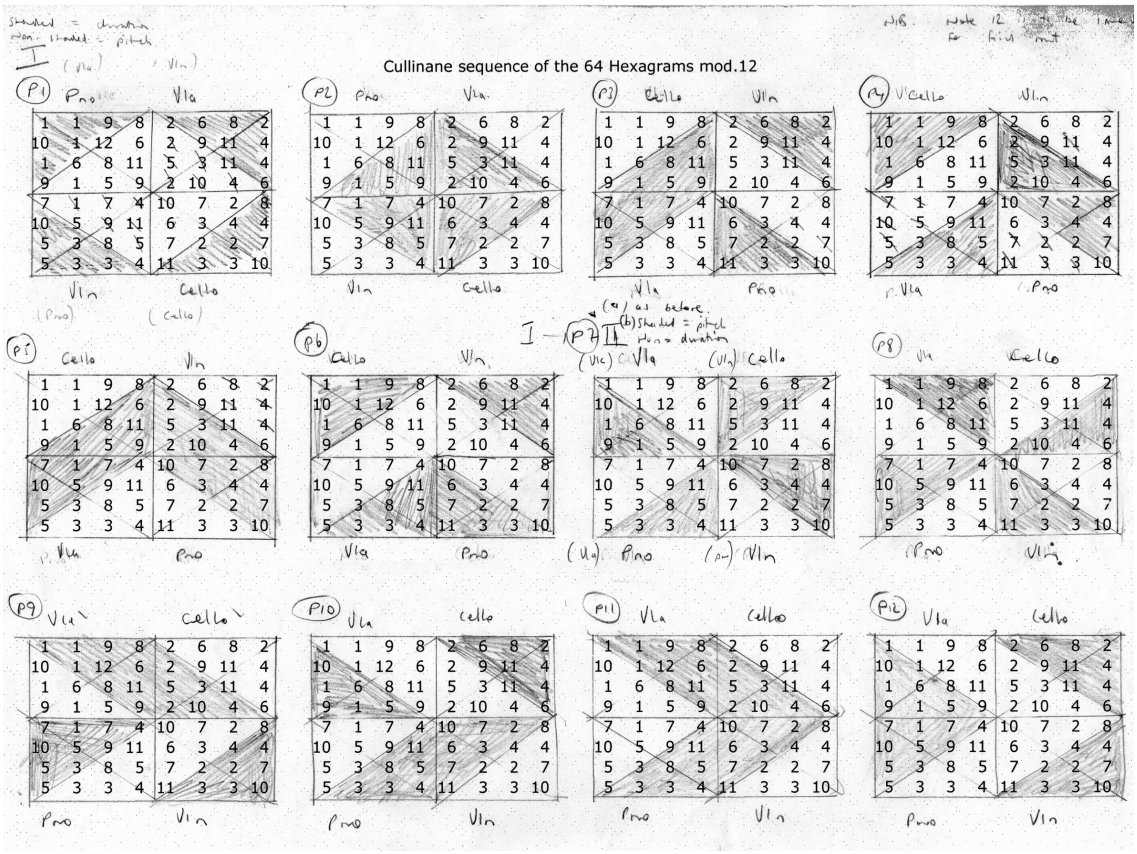


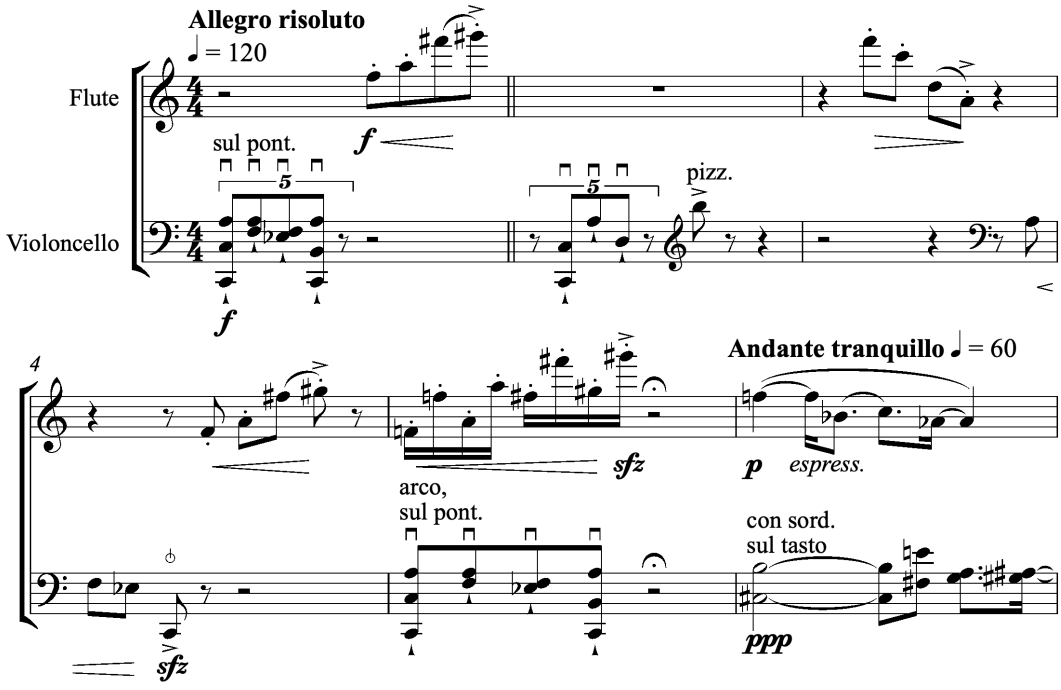
Fig. 1.3 Superimposition of *I Ching* table onto permutations, P_1 –P_{12}

shards of TiME

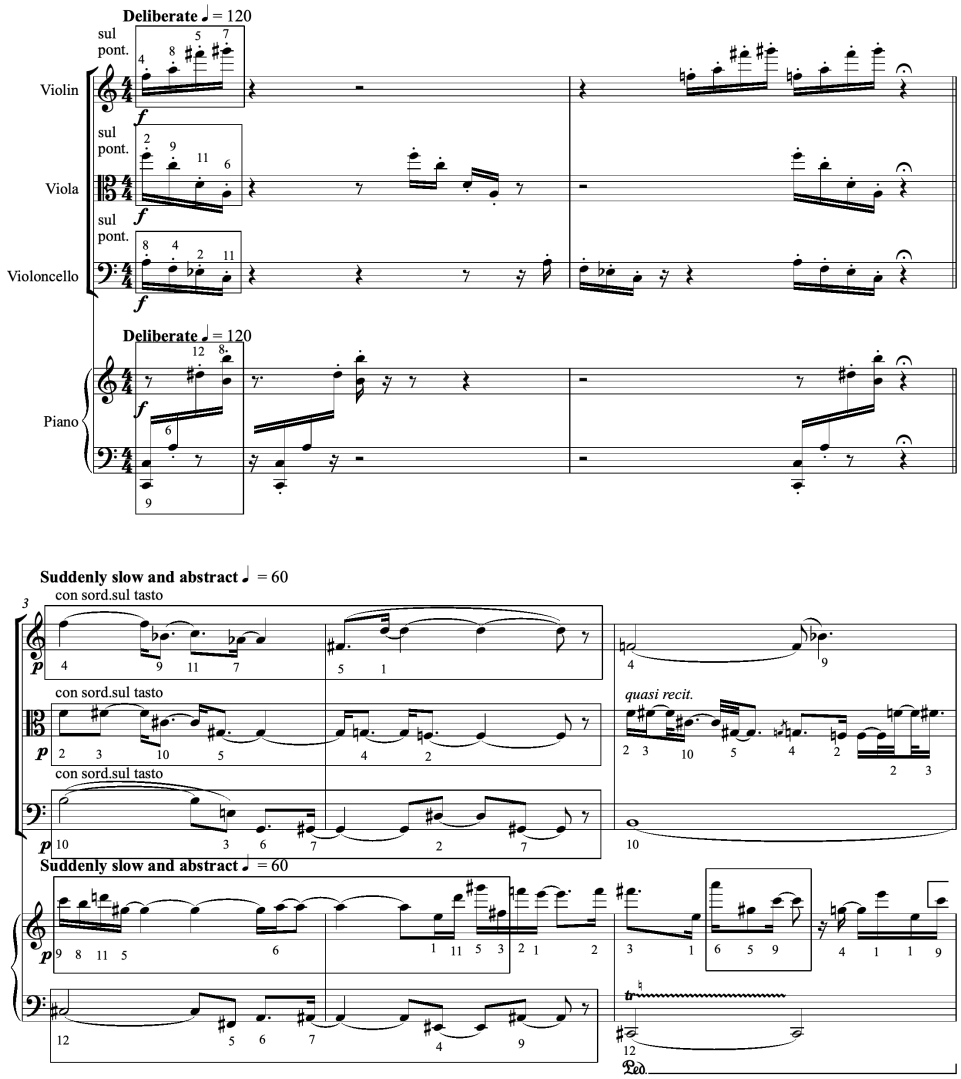
Although *shards of TiME* was based structurally, conceptually and systematically on the prototype quartet's first movement (Figure 1.1 and Table 1.4), it required idiomatic rethinking to accommodate the instrumentation change. Comparing their respective openings (Exx. 1.3 and 1.4) shows how the cello's multi-stopping facility is exploited to fill out the harmony, and the flute's agility in bar 5 is used to cover the missing instruments. The first two bars' pitches are derived from the numbers on the diagonal lines in 'Cullinane' permutations P_{1a} and P_{1b} (Ex. 1.5). For example, the diagonal line in the lower left quadrant (violin) cuts through numbers [4-8-5-7]. These are translated into pitches F-A-F♯-G♯. The diagonal line in the upper right quadrant (viola) cuts through numbers [2-9-11-6] which translate into pitches F-C-D-A. The pitches in bars 3-5 are derived from the six numbers in the unshaded areas, durations from the six numbers in the shaded areas. For example the violin begins with F-B♭ from the numbers [4-9]. The F is five semiquavers duration and the B♭ three semiquavers. The violin and cello adhere to transposition [t-D] and viola and piano to [t-E]. This encapsulates the essential relationship between the two works.

Sub-section	Bars
First Interjection	1-5
1st Subsection	6-17
Second Interjection	18
2nd Subsection	19-27
Third Interjection	28-30
3rd Subsection	31-61
'Goldberg' module – theme from Mahler's Piano Quartet on piccolo	
4th Subsection, 'Funk'	62-92
'Goldberg' module – variation 1: dance	
Fourth Interjection	93-94
5th Subsection	95-122
'Goldberg' module – variation 2: arabesque	
Fifth Interjection	124
6th Subsection, 'Gently but moving'	125-30
Sixth Interjection	131-32
7th Subsection 'Religioso'	133-44
'Goldberg' module – variation 3: Two-part canon: cello, alto flute	

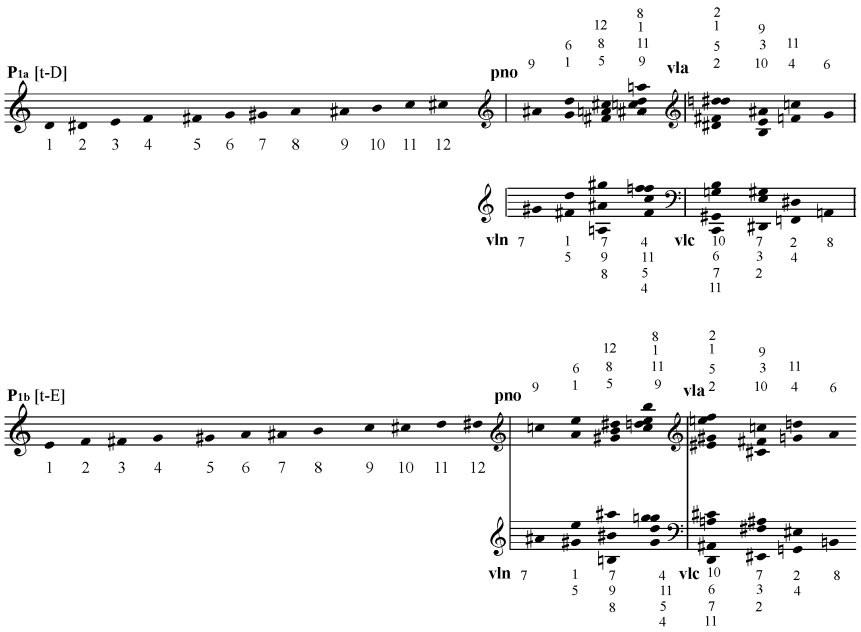
Table 1.4 *shards of TiME,* structure



Ex. 1.3 *shards of TiME,* bars 1-6



Ex. 1.4 ***PRESENT TiME,*** **bars 1-5**



Ex. 1.5 'Cullinane' permutation 1a, violin, cello; permutation 1b, viola, piano

To summarise, *shards of TiME* is a reworked fragment of an earlier work which evolved from connecting Eliot's poetic procedures in 'Burnt Norton' outwards to devise a musical structure incorporating a range of laterally connected concepts. These included: Cullinane's number table and quilt image permutations, which inspired an idiosyncratic serial rotation-based pitch-duration system; and borrowings from a Bach structure, Mahler theme, and Hebridean air. I turn now to discuss similar extra-musical compositional strategies found in works by Carter, Benjamin, Gubaidulina, Andriessen and Adams; and the prototype idea found in Saariaho's work; leaving further comment on borrowings for later. I begin with other responses to Eliot, followed by number and image usage, idiosyncratic serialism, concluding with the prototype idea.

shards of TiME adds to Whitted and Shenton's long 'Checklist of Musical Settings of Eliot's Works'.[24] Another recent example is Elliott Carter's *Three Explorations* (2011) for solo baritone, winds and brass, the second movement 'Time and the bell', a setting of Stanza IV from 'Burnt Norton'. He was throughout his life 'a great admirer of T.S. Eliot's poetry and criticism.'[25] Eliot's 'meditative' texts led to the wind and brass instrumentation, reminding Carter of a similar work by Heinrich Schütz. George Benjamin's orchestral *Ringed by the Flat Horizon* (1979–80) drew its title from *The Waste Land* (1922), although he derived 'his inspiration from the mood and the imagery, not from the language, of Eliot's poem.'[26] Sofia Gubaidulina on the other hand did in *Hommage à T.S. Eliot* for Octet and Soprano (1987). 'A typical feature of Gubaidulina's production is the almost complete lack of absolute music. In her works there is almost always something that goes beyond the purely musical. It can be a poetic text underlying the music or hidden between the lines, a ritual or some instrumental "action."'[27] Gubaidulina has described her response to reading *Four Quartets* as 'shattering' and said 'Eliot's concept of time runs perfectly parallel with mine. I became convinced of that when I began to work with the problem of time in the piece *Hommage à T.S. Eliot*'.[28]

One of her solutions can be found in the opening eighteen bar section of the first instrumental movement. Three distinctive short declamatory 2-note or three-note motifs

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[24] Brent E. Whitted, and Andrew Shenton, 'Checklist of Musical Settings of Eliot's Works', in *T.S. Eliot's Orchestra*, ed. by John Xiros Cooper (New York: Routledge, 2015) pp. 335-40.
[25] Elliott Carter, 'Composer note' in *Three Explorations* [Score], (London, Boosey & Hawkes, 2011).
[26] Brigitte Schiffer, 'George Benjamin's 'Ringed by the Flat Horizon', *Tempo*, New Series, No. 133-4 (1980), p. 79.
[27]<https:www.sikorski.de/1569/en/a_composer_who_does_not_write_works_but_cultivates_them_sofia_gubaidulina.html> [Accessed 8 September 2019]
[28] Kheng K. Koay, *The Kaleidoscope of Women's Sounds in Music of the Late 20th and Early 21st Centuries* (Cambridge: Cambridge Scholars Publishing, 2015), p. 44.

are followed by a single note repeated six times, led by violin 1, echoed by violin 2. The motif pitches form the long, sustained viola/cello harmonics accompaniment. This material is then varied through gradual ascending transpositions forming the first section, (bars 1-18). The sonic melting effect has a visual parallel with Dali's clocks in *The Persistence of Memory* (1931) or Gaudi's *La Sagrada Familia* (1885-present). She employs mathematical concepts such as Fibonacci series or other derived series to help her to 'organise the chaos of the material'. My structural analysis of the first movement below shows her clear concern with symmetry and proportion. (Table 1.4). Note how eighteen *bars* in Sections 1 and 2 become eighteen *seconds* duration in the non-metrical section 6. This is another solution to the problem of time in music, expressed in either score-time (bars) or real time (duration).

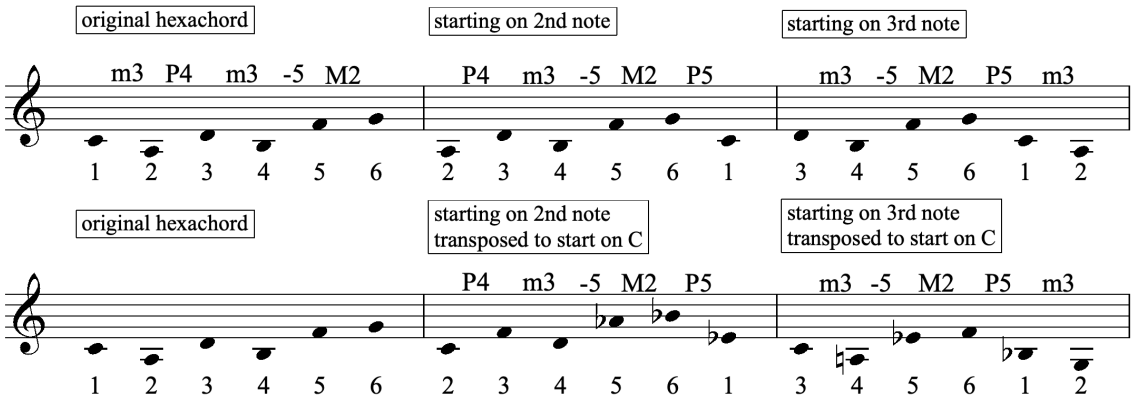
Bar	Circled Number	Section (bar count)
		Section 1 bars 1-18 (18 bars) 4
5	1	4
9	2	3
12	3	3
15	4	4
19	5	**Section 2 bars 19-36 (18 bars)** 7
26	6	4
30	7	7
37	8	**Section 3 bars 37-59 (23 bars)** 9
46	9	10
56	10	4
60	11	**Section 4 bars 60-69 (10 bars)** 10
70	12	**Section 5 bars 70-90 (21 bars)** 8
78	13	13
91	14	**Section 6 bars 91-93 (8 seconds)** Non-metrical
92	15	**(18 seconds)** Non-metrical
93	16	**(8 seconds)** Non-metrical
94	17	**Section 7 bars 94-112 (18 bars)** 18 bars
112	18	**Section 8 (20 seconds)** Non-metrical

Table 1.5 Gubaidulina, *Hommage à T.S. Eliot* (1987), first movement, structure

Louis Andriessen is similarly concerned with numbers and images claiming 'In the last few years, I've noticed that I have been more interested in non-musical elements, such as images and text, than in harmony, melody, rhythm and other parameters.'[29] One example is using Mondrian's painting *Composition with Red, Yellow, and Blue* (1930) to derive structural elements for 'De Stijl', *De Materie,* Part III*,* even down to the choice to incorporate 2400 crotchets in the piece, reflecting the painting's 2400 mm perimeter. Part IV is based on a sonnet's proportion: 4-4-3-3, the number of lines per stanza.[30]

I consider the pitch-duration method developed for *shards of TiME* to follow on from Schoenberg's emancipation of dissonance, Cage's preoccupation with the *I Ching* and subsequent 'emancipation' of authorial responsibility. The system offered consistency, with a built-in hierarchical pitch repetition process, gradual transformation and room for artistic decision-making. It uses the pitch rotation idea in a similar yet different manner from Stravinsky, Knussen and others.[31] The rotational array, often attributed to Stravinsky, was devised by Ernst Krenek for *Lamentatio Jeremiae Prophetae* (1940). It is a serial technique starting with a hexachord e.g. C-A-D-B-F-G, rotated to create a six-rows array, each starting from the preceding row's second note and transposed to the original starting pitch. The example's first rotation would be C-F-D-A♭-B♭-E♭; the second C-A-E♭-F-B♭-G; and so on (Ex. 1.6). Even the non-serialist John Adams employed an idiosyncratic 'twelve-tone row' in On *the Transmigration of Souls* (2002). From bars 1-24, over a sampled sound effect and readings of fragments of text background, the choir's sopranos and altos intone 'u' in a sustained parallel fifths sequence: D-A, B♭-F, F♯-C♯, F-C and E-B. All twelve notes from the chromatic scale have been introduced once the D-sharp and G-sharp are sounded in bars 25 and 26.

[29] Louis Andriessen, 'Rosa, a Horse Drama', a lecture for composition students at the Royal Conservatoire the Hague in June 1998, in *The Art of Stealing Time* (Lancs: Arc Music, 2002), p. 242.
[30] Louis Andriessen, 'Dialog 2: Fragments on Composing' in Maja Trochimczyk (ed.), *The Music of Louis Andriessen* (New York: Routledge, 2002), pp. 69-70.
[31] See further information on Knussen's use of the rotation technique in Julian Anderson, 'Harmonic Practices in Oliver Knussen's music since 1988: Part 1', *Tempo*, New Series, No. 221 (2002), pp. 2-13. See also Joseph N. Straus, 'Stravinsky the serialist' in *The Cambridge Companion to Stravinsky*, ed. by Jonathan Cross (Cambridge: Cambridge University Press, 2003), pp.163-172.



Ex. 1.6 Rotational array

Finally, the idea of the prototype is characteristic to Kaija Saariaho's work. *Nymphéa* for string quartet and electronics (1987) sits at the cusp of two series of works, Part III of the *Jardin secret* trilogy and the first of the *Nymphéa* trilogy followed by *Petals* for cello solo with optional electronics (1988) and *Nymphéa Reflection* (2001) for string orchestra only.

In conclusion, aiming to find out what Eliot's 'hidden music' might sound like, *shards of TiME* was composed by adhering to a prefabricated, multi-layered, laterally connected system allowed to speak for itself. Authorial intervention occurred as poem's lines acted as expressive agents suggesting creative decisions. The work embodies the system's components, rather than evoking the extra-musical stimuli. The underlying concept behind *shards of TiME* is a creative urge to make music from something non-musical by trying to make connections between the stimulus' constituent parts and musical processes. Although abstract serialism and numbers played a part in the compositional process, subsequent systems underpinning the rationale for creative decisions were contingent on me understanding the stimulus. I could not predict the end result, just as someone moving a stone in a garden cannot know what might be hidden underneath it, and I was often surprised at the outcome. Although the resultant music is sometimes quite dissonant, my goal was to create something different and unencumbered by norms, rather than aesthetic beauty. The work and its prototype are only snapshots of each system's potential and perhaps these works might act as starting points for new directions. *shards of TiME* also demonstrated an example of how I rework my own existing musical material, and I will discuss this aspect further in the next section

2. Exploring own existing musical material: 'the box is only temporary'

> I'm afraid that at the request of the Plath estate, we aren't able to grant any musical setting rights in the works of Sylvia Plath.
> *Faber & Faber* [32]

> The box is only temporary
> *Sylvia Plath* [33]

Faber & Faber's response was disappointing. I had asked them to formally grant retrospective musical setting rights for my *The Arrival of the Bee Box* (2008), a setting of Sylvia Plath's bizarre poem 'The Arrival of the Bee Box' (1965) for solo unaccompanied soprano, and mentioned plans for further Plath-inspired works. I had invested significant time and creative energy into the setting, developed a close affinity with the poet after contemplating her poems and life, and the setting was intended as a tribute. How could I continue my Plath tribute through this poem? One way would be to wait until it enters the public domain in 2033. Another more immediate way would be to think outside 'the temporary box', and the following works were two solutions. First, an oboe and piano duo, and second, a short dramatic musical dialogue for soprano and speaking body-percussionist. I will discuss each piece in turn, showing the transformation from the original vocal setting into two very different works. A concluding discussion will include similar compositional concerns found in pieces by a range of other composers.

Song's Eternity

> Hope is the thing with feathers that perches in the soul – and sings the tunes without the words – and never stops at all.
> *Emily Dickinson* [34]

The most obvious way to adapt my original setting of Plath's poem was to adapt the vocal part instrumentally, add a piano accompaniment, and choose another title. I chose

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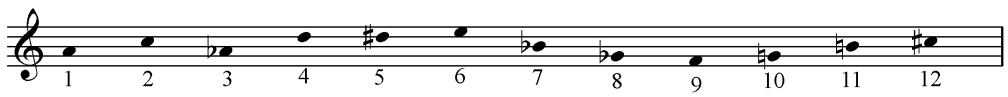
[32] Email received on the 4th November, 2009 from Faber & Faber. Permission is not being granted due to a change in the Plath estate personnel despite previous settings including: "Edge" in Oliver Knussen's Symphony no. 2 (1970-1971); Ned Rorem's Ariel: 5 Poems of Sylvia Plath (1971) for soprano, clarinet and piano; Shulamit Ran's Apprehensions (1978-1979) for voice, clarinet and piano; Mark-Anthony Turnage's Lament for a Hanging Man (1984) for soprano and ensemble; Kaija Saariaho From the Grammar of Dreams (1988), five songs for soprano and mezzo-soprano.
[33] Plath, Sylvia, 'The Arrival of the Bee Box', in Ariel (London: Faber, 2010).
[34] Emily Dickinson, *Poems by Emily Dickinson: Second Series*, ed. by Mabel Loomis Todd and T. W. Higginson (1891), (Urbana, Illinois: Project Gutenberg, 2004) I. Life, no. VI. <https://www.gutenberg.org/ebooks/12242> [Accessed 8 September 2019]

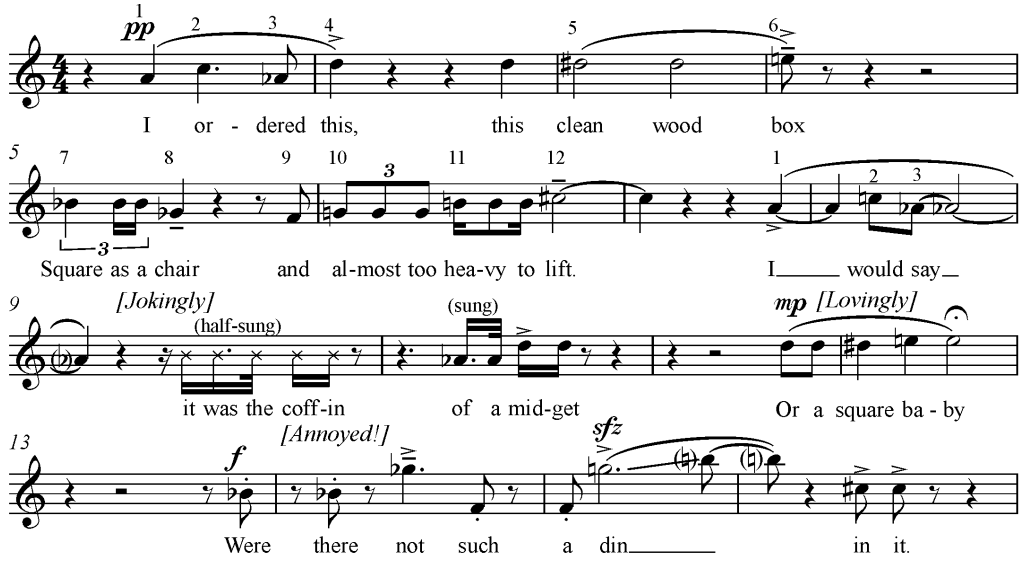
to explore the oboe's expressive and technical melodic agility to maintain lyrical intensity, and investigated how to enhance this with the piano part's harmonic potential. John Clare's nineteenth-century poem 'Song's Eternity' alludes to nature's eternal sounds as song.[35] It not only provided the new title, but also a new expressive dimension, and relates to Plath as Clare also struggled with mental illness. The structure remained the same, seven sections plus a brief coda, following Plath's seven verses and final single line: Section 1, bars 1-19; Section 2, bars 20-46; Section 3, bars 47-65; Section 4, bars 66-79; Section 5, bars 80-106; Section 6, bars 107-19; Section 7, bars 20-25 and a short coda at bars 126-28. The following comparative analyses of extracts from the first, third, fourth and fifth sections, show the relationship between *Song's Eternity* and its precursor, and how I've tried to maintain Plath's crazy narrative trajectory without the words.

Comparing the respective first sections shows how the original series derived melody was adapted and expanded (Exx. 2.2 and 2.4), and how piano harmonies were derived from a new series matrix (Ex. 2.3). The melody was transposed up a minor third to suit the oboe's tessitura, each phrase's final note extended, and a new two-note D-E motif added from the new series matrix eleventh and twelfth pitches (compare bars 4-5 in Exx. 2.3 and 2.4). This recurrent motif's rhythm (Ex. 2.4, bar 5) was suggested by Clare's repeated alternate line three-word phrases e.g. "Come and see". The piano part was formed from horizontal and vertical series readings, its retrograde and inversions according to taste. The oboe presents an ordered version of $O_{1\text{-}12}$ except for the O_{11} and O_{12} extension in bar 5. The dotted lines show the relationship between the piano part and the series as pitches are introduced by the piano before or after the oboe, but rarely together. This comparison condenses the new piece's melodic and harmonic procedures.

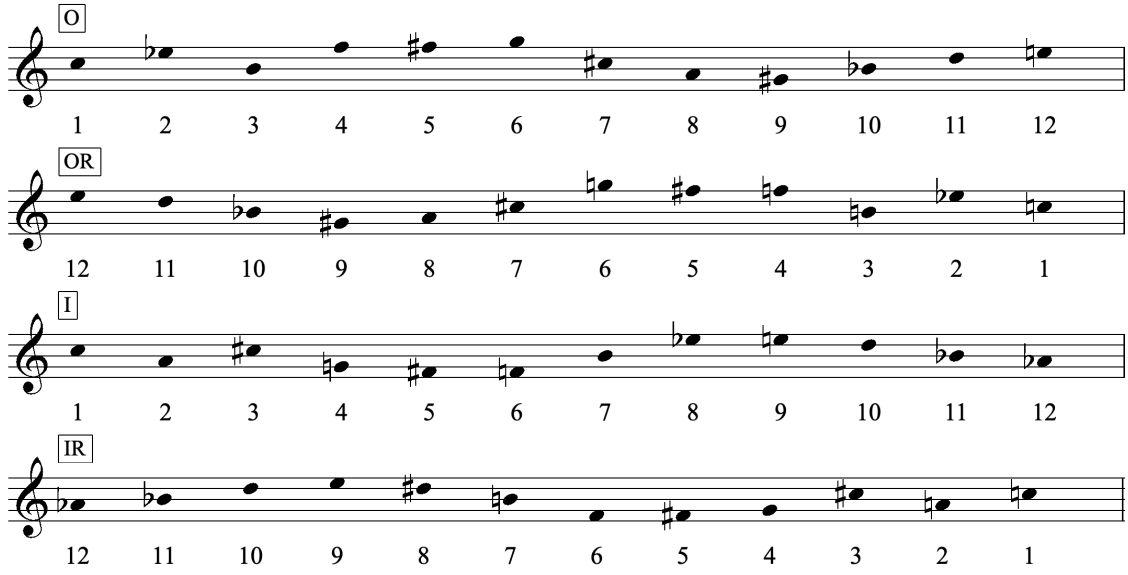


Ex. 2.1 Vocal 'Bee Box' series

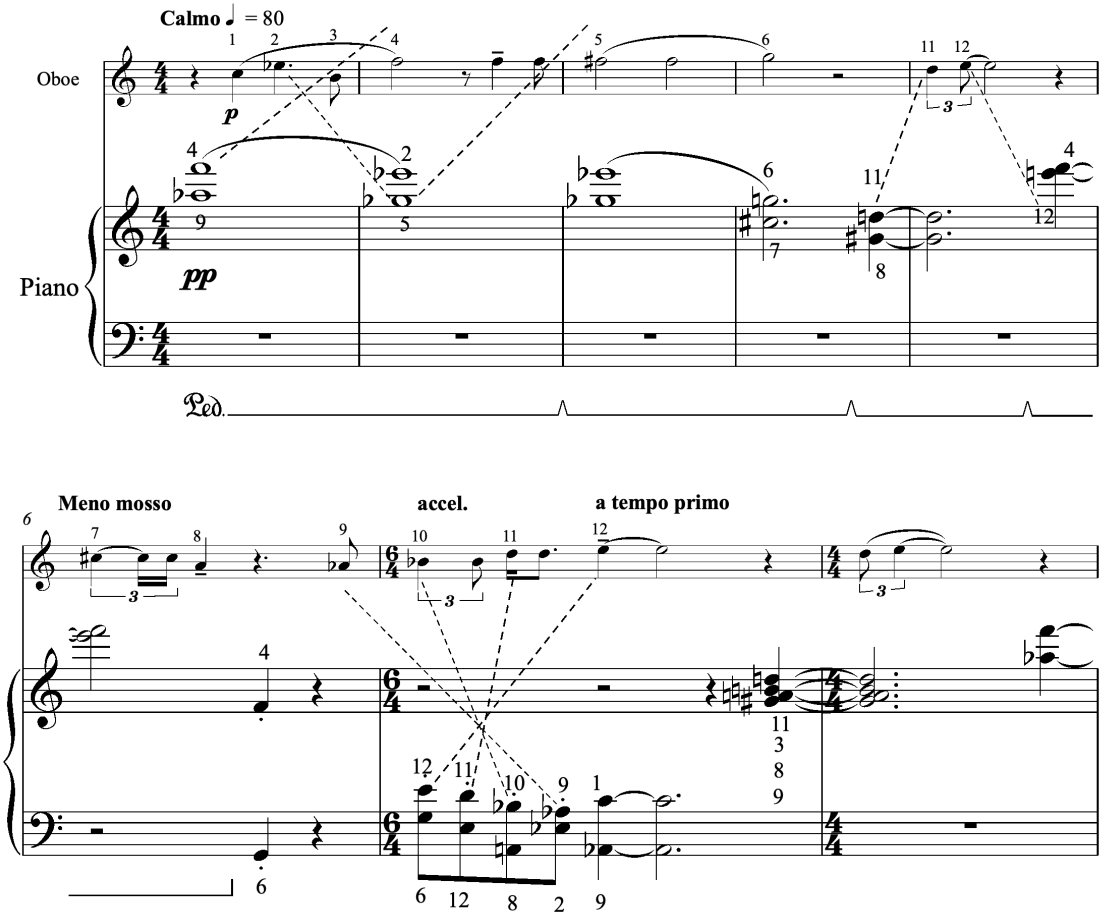
[35] John Clare, *Poems Chiefly from Manuscript*, 'Middle Period (1824-1836), (Urbana, Illinois: Project Gutenberg, 2005) <http://www.gutenberg.org/ebooks/8672> [Accessed 8 September 2019]



Ex. 2.2 ***The Arrival of the Bee Box*****, bars 1-16, application of series**

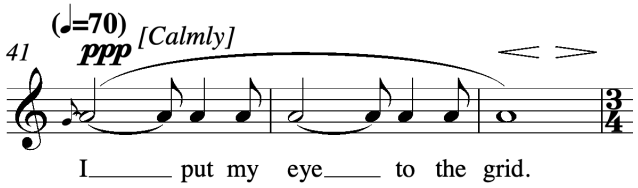


Ex. 2.3 New instrumental ***Song's Eternity*****, series matrix**

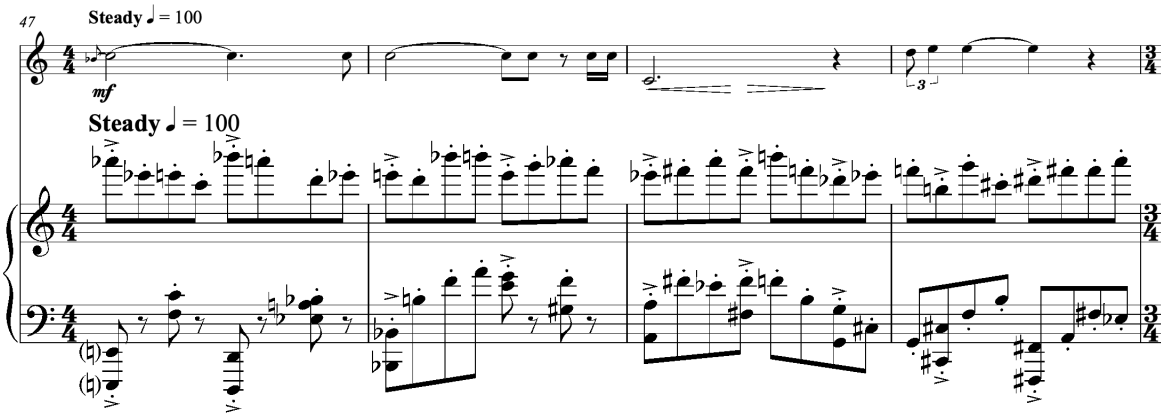


Ex. 2.4 ***Song's Eternity*****, bars 1-8**

The third section's tentative lyrics are evoked by instrumental and rhythmic contrast, while piano pitches are determined by further flexible series readings. The long duration single-pitch oboe line is juxtaposed against a rhythmic pointillistic steady quaver accompaniment (Exx. 2.5 and 2.6), however a brief three-against-two passage from bars 51-54 intensifies the flow. The four right-hand quaver pitches B♭-A-D-E♭ in bar 46 are drawn from each row variation's second pitch [IR-11, I-2, OR-11, O-2], see numbered new series matrix (Ex. 2.3). The left-hand accented octave pitches E-D-B♭ [OR-12, 11, 10] continue to unfold in the overall texture, incorporated a beat later by the right hand. Except for the repeating right-hand beats 3 and 4 in bar 46 a bar later, there are no pattern repetitions through to bar 64, just a steady changing-interval metamorphosis. The third section shows 'hidden' word-painting achieved through rhythmic contrast and flexible pitch determination.

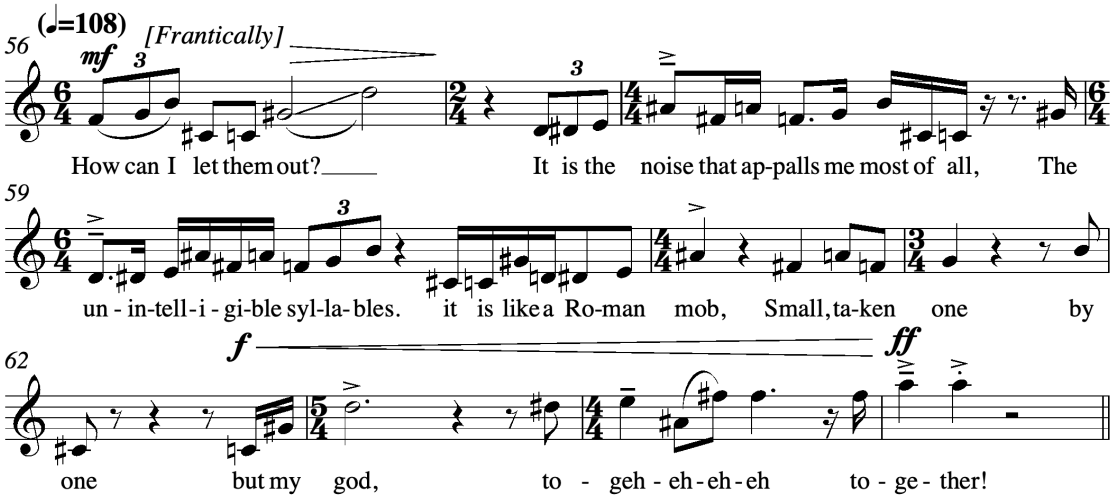


Ex. 2.5 ***The Arrival of the Bee Box,*** **bars 41-43**

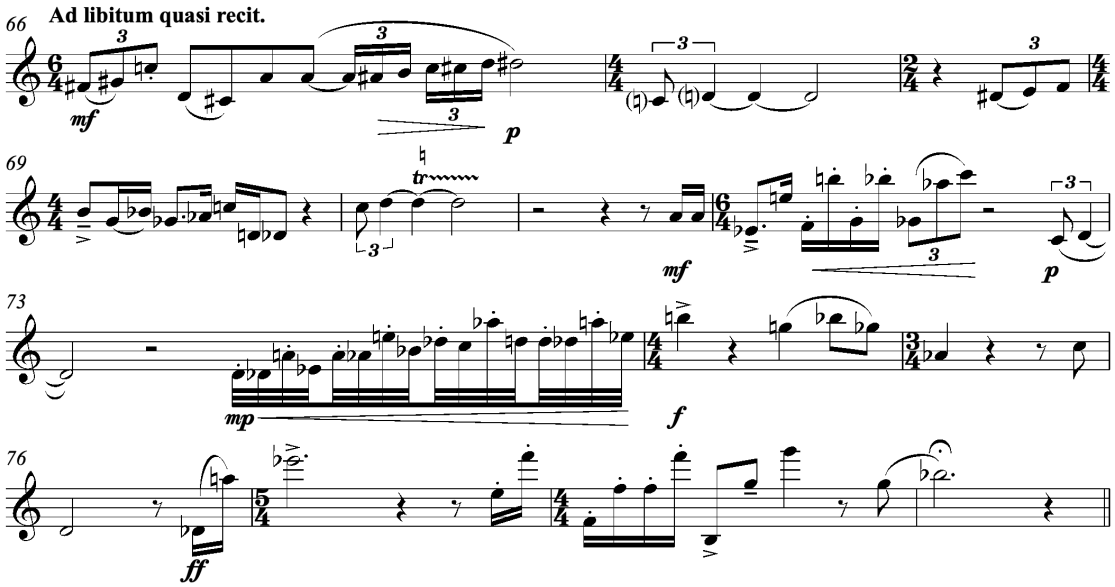


Ex. 2.6 ***Song's Eternity*****, bars 47-50**

The fourth section's neurotic lyrics, perhaps the narrator's most unstable response to the bee box, were originally set for a rapid-fire vocal delivery over a wide soprano range (Ex. 2.7). This idea was transferred to the oboe transposed up a minor second, in a virtually unaccompanied virtuosic quasi-recitative, with rapid spiky articulated staccato octave shifts from bar 72, reaching G^6 in bar 78 (Ex. 2.8). Varied register Clare-derived C-D motifs interrupt the flow in bars 67, 70, 72 and 75, anchoring the frantic section. The piano is silent throughout except for single high bell-notes $D\sharp^6$, A^6, G^6, sounded during oboe rests in bars 68, 71 and 74, but anticipating the oboe's next note. This highly expressive central section allows the oboe to articulate Plath's words, while hearkening back to the first section's sparse accompaniment.



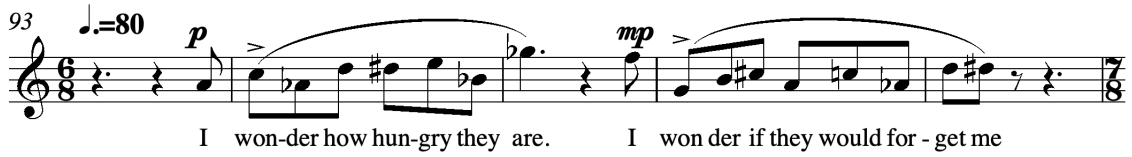
Ex. 2.7 ***The Arrival of the Bee Box,*** **bars 56-65**



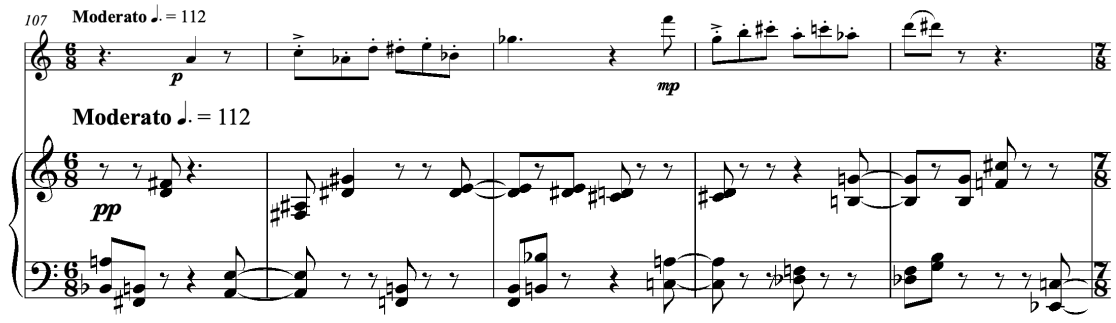
Ex. 2.8 ***Song's Eternity*****, oboe, bars 66-79**

Finally, the piano accompaniment's return in the fifth section at bar 80 commences with three 4/4 bars of cascading right-hand triplet quavers over rhythmically displaced dotted minim three-note left-hand triads. This settles into a strong rhythmic displaced chordal idea in bars 83-89, where right-hand dotted minim dyads are set against left-hand minim dyads across alternating time signatures 5/8, 2/4, 4/4, 5/8, 6/8. This unsettling effect is intended to reinforce the narrator's disturbed outbursts. The rhythmic displacement accompaniment idea continues in a more relaxed sixth section starting from bar 107, with a two-bar rhythmic pattern in 6/8, each bar's last quaver tied to the following bar's first beat (Exx. 2.9 and 2.10). An unsettled harmonic effect is achieved

once again by varying intervals while maintaining oboe line pitches. This example shows how the piano actively contributes to eliciting Plath's narrative trajectory through careful metric, rhythmic and pitch determination, and is the last of four analyses demonstrating the range of reworking employed to elicit Plath's narrative trajectory in an instrumental way. I turn now to discuss the original vocal work's second transformation, in which Plath's words and rhythmic accompaniment also play an important part but in a very different way.



Ex. 2.9 ***The Arrival of the Bee Box,*** **bars 93-97**



Ex. 2.10 ***Song's Eternity*****, bars 107-111**

The Arrival of The Beat Box

> If neurotic is wanting two mutually exclusive things at one and the same time, then I'm neurotic as hell. I'll be flying back and forth between one mutually exclusive thing and another for the rest of my days.
> *Sylvia Plath* [36]

The Arrival of the Beat Box for soprano voice and speaking body-percussionist was composed for the Second Athens Composer/Performer conference (2011).[37] After proposing to collaborate with a soprano to produce a new piece retaining the original Plath setting's drama using vocal sounds only and no words, I was assigned to collaborate with soprano Danae Eleni and body-percussionist Enrico Bertelli, so the title became *The Arrival of the Beat Box*. I explained to them 'I've always thought of the poem as a one-act play involving two protagonists: The narrator and the bees. The dramatic tension/interest is their interaction. In reworking as *The Arrival of the Beat Box*, the protagonists become the soprano and the arrival of a box of beats (the percussionist).' I welcomed creative input.

Greek-born Danae could provide Greek translation, and IPA transliteration, while the Italian-born Enrico could provide Italian translation, and preferred controlled improvisation parameters rather than a set score. He was also prepared to perform spoken text and movement gestures. Armed with these resources, the next stage was to find solutions to the following problems: What new structural design and rationale could be used to integrate the existing composition into the new work? How could the original composition's lyrics be transformed? What role would the percussionist play? What words would he use? What rhythms would he play? What controlled improvisation parameters? How would this be notated? The answers to these questions follow.

The structural rationale was inspired by Plath's words in the epigraph above, 'flying back and forth between one mutually exclusive thing and another' and the *nomos,* an ancient Greek symposium song form. Fourteen short sections labelled A to N in the score, rotate focus from one performer to the other. The soprano follows the Plath poem's seven-section narrative trajectory as in the original vocal setting and *Song's Eternity*, using melodic material from my first vocal setting and sounds derived from Plath's words. The percussionist follows the seven-section *nomos* structure and rationale: *Eparcha*, statement of rules; *Metarcha*, basic tuning and rhythm to be

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[36] Sylvia Plath, *The Bell Jar* (London: William Heinemann Limited, 1963), p. 76.
[37] <https://coreenmorsink.wordpress.com/performercomposer-conferences> [accessed 6 May 2019]

employed; *Katatropa*, first development; *Metakatatropa*, second development; *Omphalos,* central point; *Sphragis*, conclusion in which poet refers to himself; *Epilogus*, coda.[38] This bipartite structure acts as a scaffold in which the performers can portray the poem's protagonist's bipolar inner struggle regarding the bees.

Rather than rendering my original vocal setting as a complete wordless vocalise, I was determined to keep Plath's words in the piece, even if it meant losing their meaning or sense, as this would intensify the overall intended deranged mood. To transform the words, I applied music technology reverse sampling and slicing concepts,[39] and a Greek translation as follows: verses 1 and 6 – reversed lyrics (Table 2.1); verses 2 and 5 – soprano sings vowels while percussionist beatboxes consonants (Table 2.2); verses 3 and 4 – Greek translation.[40] The soprano also interacted with the percussionist during the *nomos* sections and used a table of 12 emotions to guide her controlled improvisation parameters (Table 2.3). The emotions were derived from expression markings in my original Plath setting.

Section B (Plath verse 1)	Soprano sings words backwards
I ordered this, clean wood box	I deredro siht, naelc doow xob
Square as a chair and almost too heavy	erauqS sa a riahc dna tsomla oot yvaeh
to lift.	ot tfil.
I would say it was the coffin of a midget	I dluow yas ti saw eht niffoc fo a tegdim
Or a square baby	rO a erauqs ybab
Were there not such a din in it.	ereW ereht ton hcus a nid ni ti.

Table 2.1 Applying music technology reverse sampling concept

[38] Thomas Mathiesen, 'Ancient Greek music.' The Oxford Companion to Music. Oxford Music Online. Oxford University Press <http://www.oxfordmusiconline.com/subscriber/article/opr/t114/e260> [Accessed 8 September 2019]

[39] Sampling techniques are used in Digital Audio Workstations like Apple's Logic Pro, to manipulate and transform audio files.

[40] It has been pointed out to me that the Greek translation in the score is inaccurate and ambiguous. This fits with the overall rationale and therefore not problematic for me.

Section D (Plath verse 2)	Soprano intones extracted vowels, IPA	Percussionist beatboxes extracted consonants
The box is locked, it is dangerous. I have to live with it overnight And I can't keep away from it. There are no windows, so I can't see what is in there. There is only a little grid, no exit.	/ə ɒ ɪ ɒ, ɪ ɪ e-e-ə-ɜ/ /ɑɪ æ ʉ ɪ ɪ ɪ o ə ɑɪ/ /æ ɑɪ ɑ i ɐ ɑ i ɐ ɑ i ɐ e ɐ e ɒɪ/ /ɛ ɐ o ɪ o o ɑɪ ɑ i ɒ ɪ ɪ ɛ/ /ɛ ɪ o i ɐ ɪ ə ɪ o ɛ ɪ/	Th-b-x s-l-ckd-t-s d-dn-grs. h-v-t l-v-w-t-v r-n-t n-d-c k-p-w-f-r m-m-t. Th-n-w nd-s-c-nt-s wh-ts-n-th-r. Th-r-s n-l-t-l-gr n-ks-t.

Table 2.2 Applying music technology slicing concept and beatboxing technique

calmly	jokingly	lovingly	annoyed
fearfully	lullaby	curiously	ominously
vindictively	frantically	deluded	finally accepting

Table 2.3 Table of 12 emotions

The *nomos* section texts, selected to both reflect the piece's rationale and comment on Plath's poem, were drawn from copyright law (statement of rules) and from bee-related statements by Socrates, Plato, and lyric poet Pindar. Assembling my own text followed Satie's precedent in compiling Socratic texts for his *Socrate* libretto, and my choices show the bee as an enduring symbol of poetic-creative contemplation.[41] A non-bee text selected from poet, musician and reputed *nomos* master Timotheus, mentioning 'eleven-stroke metres and rhythms' (Ex. 2.15, p. 42) suggested a rhythm grid of eleven subdivisions of eleven beats for the percussionist to use to formulate body percussion and beatboxing rhythmic patterns (Table 2.4, and Exx. 2.13 and 2.15). He also devised a series of silent gestures for 'air' percussion, which became a performance focal point (Table 2.5). One does not always notice the gestural aspect of musicians' performative movements and watching this as sudden mime has an impact, particularly when carried out by both performers in the completely mimed section M.[42] The texts selected for the added *nomos* section thus both linked to the original poem and provided rhythmic stimulus.

[41] Erik Satie, *Socrate,* for voice and piano or small orchestra (Paris: Edition de la Sirene, 1919).
[42] See video supplied with the portfolio media, from 9:48.

2 + 2 + 7	2 + 2 + 5 + 2	2 + 2 + 3 + 2 + 2
2 + 7 + 2	2 + 5 + 2 + 2	
3 + 3 + 5	2 + 3 + 3 + 3	
3 + 5 + 3	3 + 2 + 2 + 2	
5 + 3 + 3		
7 + 2 + 2		

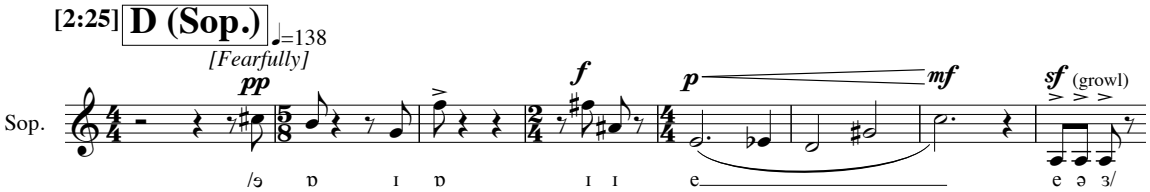
Table 2.4 Rhythm grid of 11 subdivisions of 11 beats

1. Copyright Gesture (left hand – stop-sign, right hand – "Royal" wave)	**Techniques:**
2. Dumbbell (forearm vertical lift, palm down)	8. Percussion Rolls
Percussion instruments:	9. Choked Cymbal
3. Bells (index, middle finger)	10. Elbow Gliss. (left elbow on drum, right hand plays on head)
4. Guiro (scrape to right)	**Other instruments:**
5. Finger Cymbals (two hands, 'tea-party' little fingers)	11. "Air" Guitar
6. Drum-Kit	12. Piano sideways, (two octave ascending scale ending with 'chucking in the bin' motion)
7. Tuning Fork	

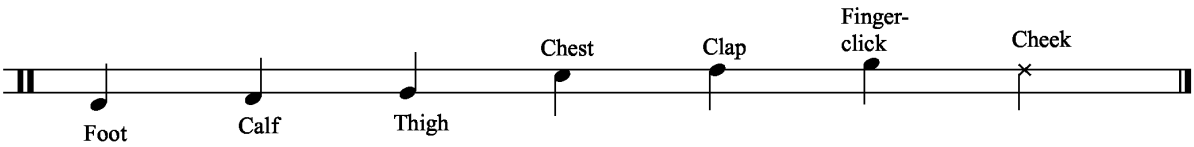
Table 2.5 List of 12 gestures for 'air' percussion

Preparing the score and working out the notation needed careful thought as there was no precedent for this unique duo's forces. Discussion with the performers led to the score's final notation and extensive performance instructions. See (Exx. 2.11, 2.12, 2.13) for short examples of vocal, body-percussion and beatboxing notation. See also (Exx. 2.14 and 2.15) for complete sections B and C. My scoring allows a more improvisatory beatboxing approach than the specific beatboxing notation found in Anna Meredith's *Concerto for Beatboxer and Orchestra* (2010), developed with beatboxer Shlomo. Her score is actually for six beatboxers, and contains free improvised moments marked in the score as 'Go beatboxers' or 'Go Shlomo'. In terms of the vocal character, I had in mind Georges Aperghis' *Récitations* (1977–78) for solo voice, before discovering Berio's *Sequenza III* for voice (1965). Both are exemplary studies in

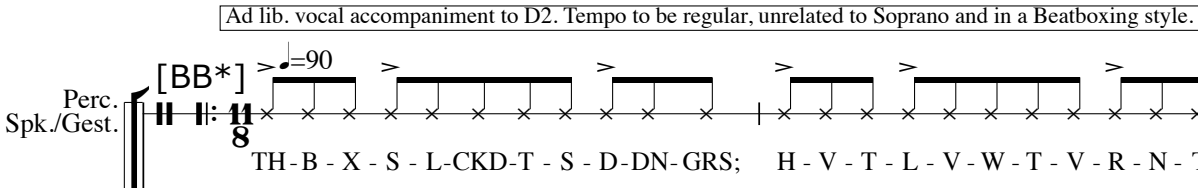
extended vocal performance technique notation, while Aphergis' work is particularly suited to the highly expressive and stylised sound of French. The indeterminate notational aspects in my piece allow the performers to engage and contribute in a creative way. The following discussion goes further to situate *Song's Eternity* and *The Arrival of the Bee Box* alongside other works exhibiting similar interests or approaches.



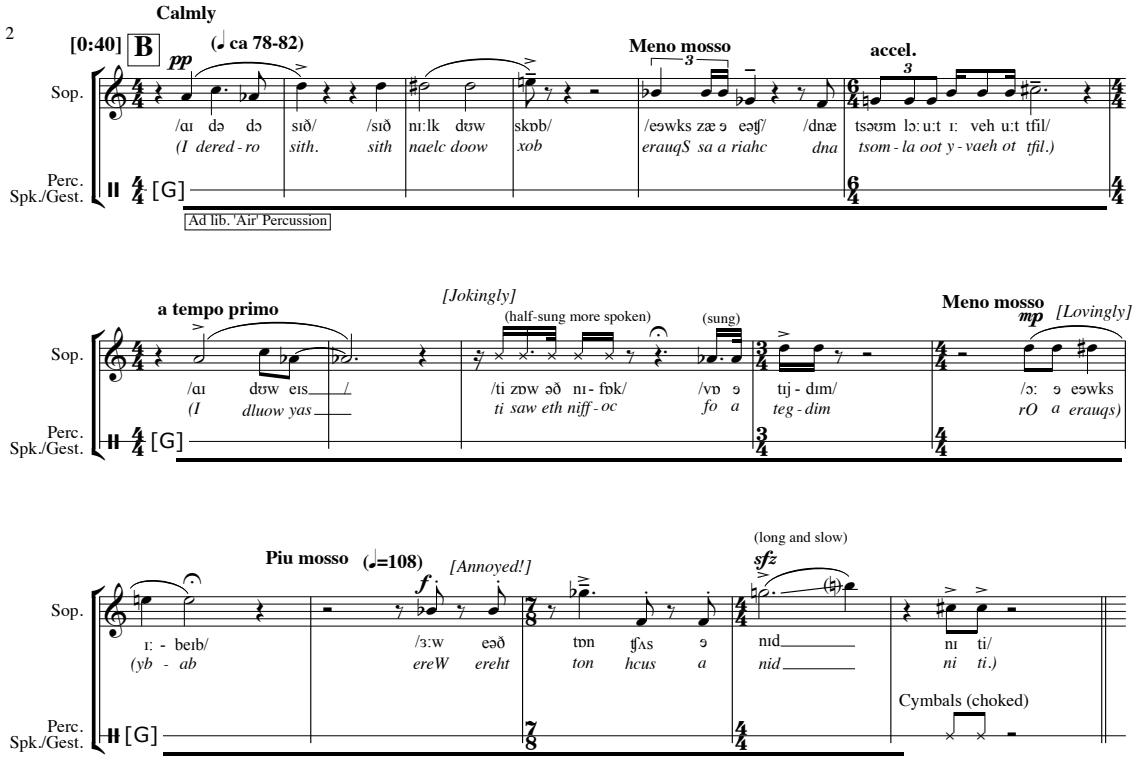
Ex. 2.11 ***The Arrival of the Beat Box,*** **Section D, p. 4, vocal notation**



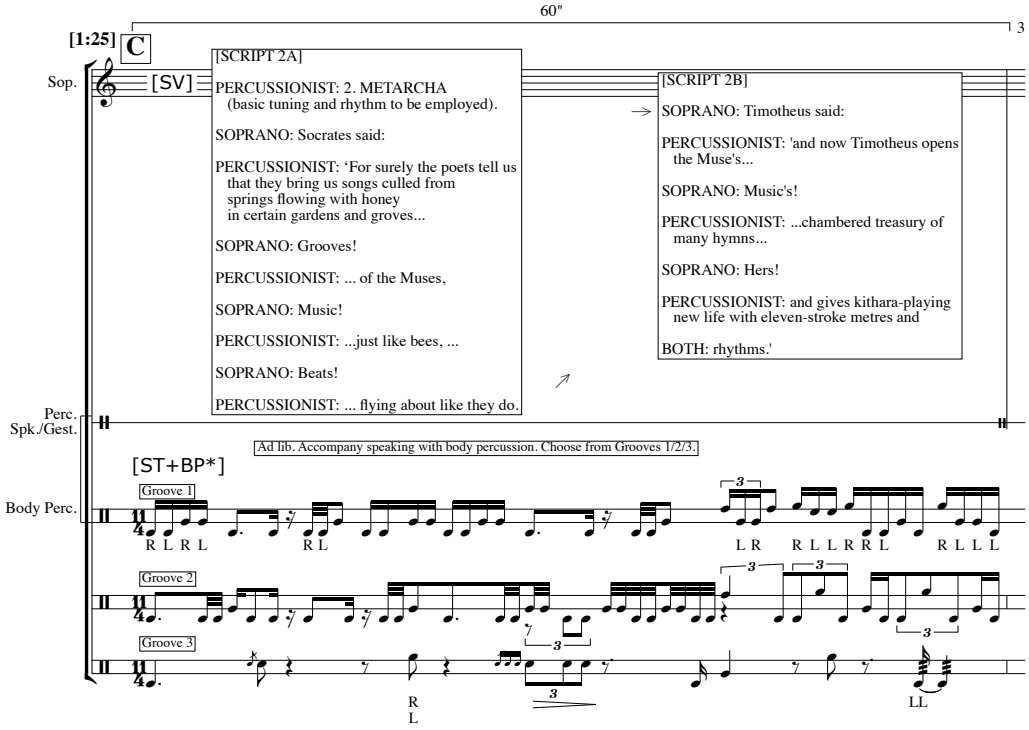
Ex. 2.12 ***The Arrival of the Beat Box,*** **body-percussion notation key**



Ex. 2.13 ***The Arrival of the Beat Box,*** **Section D, p. 5, beatboxing notation**



Ex. 2.14 ***The Arrival of the Beat Box*****, p. 2**



Ex. 2.15 ***The Arrival of the Beat Box*****, p. 6**

To sum up, *Song's Eternity* and *The Arrival of the Beat Box* exemplify techniques used to explore my own existing material, in particular: transferring from unaccompanied vocal to accompanied instrumental; using 'hidden' word-painting and flexible series realisation; integrating into new forces combination; lyric transformation through applying technological sampling concepts for human performance; and resolving notation issues. In *Song's Eternity* the oboe's expressive timbre and technical exploitation, added recurring Clare-derived C-D motif, the piano's mixed serial-atonal harmonic language and rhythmic displacement, all combined to evoke the poem's dramatic and fluctuating manic-depressive intensity. *The Arrival of the Beat Box* on the other hand follows a surrealistic logic of displacement and condensation, a psychological term for fusing two or more images, ideas, or symbolic meanings into a single composite or new image. Such primary processes in unconscious thought are exemplified in dreams. The performers participate in a historical continuum linked by bee metaphors, while the performance articulates multiple and frequent changing identification points. It is almost as if Sylvia Plath had participated as a silent collaborator. I turn now to discuss pieces incorporating similar approaches, concluding with some thoughts on audience reception.

Despite their differences, *Song's Eternity* and *The Arrival of the Beat Box* emerged from activating the latent potential offered by an unforeseen constraint. John Cage similarly needed to circumvent such a copyright dilemma in 1969. Merce Cunningham had choreographed a dance to the rhythms of Satie's *Socrate*, mentioned earlier, for voice and piano or small orchestra.[43] Cage had produced a two-piano arrangement, which Satie's publishers didn't approve. He then 'rewrote' his arrangement applying new pitches to Satie's rhythms, retitling the 'new' piece as *Cheap Imitation*.[44] Cunningham responded by calling his dance *Second Hand.*

A series of works linked by one focal stimulus can be found in Richard Rodney Bennett's *Syrinx* series derived from Debussy's *Syrinx* (1913) for solo unaccompanied flute. The first of five works, *After Syrinx* I (1982) for oboe and piano, has similar sounding expressive moments with *Song's Eternity*. Compare the pointillistic rhythms (RRB, rehearsal no. 4) with those in my section 6 (from bar 107) and the maximum oboe range exploitation featuring four loud low B naturals marked 'ruvido' (RRB Cadenza 2, rehearsal no. 22) with my three low B flats marked '*unsubtle*' (bars 99-101). The piano accompaniment is also conceived in an atonal serial manner, with frequent

[43] Erik Satie, *Socrate* (Paris: Edition de la Sirene, 1919).
[44] John Cage, *Cheap Imitation* (Henmar Press, 1970).

high register bell chords. *After Syrinx II* (1984) for solo marimba, *Sonato After Syrinx* (1985) for flute, viola and harp, *Tango After Syrinx* (1985) for solo piano, and *Dream Dancing* (1986) for large ensemble followed. The series of works is also important in Kaija Saariaho's compositional process, for example, *Nymphéa* for string quartet and electronics (1987) sits at the cusp of two series of works. It is Part III of the *Jardin secret* trilogy and the first of the *Nymphéa* trilogy, recognisable in the subsequent *Petals* for cello solo with optional electronics (1988), and *Nymphéa Reflection* (2001) for string orchestra.

But I wish to take a brief closer look at her own similar length Plath response, *From the Grammar of Dreams* (1988), five songs for soprano and mezzo soprano, revised in 2004 for soprano and electronics. She is explicit about the literary or visual impulses behind her works, and keeps a dreams diary, and in this work similarly explored the soprano voice's capacity to express insanity alongside dreamlike states. Plath's late poem 'Paralytic' (1963) functions as a central text alongside three short excerpts from her only novel *The Bell Jar* (1963). The texts are similarly fragmented and extended as timbral effect becomes more important than textual comprehension. She applied 'strict rules of musical organization' to contrast the texts' emotional power 'in the manner of our dreams, where thoughts are transformed into visual images with their colors, juxtapositions, movements and directions.'[45] These strict organisational rules include the careful transformation of vocal timbre, allowing an expressive form of modulation from consonance to dissonance (repose to frenzy). Karen J. Siegel claims *From the Grammar of Dreams* to be pivotal to the sound of Saariaho's subsequent instrumental works.[46]

Her immaculate, hand-written score, as prescriptive as Berio and Aperghis, contains detailed performance instructions and copious expressive markings including: 'intensive, restless' and 'excited, violent'; or performance instructions such as 'allow the "r" to become a croaking sound in the throat'. Instructions in Song IV include 'inhale only, as if short of breath' and 'exhale loudly'. Within a largely atonal context, a major third functions noticeably as an opening, mid-way and closing intervallic 'tonal' anchor, in a balanced macro-structure. Song I opens with E-G♯; the lyrical central Song

[45] Kaija Saariaho, 'Programme note' <https://saariaho.org/works/from-the-grammar-of-dreams> [Accessed 6.9.19]
[46] Karen J. Siegel, *Timbral Transformations in Kaija Saariaho's* 'From the Grammar of Dreams' (PhD, 2014).

III opens with F♯-A♯; and the final Song V, a vocalise, closes with F♯-A♯ as each singer intones 'I smile'; Songs II and IV, prioritise rhythmic delivery.

The piece was later reworked to enable one soprano to perform live accompanied by her own pre-recorded mezzo-soprano part, and published in 2004. The only noticeable revision is the new electronic typesetting. Saariaho's timbral preoccupation came from studying spectral compositional techniques developed by Tristan Murail and Gérard Grisey at IRCAM during the early 1970s. Analysing the harmonic series' contribution to acoustic instrument unique timbres provided composers with pitch organisation tools. John Adams' *Shaker Loops* (1978) was derived from his early experimentations with synthesisers, loops being a technological term describing sequential repeated drum patterns, for example in digital audio work stations. The reverse and slice sampling strategies I applied in *The Arrival of The Beat Box* similarly flipped this idea by harnessing electronic concepts for live performance. Of course, Berio had done this earlier by deriving *Sequenza III* (1965) from his earlier electronic manipulations of Cathy Berberian's voice in the electroacoustic *Thema (Omaggio a Joyce)* (1958-9) for voice and tape.

Audience responses to *The Arrival of the Beat Box* have varied, ranging from those who "only understood half of it", to those who "got it after watching it a few times", understandable due to its lack of narrative comprehensibility. I have been asked if I wrote this work for the concert hall. A composer needs to consider the relationship between their creations and the audience despite Milton Babbitt's provocative, yet often misread article 'Who cares if you listen?' often used as a banner for contemporary classical music's insularity.[47] However, most composers experiment during their search for new ways to do things, and I consider *The Arrival of the Beat Box* just as experimental as Ligeti's *Poéme Symphonique* for 100 metronomes (1962), written during his brief involvement with the avant-garde Fluxus movement. Nevertheless, both *Song's Eternity* and *The Arrival of the Beat Box* realised my creative aim to continue my Plath tribute through her poem, which appropriately ends with the line 'The box is only temporary.' I turn now to a piece exploring other existing music.

[47] Milton Babbitt, 'Who cares if you listen?', in *High Fidelity* (Feb. 1958).

3. Exploring other existing musical material: jingle tales

> For the snark was a boojum, you see.
> *Lewis Carroll* [48]

I was approached by Joshua Wilson to compose a new bassoon concerto for him to premiere at his farewell concert with the Enfield Young Symphony Orchestra. There was no brief as such, however he told me that aside from 19th century repertoire, he liked Varese and John Adams, had performed John Williams' bassoon concerto,[49] and admitted he was 'not that much of a contemporary music listener, more of a player.'[50] He added: 'The Marcel Bitsch Concertino is incredible, but there is no way in h*** I can play it!' Nevertheless, his unconditional offer to study bassoon at the Royal Academy of Music reassured me as to his performing credentials, but I would need to find a way to showcase his talent within an orchestra mainly comprising grade 6 to grade 8 performers.

I started my usual pre-compositional search for a central stimulus and rationale, settling on Lewis Carroll's enigmatic nonsense poem *The Hunting of the Snark: an Agony in Eight Fits* (1874-6). describes 'with infinite humour the impossible voyage of an improbable crew to find an inconceivable creature.'[51] I wanted to use this at the centre of a collage-based piece connecting existing popular music fragments and styles, rather than the classical music references in earlier models including: Andriessen's *Anachronie I* (1966-7); Schnittke's First Symphony (1969-74); or Berio's *Sinfonia* movement III (1972). After further comments on the rationale and structure, I will elucidate the pitch organisation for the solo bassoon before explaining the derivation and use of other existing music. The concluding discussion will include comments on similar compositional concerns found in pieces by a range of other composers, ending with a reflection on some feedback from the premiere's audience.

Boojum

The poem contained sufficient material for my purpose. Its riddles including the number forty-two, the Bellman's rule of three, hidden messages, and logical structure with illogical content suggested an enigmatic nonsensical wordless musical drama. The solo

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[48] Lewis Carroll, *The Hunting of the Snark*. (1874-6) (Urbana, Illinois: Project Gutenberg, 2008) <http://www.gutenberg.org/ebooks/13> [Accessed 9 September 2019]
[49] John Williams, *Five Sacred Trees*, Concerto for Bassoon and Orchestra (1995).
[50] Email communication, Dec 2011.
[51] Sidney Williams and Falconer Madan, *Handbook of the Literature of the Rev. C. L., Dodgson* as cited in Martin Gardner, *The Annotated Snark* (London: Penguin Books, 1974).

bassoon's extensive 3½ octave range and expressive potential from low comic to high plaintive was exploited to the full to 'play' the Snark, Bellman and Boojum, while the orchestra 'played' the other ten characters listed in (Table 3.3).

'*Logical' Structure.* The structure was derived proportionally from the poem (Table 3.1). The eight verses (fits) contain a total 141 lines (22, 21, 14, 18, 29, 18, 10, 9). The verse's lines to the total were translated proportionately into durational percentages, then adjusted to meet the targeted fourteen minutes. Bell strikes, corresponding to the 'Eight bell' nautical watch bell-ringing system, introduce each section (Table 3.2).

Sub-title	Bars	Description
1. The Landing	1-54	Opens with ominous low strings and four bass drum strikes introduce the bassoon's first of three announcements: 'Just the place for a Snark!' (Ex. 3.2, bar 12). The ten hunting party themes borrowed from various sources are introduced.
2. The Bellman's Speech	55-120	Begins with a lyrical statement and settles into a funky section where orchestral 'stab' chords interrupt the soloist's narration.
3. The Baker's Tale	121-48	A plaintive trio for bassoon, oboe and clarinet.
4. The Hunting	149-213	An exciting adventure where woodwind flurries, brass fanfares, 'stab' chords and percussion interact with the soloist's energetic runs.
5. The Beaver's Lesson	214-246	Begins with burbling low strings leading to a ferocious orchestral crescendo, quietened as the bassoon duets with an oboe, accompanied by a new motif.
6. The Barrister's Dream	247-286	Bassoon and violin duet followed by a string feature building to the bassoon cadenza. Quartet for oboe, horn, harp and bassoon follows.
7. The Banker's Fate	287-399	A new motif builds in canon as the bassoon creates the momentum for the final section.
8. The Vanishing	300-319	At first appears to be a successful conclusion until the bassoon intones: 'The Snark was a Boojum you see.' Brief woodwind echo precedes the final chords.

Table 3.1 *Boojum*, structure and descriptive notes

Number of bells	Bell pattern	Hour (a.m. and p.m.)		
One bell	1	12:30	4:30	8:30
Two bells	2	1:00	5:00	9:00
Three bells	2 1	1:30	5:30	9:30
Four bells	2 2	2:00	6:00	10:00
Five bells	2 2 1	2:30	6:30	10:30
Six bells	2 2 2	3:00	7:00	11:00
Seven bells	2 2 2 1	3:30	7:30	11:30
Eight bells	2 2 2 2	4:00	8:00	12:00

Table 3.2 Nautical eight-bell ringing system

'Illogical' content – solo bassoon. The bassoon's pitch material was derived from a snark, a connected, bridgeless cubic graph in mathematical graph theory, and a magic cube. Tietze's graph, a type of snark (Figure 3.1) was used to organise pitch. The twelve possible pitches were plotted clockwise around the points on the outer circle following a cycle of fifths, continuing around the inner triangle. The connecting coloured lines (six yellow, five green, four blue, three red) rendered four dyad groups, as in the top system (Figure 3.2). The annotated extract from the bassoon part, bars 155-65, shows how the system generated pitches (Ex. 3.1). A magic cube was used to generate an alternative method of pitch organisation as shown in (Figures 3.3, 3.4, and Ex. 3.2). Using the two, three-dimensional shapes to organise the bassoon's pitches links to the Bellman's 'rule of three', and relates to the twofold relationship between the Snark and the Boojum, as the Baker warns in the poem: '(…) if your Snark is a Boojum then (…)'.

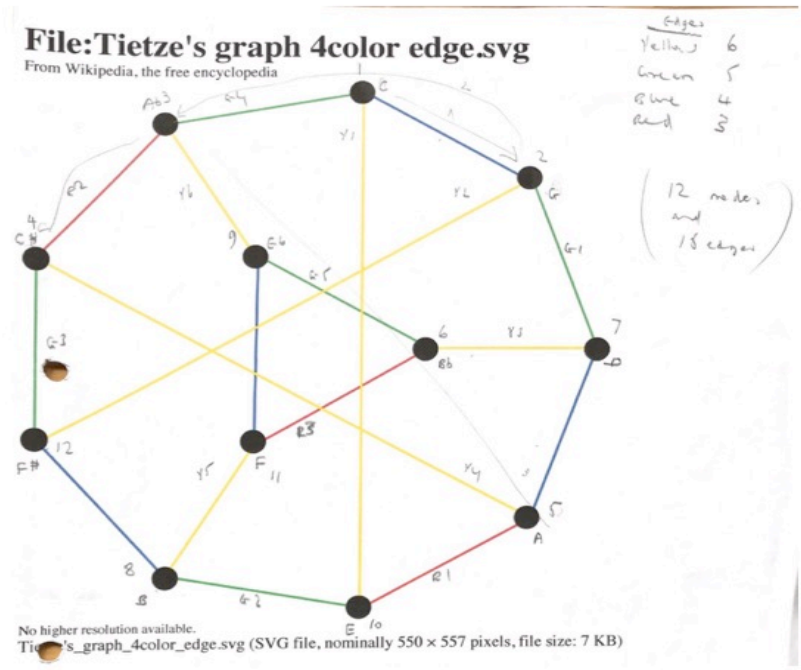


Fig. 3.1 Tietze's graph, example of a snark

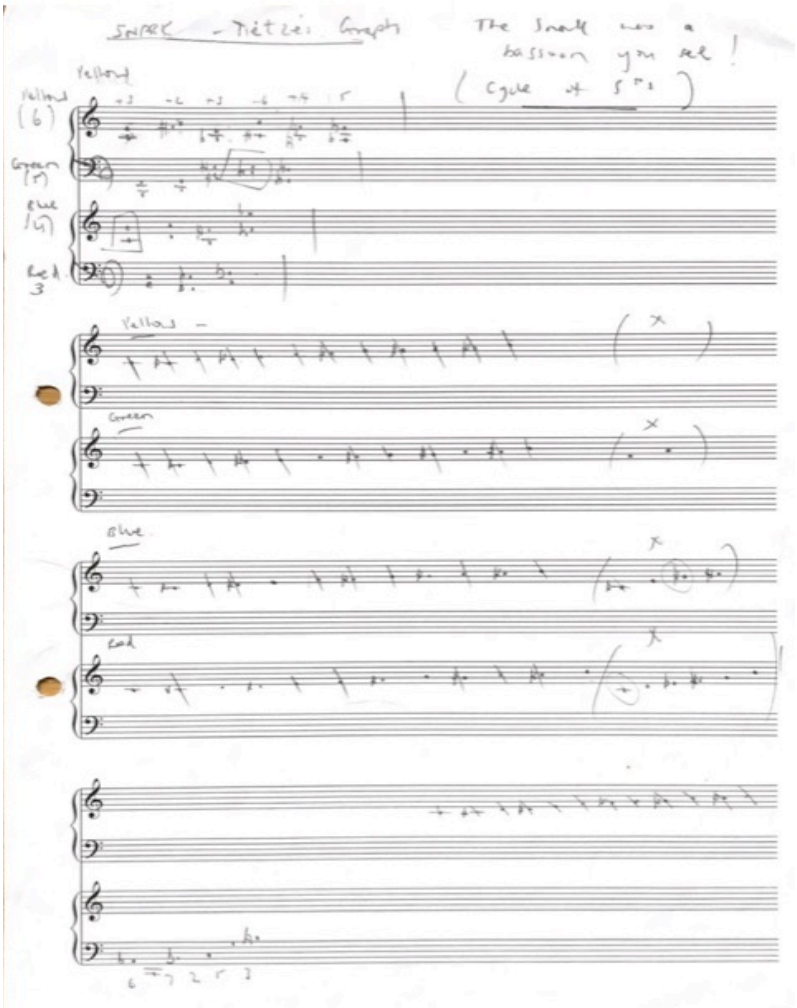
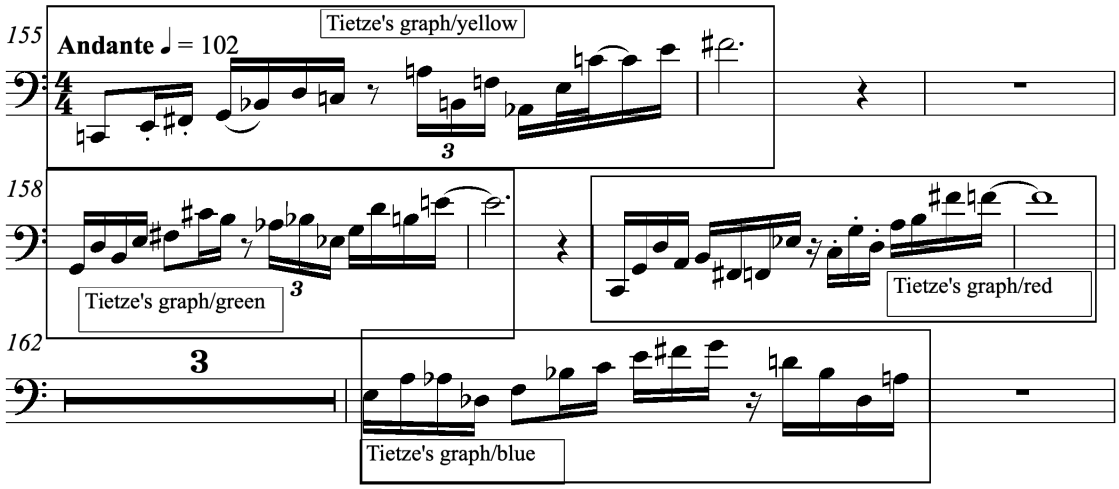


Fig. 3.2 Pitch organisation derived from a snark



Ex. 3.1 Snark derived pitch system applied, solo bassoon, bb. 155-165

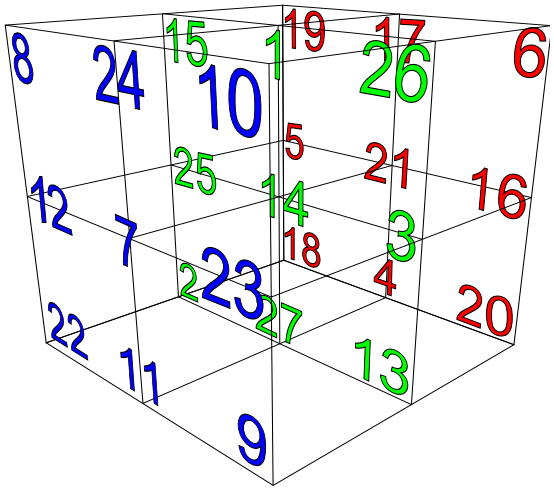


Fig. 3.3 Example of a magic cube

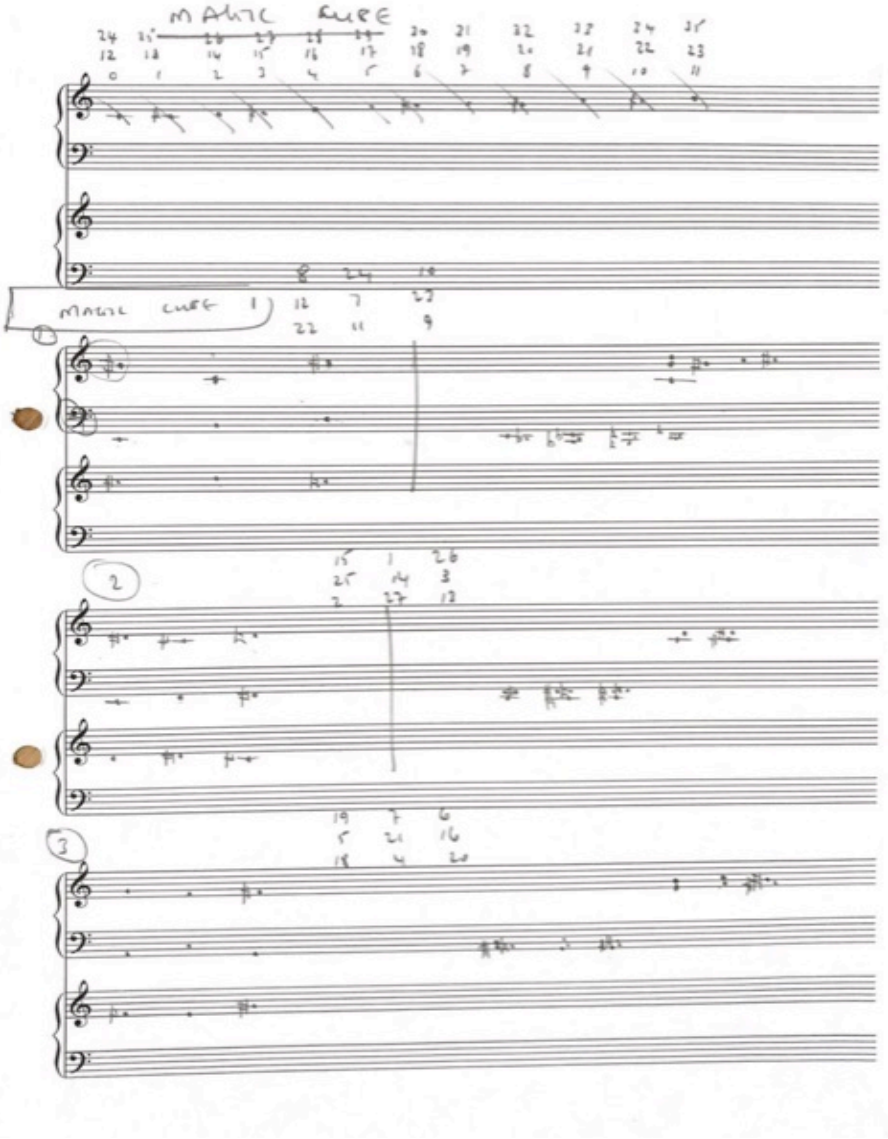
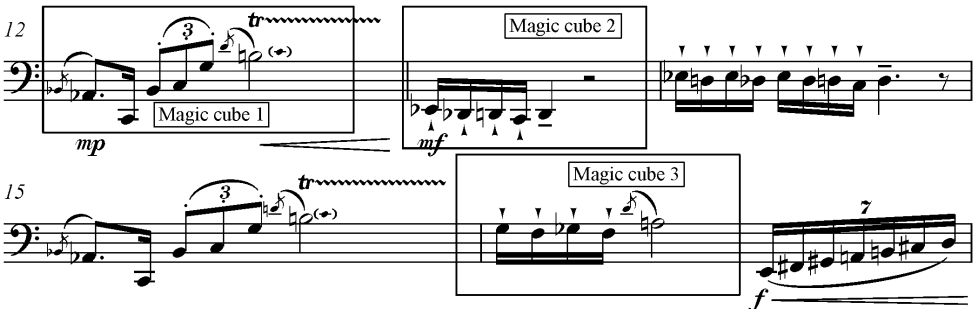


Fig. 3.4 Pitch organisation derived from magic cube

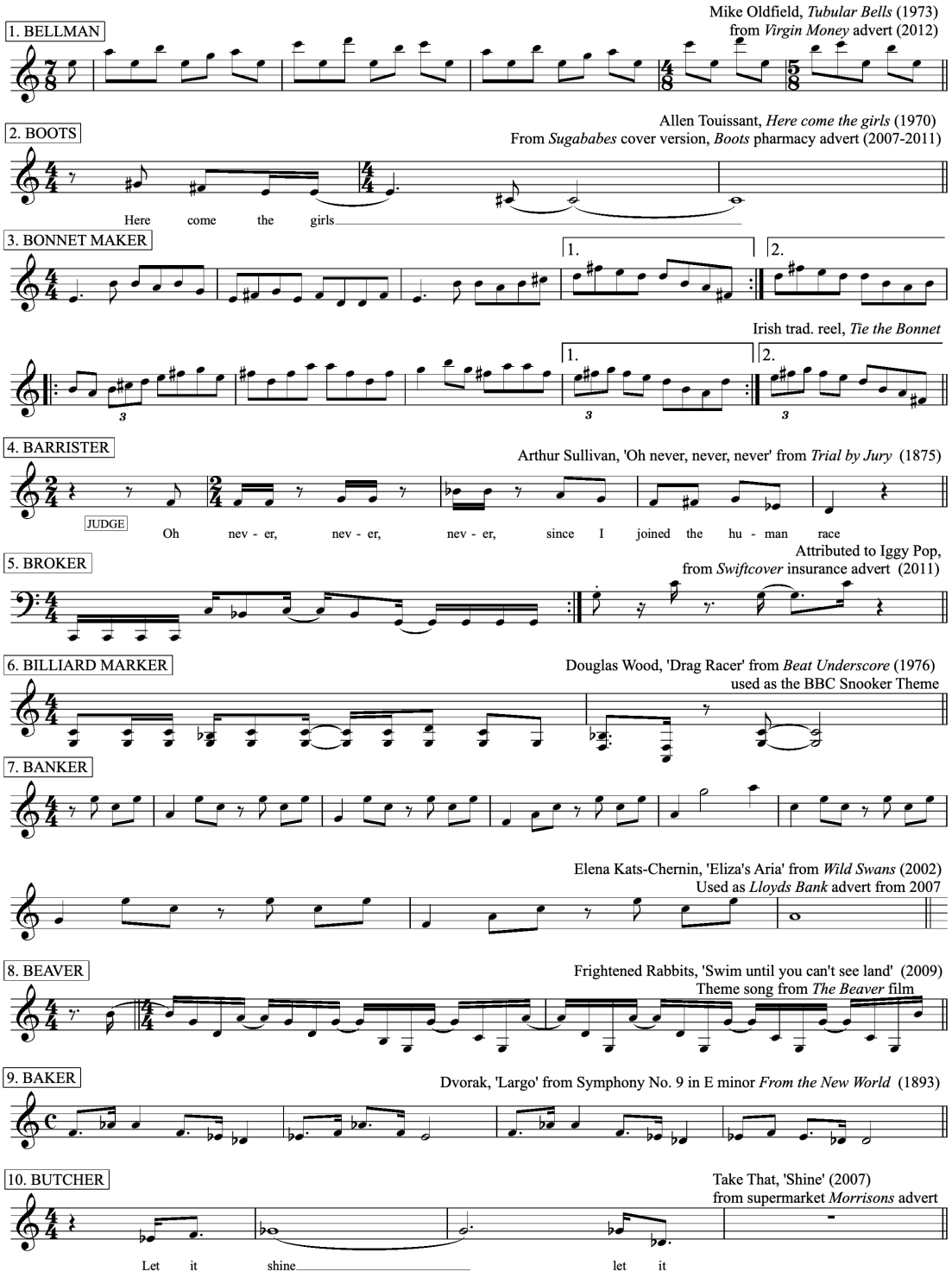


Ex. 3.2 Magic cube derived pitch system applied, solo bassoon, bb. 12-16

'*Illogical' Content – orchestra.* Motivic material for the orchestra was borrowed from ten sources, detailed in order of appearance (Table 3.3) and transcribed with credits (Ex. 3.3, p. 52). Selection rationale was to connect the character name with a well-known theme. Motifs were then introduced in the first section as a background to the solo bassoon in a tapestry of fragmented, sometimes layered utterances, through popular music stylistic allusions underpinned by a prominent drum kit part. I will explain how the motifs were introduced and then show how they were developed later in the piece.

	Character	Bar no.	Instrument	Source
1.	The Bellman	b. 2	vla/hp/vln 2	*Tubular bells*
2.	Boots	b. 6_3	clts	*Boots* pharmacy jingle
3.	Bonnet Maker	b. 7_3	flts/picc	Irish trad tune
4.	Barrister	b. 9	tba/tbn/bsn/bclt	*Trial by Jury*
5.	Broker	b. 11	bsn/bclt	*Swiftcover* jingle
6.	Billiard Marker	b. 11_3	ob	BBC 'Snooker'
7.	Banker	b. 15_3	flts/picc	*Lloyds* jingle
8.	Beaver	b. 39	vln 2	*The Beaver* film
9.	Baker	b. 45	Ob/CA	*Hovis* jingle
10.	Butcher	b. 51_3	Flt/picc/clt	*Morrisons* jingle

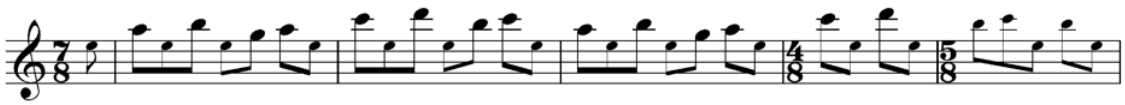
Table 3.3 Borrowed theme entries in *Boojum*, 'The Landing', bars 1-54



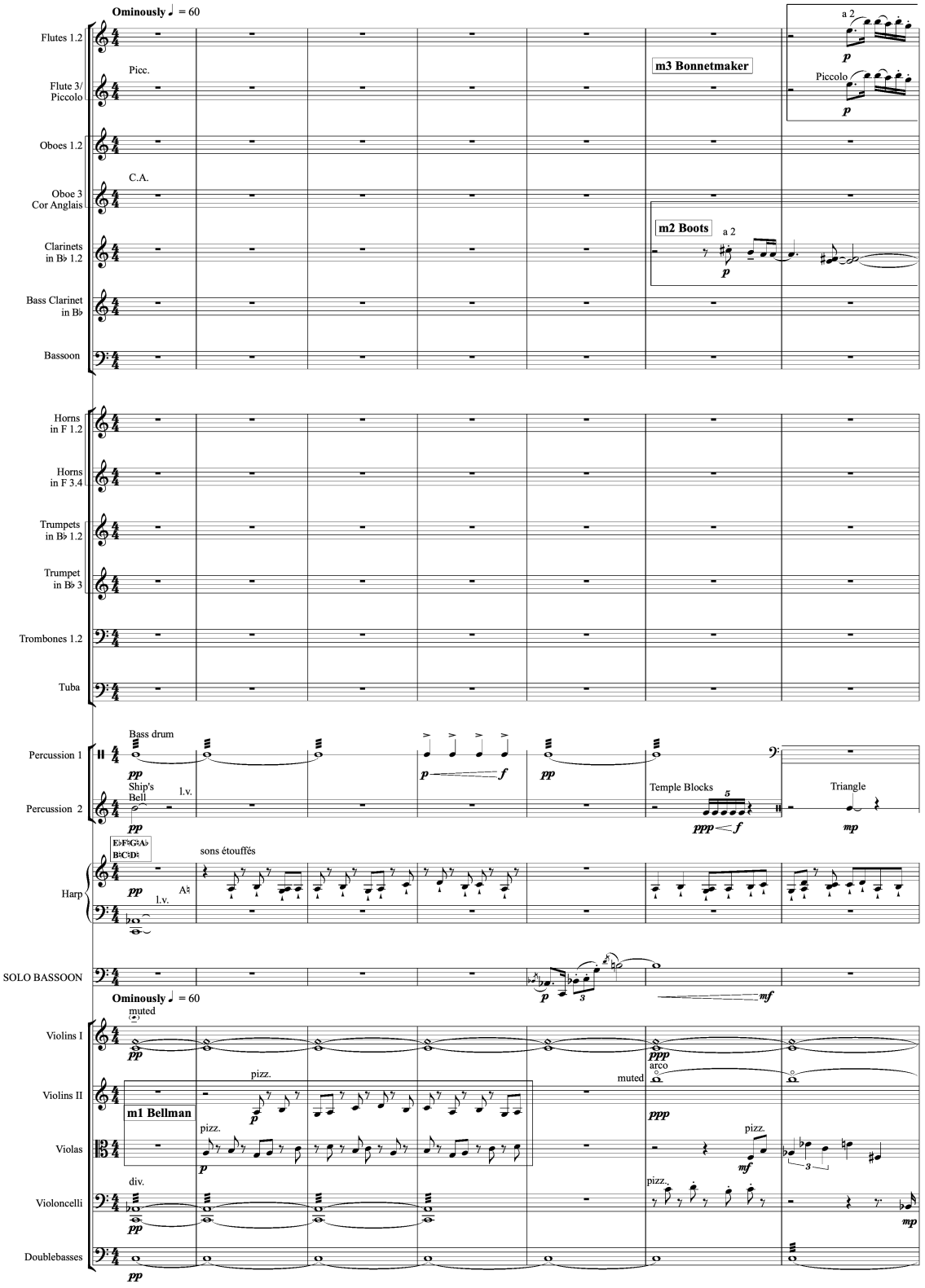
Ex. 3.3 Ten motifs borrowed from other sources for orchestral 'characters'

The Bellman motif (m1) is drawn from the *Tubular Bells* main theme, omitting the E pedal (Ex. 3.4) and introduced in pizzicato viola with harp and pizzicato violin II following in canon at the unison a beat later. The annotated first three pages from the score show how the first seven motifs were introduced in the opening (Exx. 3.5a, 3.5b, and 3.5c). The Boots motif (m2) on clarinet crossfades into the Bonnetmaker (m3) on

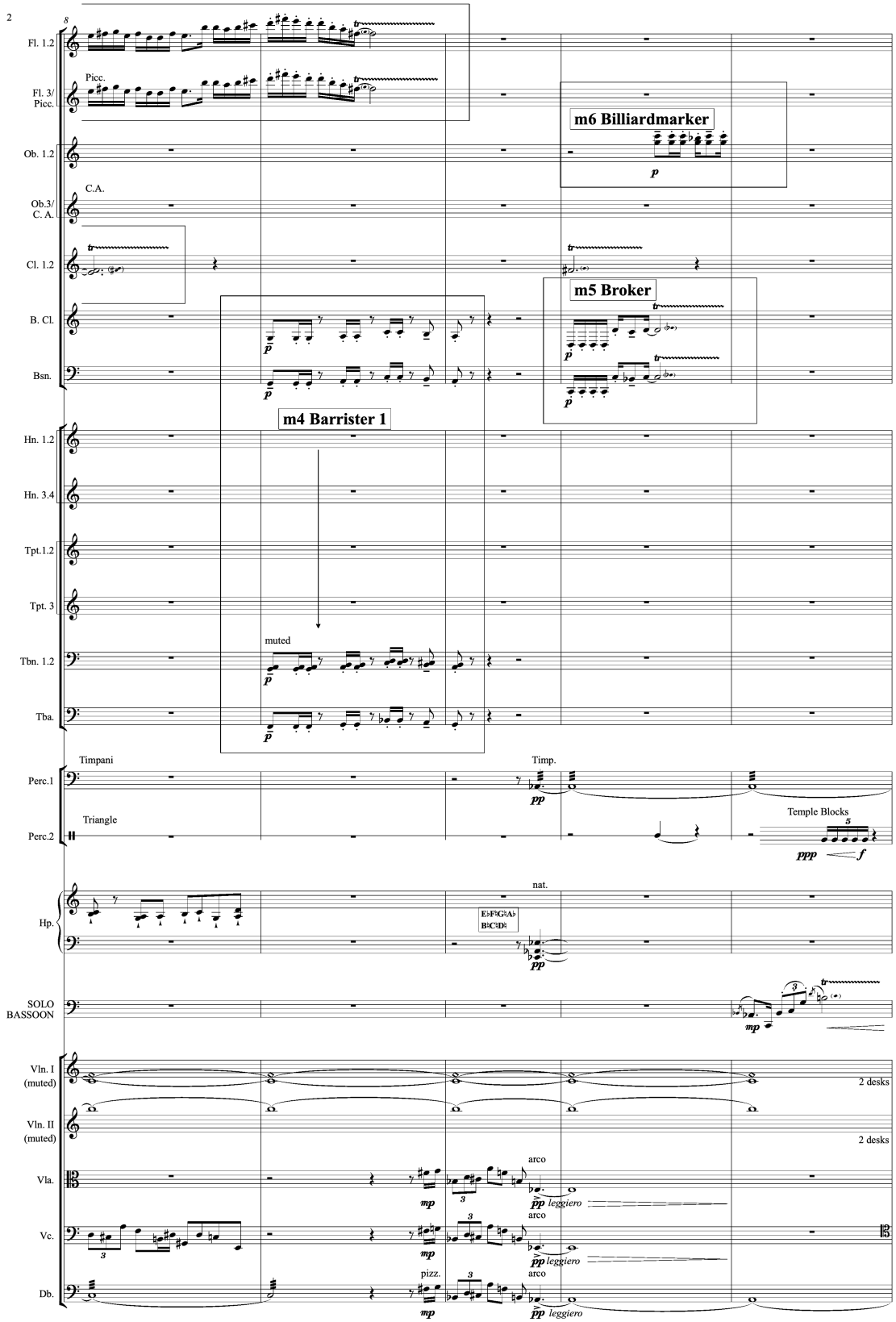
flutes and piccolo. This in turn crossfades into the Barrister motif's first part (m4-1), made by shifting Sullivan's melody a quaver later, on trombones, tuba, bass clarinet and orchestral bassoon. The Broker (m5), and Billiardmarker (m6) motifs follow on bass clarinet, orchestral bassoon and oboes, and each source's first two beats only are sounded. The Barrister motif's second part (m4-2), occurs at bar 13, followed by the Banker motif, the source theme's first two bars on flutes and piccolo. I turn now to explaining how the themes were integrated and developed later in the piece, in the third section 'The Baker's Tale', bars 121-148, followed by the final eighth section, 'The Vanishing', bars 300-319.



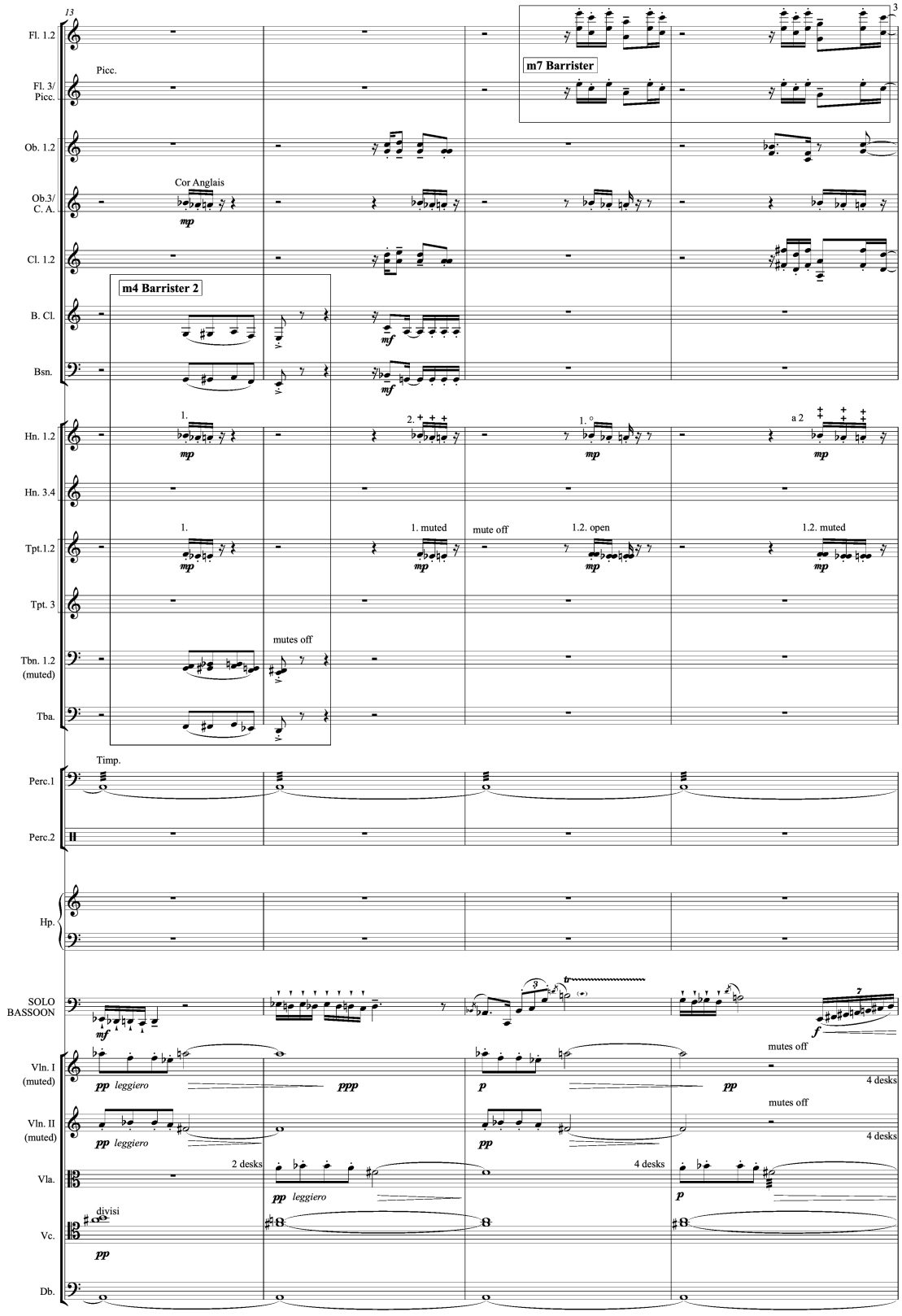
Ex. 3.4 Bellman motif, borrowed from *Tubular Bells*



Ex. 3.5a Borrowed motifs as part of orchestral texture, *Boojum* bars 1-7

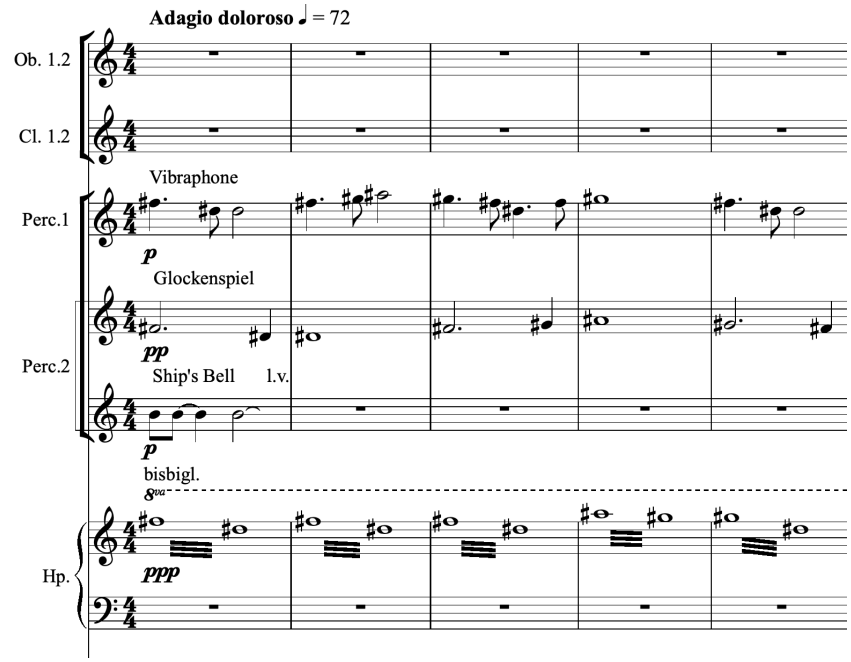


Ex. 3.5b Borrowed motifs as part of orchestral texture, *Boojum* bars 8-12



Ex. 3.5c Borrowed motifs as part of orchestral texture, *Boojum* bars 13-16

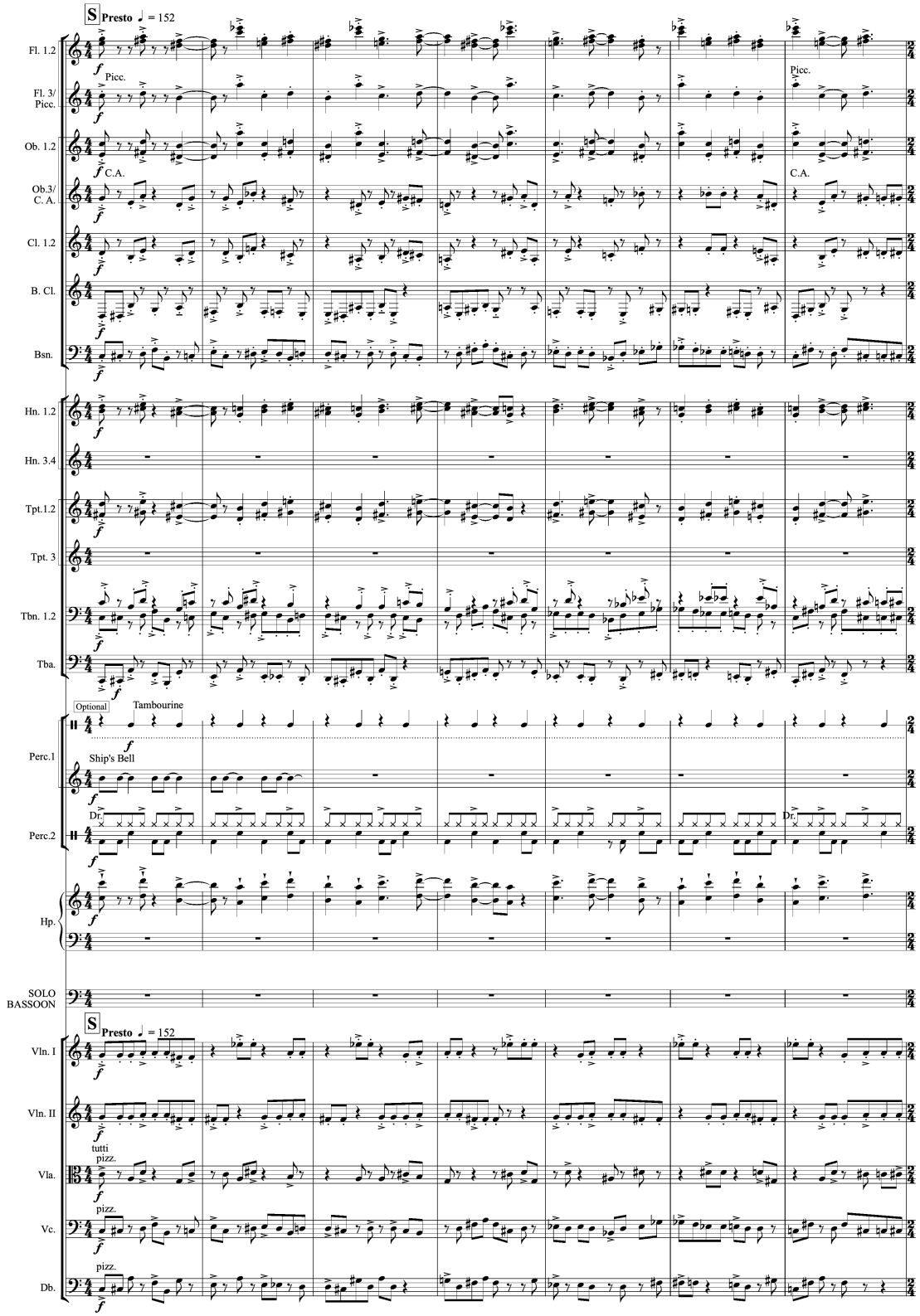
I chose the lyrical cor anglais theme from Dvorak's 9th Symphony, movement 2, to represent the Baker, due to its association with Hovis' iconic 'Boy on the Bike' bread advert.[52] This mood was pertinent to the Baker's Tale as he recounts his uncle's stark warning should the Snark be a Boojum he would 'softly and suddenly vanish away, And never be met with again.'[53] A transposed, inverted version of the borrowed theme can be seen at letter F from bar 121, on vibraphone layered over a double-duration augmented glockenspiel creating a gentle background till the section's end (Ex. 3.6).



Ex. 3.6 Dvorak's *New World* Adagio theme, letter F, *Boojum*, bars 121-125

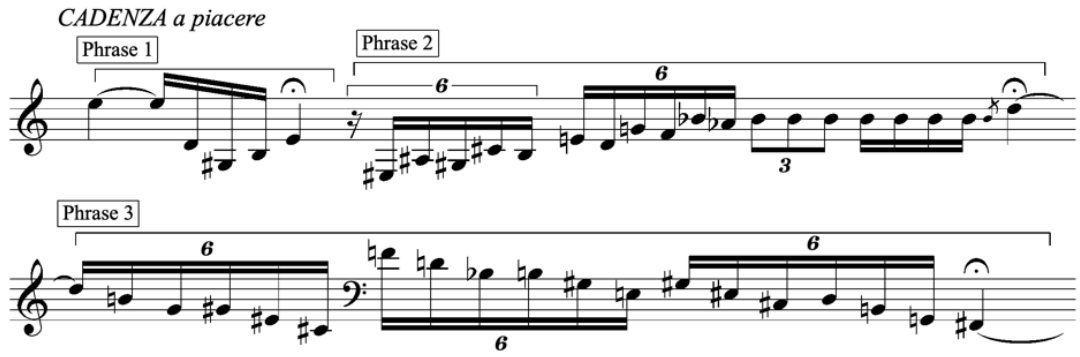
Mike Oldfield's *Tubular Bells* theme, representing the Bellman, first introduced as a fragmented motif in the opening at bar 2, is reworked to become a fragmented motif forming the vigorous rock-styled closing section's thematic material in 'The Vanishing', bars 300-19. As before, the pedal E is ignored and the pitches C-D-B, are the first, third and fifth quavers of the original's second bar, A is the third bar's first quaver, and C-D are the fourth bar's first and third quavers. These pitches form a new four-bar phrase in 4/4 containing two 3+3+2 rhythmic units starting in the first bar and on third bar's third beat (Ex 3.6). Other significant drum-kit led popular music stylistic allusions can be found earlier at letter D, bars 74-84 (choppy funk) and letter I, bars 185-204 (smooth rock).

[52] First screened in 1973, performed by the Ashington Colliery Brass band.
[53] *The Hunting of the Snark,* Fit the Third, 'The Baker's Tale, stanza 10, lines 3-4.

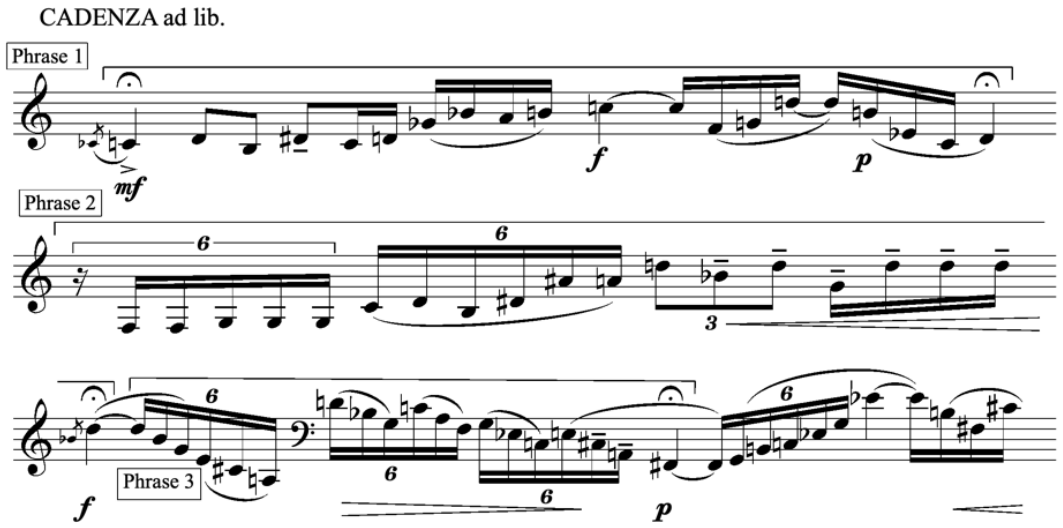


Ex. 3.7 *Boojum*, bars 316-22, *Tubular Bells* theme, variation at letter S

Finally, in response to one of the soloist's early comments, I modelled the bassoon cadenza at letter P on the cadenza in Marcel Bitsch's Paris conservatoire's annual *concours* (contest) piece, the Concertino for Bassoon and Piano (1948). I maintained Bitsch's seven short phrase structure, each ending with a fermata, exploiting a wide range from C♯[1] to D[4]. I also maintained the sextuplet increasing to septuplet arpeggios, broken chords or pattern figurations. However, I extended the first phrase, and altered pitches throughout according to my taste, as shown in the first three phrases comparative example below (Exx. 3.8 and 3.9).



Ex. 3.8 Marcel Bitsch, Concertino, cadenza, first three phrases



Ex. 3.9 *Boojum*, cadenza from letter P, first three phrases

Reviewing salient points, *Boojum* is a tapestry of invented and borrowed musical materials woven into an intended disconnected whole, mirroring and taking compositional cues from Carrol's nonsensical poem. The solo bassoon's range and expressive qualities were exploited to the full, using two pitch organisation systems derived from two three-dimensional images, a snark and a magic cube. The eclectic

orchestral accompaniment was formed by assembling and transforming a web of motivic references drawn from ten existing music sources, situated in a wide range of stylistic allusions, including some drum-kit led rock and funk sections. The thematic borrowings are almost unrecognisable as they are either too fleeting or disguised, and are intended to function mostly at a subconscious level. I turn now to discuss pieces incorporating similar compositional concerns, concluding with some more thoughts on audience reception.

This niche instrument's unique sound has attracted a range of interesting responses ever since Stravinsky's *Rite of Spring*'s opening, and particularly over the last 40 years. Berio has noted regarding his *Sequenza XII,* 'the bassoon, perhaps more than any other wind instrument, possesses contrasting personalities, especially in its extreme registers'.[54] Gubaidulina used the opposition of soloist and orchestra in her *Concerto for Bassoon and Low Strings* (1978), to illustrate the work's narrative structure, describing the work as a theatrical display in which the "bassoon represents a lyric hero; the 'low strings' personify a 'low' and aggressive crowd, which destroys the hero.'[55] Anna Meredith on the other hand, in *Axeman* (2004) for bassoon with distortion pedal, decided to 'turn the bassoon into an electric guitar and the gestural writing and amplification have been written with this in mind.'[56] While Berio used extended articulation procedures for timbral variety and glissandi, Gubaidulina and Meredith also used multiphonics.

The powerful offstage solo trumpet's allusion to arch-collage artist Charles Ives' *The Unanswered Question* (1908, rev. 1930-35) is a significant moment in John Adams' *On the Transmigration of Souls*, (bars 43-66). On the other hand, Hildegard von Bingen's *O quam preciosa* (c. 1140) quoted in 'The Christmas Star', from the oratorio *El Niño* (2000) can only just be discerned in the busy texture underscoring the solo mezzo-soprano from bar 71. The cantus firmus technique recalls Bach's albeit more obvious 'O Lamm Gottes unschuldig' quotation during the opening choral fantasia of his St Matthew Passion. Adams plundered a range of popular music styles to create the music for his chamber opera *I was looking at the ceiling and then I saw the sky* (1995). He

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[54] Luciano Berio, 'Authors note' *Sequenza III* for bassoon. <http://www.lucianoberio.org/node/1488?412371777=1>

[55] Enzo Restagno, *Gubaidulina* (Turin: Edizioni di Torino, 1991), pp. 134-135, in Jacqueline May Wilson, *The Concerto for Bassoon and Low Strings by Sofia Gubaidulina: a performance guide* (PhD thesis, University of Iowa, 2011), p. 20.

[56] See Jeffrey Lyman's exciting 'rock-god' performance at <https://www.youtube.com/watch?v=HAxnBk8S6AU> [Accessed 22.6.20]

describes it as 'consisting of 20 songs in the pop mode but with particular Adamsian rhythmic and harmonic twists.'[57]

Louis Andriessen's *Anachronie I* (1966-7), a collage of mostly classical orchestral quotations, is dedicated to Charles Ives, and was no doubt an influence on Berio's *Sinfonia* (1968). The piece sprints through musical snapshots incorporating stylistic allusions and actual literal quotations from Brahms, Franck, Milhaud, Bach and others.[58] One odd example at letter M is the sudden allusion to an Italian popular song in 12/8 time. However, in *The Art of Stealing Time* he says the 'audience didn't understand the composer's idea at all' and this was his last work for symphony orchestra.[59] Since then he has expressed his musical ideas in ensembles often featuring jazz or rock band instrumentation, including bass guitar and drum kit. But unlike Adams and myself, he is anti-pop and his hard-edged fragmented musical language, which I share, owes more to jazz and jazz improvisation's unpredictability.

I first discovered my connections with Holly Harrison's work while reading her published musicological article on her orchestral piece *Frumious* (2013).[60] Her compositional aesthetic is a musical version of Lewis Carroll's portmanteau idea – two meanings packed up into one word, e.g. chuckle + snort = *chortle*, or fuming + furious = *frumious*. She acknowledges Andriessen's stylistic collisions as an influence, however she is 'not interested in musical quotations, references, or borrowings, but rather the abstract variegated patchwork these devices achieve.'[61] As a rock drummer, she conceives many rhythmic ideas on the kit first and then translates to other sonorities as required. These ideas were worked out in her first piece for orchestra also surprisingly (for me) called *Boojum* (2012), which starts on drumkit at a ferocious tempo (quaver = 240) in a 7/16-time signature. Her compositional aesthetic is founded on musically interpreting Lewis Carroll's portmanteau – two meanings packed up into one word, e.g. chuckle + snort = *chortle*, or fuming + furious = *frumious*.

Frumious, her second orchestral work, contains blocks of sound: free-time; funky; dreamy; march-like; and energetic, in a stuttering, harmonic landscape ranging from extended chord jazz funk harmony to filmic textures, jumping from woodwind section

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[57] John Adams, 'Composer Notes' <https://www.boosey.com/opera/moreDetails?musicID=1186> [Accessed 22.6.20]
[58] Yayoi Uno Everett, *The Music of Louis Andriessen* (Cambridge: CUP, 2006), p. 47.
[59] Louis Andriessen, *The Art of Stealing Time* (Todmorden: Arc Music, 2002)), p. 130.
[60] Holly Harrison 'A musical portmanteau: Rock viscerality, juxtaposition and modernist textures in *Frumious*' in *Music's Immanent Future: The Deleuzian Turn in Music Studies*, ed. by Sally Macarthur, Judy Lochhead, Jennifer Shaw (London: Routledge, 2016).
[61] Holly Harrison, 'The Logic of Nonsense: Personal Process towards Oppositionality and Reorganisation as Music Composition' (unpublished doctoral thesis, University of Western Sydney, 2014), p. 33.

to brass and back. Aside from a shared creative and aesthetic engagement with Carroll's nonsense, and coming from a similar pop music background, our works sound different. Harrison's musical language to my ears is an exciting and frenetic application of jazz/funk harmonies and rhythms to an orchestral setting, while (my) *Boojum*'s coincidental harmonies arise through juxtaposing two different pitch-organising systems against a web of borrowed materials.

These coincidental juxtapositions lead on from my earlier comments about allowing the systems to speak for themselves and not always knowing what the end result might be. For me, *Boojum* is not meant to make sense, after all, Carroll's poem is nonsense. However, this can affect the listener's experience, as Andriessen has noted. I quote here two self-explanatory audience member responses from anonymous feedback gathered following the *Boojum* premiere from players, teachers and audience members.

Question: What was it like being in the audience at the premiere of a new composition?

> It's always an interesting and, usually, fun occasion. *As an audience member I really appreciated the words you said at the end* which made it a much more relevant experience. I think it can be easy for an audience *to feel quite disconnected from the composer.*

Question: Please write any further thoughts about your experience of Boojum.

> An excellent enterprise all round. back in the day there was [sic] a lot more county youth orchestras playing and commissioning new works. With the steady erosion of funding and support for the arts and the terrible dumbing down of music in schools the quality of youth orchestras has deteriorated and the desire and where with all for this sort of enterprise is virtually lost.

With hindsight, I think the piece should have a narrator or a slide show to bridge the gap between my compositional intention and the audience's reception, as I want the audience to understood this piece's narrative.

Conclusions Part I

The four pieces discussed so far come from my aim to uncover new connections between stimuli. A common thread throughout is using the contemplative pre-compositional period to build a foundation of connected concepts drawn from non-musical or existing musical sources, which then serves as the basis for further exploration, problem solving and making artistic decisions. This is clear in the matrix of ideas underlying *shards of TiME*. The second and third works evolved as a creative response to a copyright constraint, and involved recasting and expanding an existing

unaccompanied vocal setting into two very different duets. *Song's Eternity* was a straightforward case of recasting the melody for oboe, and inventing an appropriate, harmonised piano accompaniment. *The Arrival of the Beat Box* was more challenging, requiring finding a new way to present Plath's words, and creating an appropriate part for a speaking body-percussionist. *Boojum* resulted from connecting characters in Carrol's *The Hunting of the Snark* to existing musical themes, and casting these as orchestral musical materials to accompany a solo bassoonist intoning an unrelated pitch organisation system and reworked existing cadenza.

The four works' eclectic sound worlds range from serial/atonal, through experimental, to polystylistic, no doubt due to my wide-ranging musical interests and performance background. While the connection between the second and third works is obvious, the connections in the fourth piece are to do with dissolving existing music into the overall creative process. The post-analysis discussions illustrate connections between my pieces and those composed by other contemporary composers. Unless mentioned, these pieces were not models as such, but discovered after the fact and in a sense help to valorise my portfolio. Most surprising for me was the serendipitous discovery of Holly Harrison's work, first though her musicological article and then discovering her own *Boojum*, also written in 2012. I liked the notion of an unknown different generation composer working on the other side of the world, with a broadly similar compositional aesthetic, and popular music background. I have also discussed audience responses to my pieces where possible or appropriate. In Part II, I will discuss bringing together these aspects of my work alongside a more instinctive approach.

Part II

Bringing Together Various Strands in Later Works

'(…) and go on as you began' continued Charles H. Spurgeon.[62] The four later works written after a short midpoint creative hiatus, continue to develop the compositional strategies discussed so far, but three works include an intuitive approach emanating from my popular-music, music theatre career background. In section 4, I discuss three works: *Babel* and its revised piano accompaniment; *Montage,* bringing together many various strands including the vernacular; and the nested 'bee' trilogy's third piece, *Bumble,* a choral beat-boxing study structured on a 658-letter bumblebee DNA sequence. In section 5, I explain the mixed strategies employed to create *The Shard* for orchestra, and discuss its relationship with other works inspired by architecture. In the Part II conclusion I will draw together main points prior to the final concluding thoughts.

4. Exploring further: from WWI to DNA

Babel

I chose to set Osbert Sitwell's first published poem 'Babel' (1916) in *Babel* for soprano voice and piano, a commissioned song for a First World War memorial event.[63] Like Plath's 'The Arrival of the Bee Box', I was seduced by the poem's direct and vivid metaphorical links, in this case between war's futility and the Tower of Babel's chaos. Sitwell (1892-1969), Edith's younger brother, wrote poetry during his time spent in the trenches near Ypres, and his poem doesn't generate pity for combatants or victims. Ligeti has spoken about how he alienated his own wartime experiences. 'Anyone who has been through horrifying experiences is not likely to create terrifying works of art in all seriousness. He is more likely to alienate (…).'[64] Nevertheless, I wished to musically encapsulate the disturbing emotions Sitwell's poem stirred in me.

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[62] Charles H. Spurgeon, *All of Grace* (Chicago, Moody Publishers, 2010), p. 80. Originally pub. 1894.
[63] Osbert Sitwell, 'Babel' in *The Muse in Arms*, ed. by E. B. Osborn (London: John Murray, 1917), p. 38, in *Internet Archive* < https://archive.org> [Accessed 9 September 2019]. Copyright held by David Higham Associates. The poem is in the preface pages of my score for *Babel*.
[64] 'György Ligeti talking to Péter Várnai' (1978)' in *Ligeti in conversation*, trans. by Gabor J. Schabert (London: Eulenberg, 1983), p. 21.

The setting follows the poem's seven stanza structure with overt word-painting. For example, an allusion to a children's nursery rhyme in stanza four (bar 37 ff.) to evoke stanza four's suggested poignant memories: 'where once there played | Children with painted pail and spade'. Or exploiting the full soprano voice range from Middle C to a top B^5 to point the word 'world' in the phrase 'With victims of world disease' (bar 97). The hidden connection in this case was a musical cipher based on the letters B-A-B-E-L – translated into musical notes as B-A-B♭-E-G♯ as shown in my pre-compositional melodic and harmonic material sketch (Figure 4.1).

The letter L stands for 'la' in the tonic Sol-fa system, representing pitch A in a scale starting on C. To avoid pitch repetition, the second B becomes B♭, and the second A becomes A♭, expressed as its enharmonic equivalent G♯. The five-note row was then rotated four times, starting with the second note, third and so on. The rotations were transposed to all start on B, read vertically to produce four chords, then transposed by inversion to generate four groups of five chords. The annotated example shows how the row was used in the opening (Ex. 4.1). Four boxes in the piano part show the row's distribution across staves and different, extreme registers. The box around the vocal part also shows the row distribution, while it simultaneously unfolds in the bass clef with longer durations. The row continues in the vocal part (Ex. 4.2) while the sparse triadic tonal accompaniment contains row-notes within each chord. (Ex. 4.3) shows row II transposed down a major third – the row being identifiable by the intervallic succession. In this way, the song's title was employed to direct melodic pitch organisation.

Harmonic pitch organisation was a different matter. The fragmented and pointillistic character of the first seven bars was employed throughout the first written accompaniment. During the first rehearsal, I found it distracting and decided to change it to a smoother less intrusive part, giving space to the vocal part space and allowing lyrical clarity. I tried improvising a 'Sondheim-like' crotchet pulsed chromatic harmonic progression, word-painting according to my feelings, making sure to include the singer's note in each chord as a pitching anchor. We both preferred the result, so it remained. This was a significant compositional turning point for me, as up until then I had always written away from the piano to avoid resorting to any pianistic or stylistic clichés, and tended to follow my initial systems rigidly. But in this case, it worked and opened up a new avenue to explore in *Montage*.

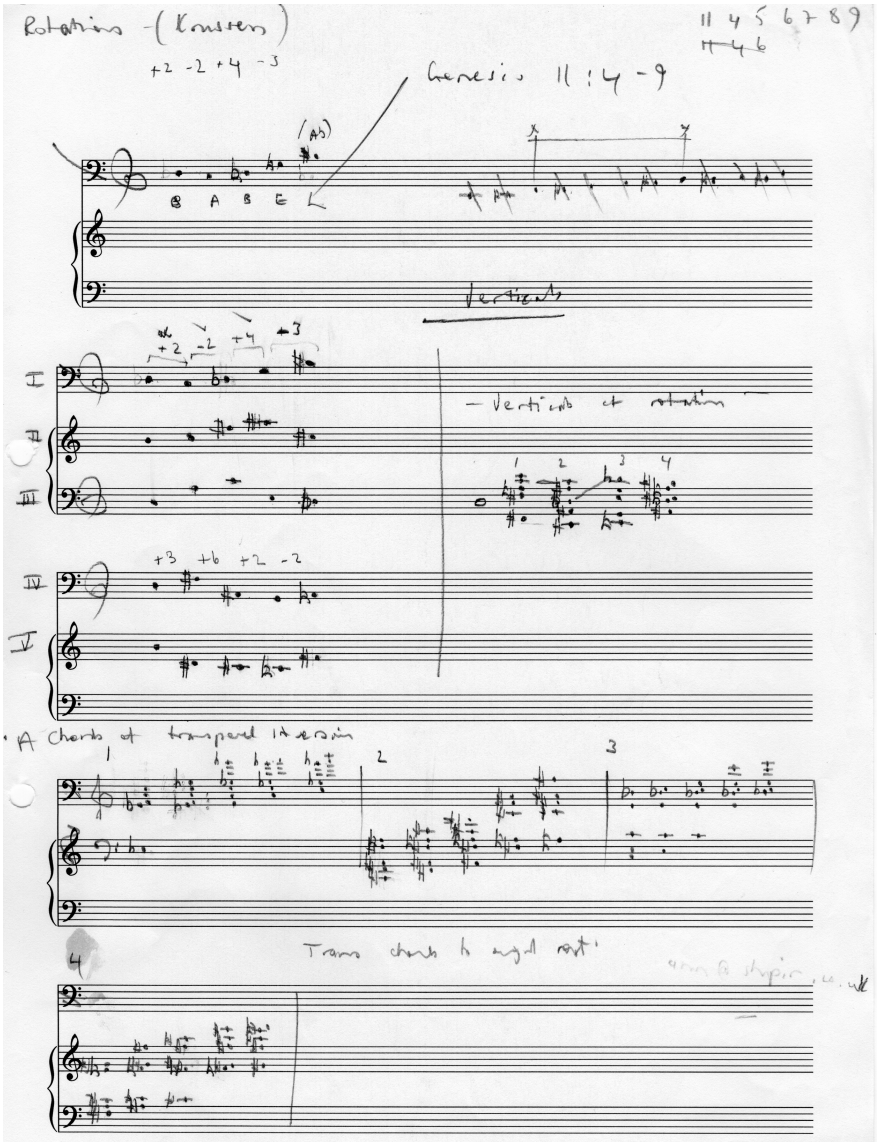
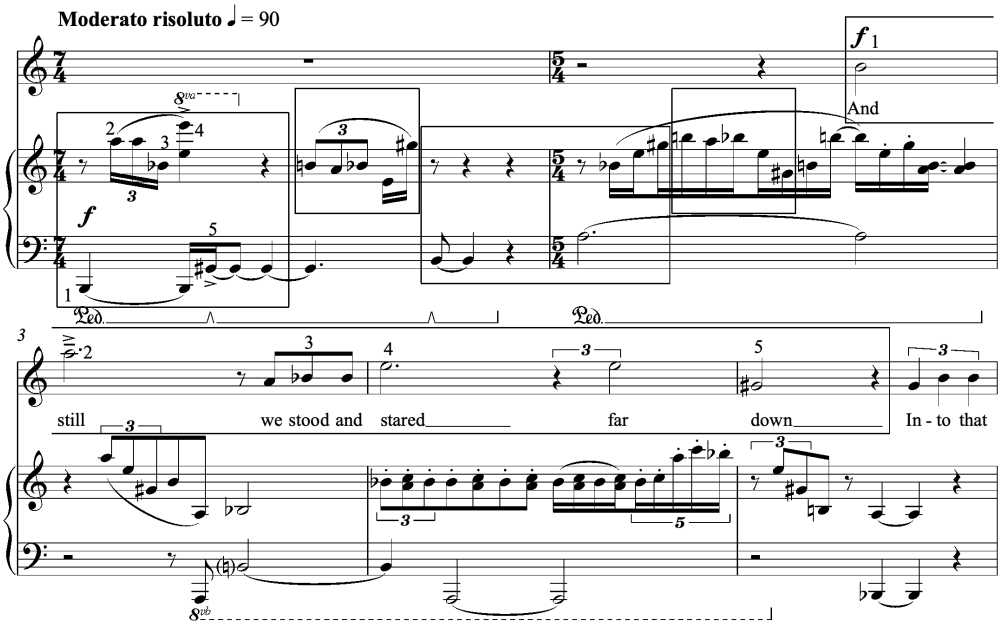
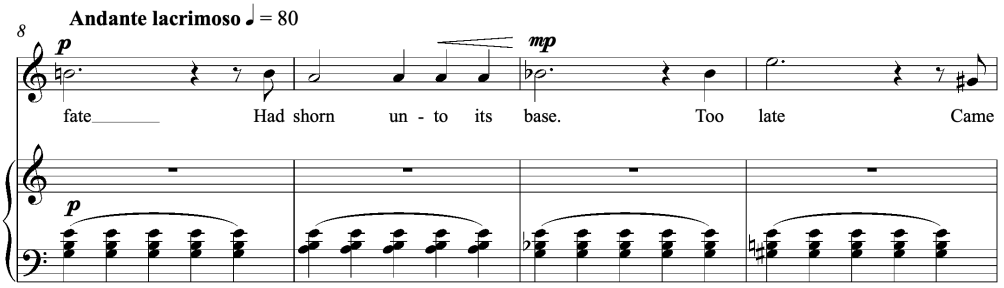


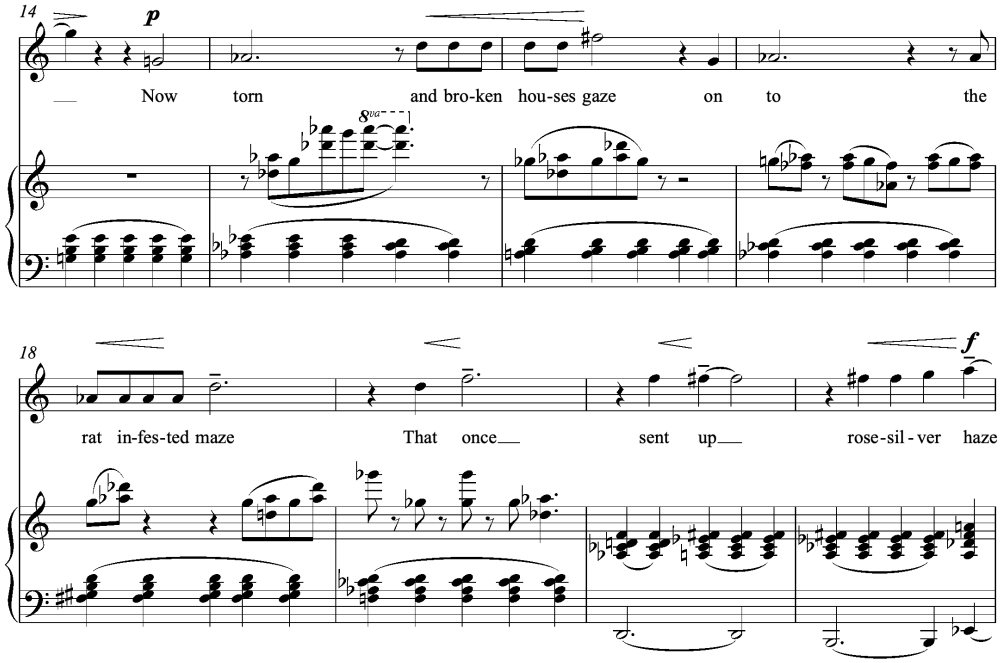
Fig. 4.1 ***Babel*****, pitch organization, rotations**



Ex. 4.1 ***Babel*****, bars 1-5**



Ex. 4.2 ***Babel*****, bars 8-11**



Ex. 4.3 ***Babel*****, bars 14-21**

Montage

Montage is a composite work combining different sonic images blended with and alongside one another to produce a linear whole, bringing together many aspects of my extra-musical and existing musical strategies employed so far. I drew material from my earlier song *Farewell* for baritone and piano, in which I had set Robert Nichols' poignant First World War poem 'Farewell', written during his expeditionary shore leave. [65] I aimed to evoke the poem's sense of contemplating mortality. Additional material includes refracted borrowing from Shostakovich and Ligeti, and reimagined popular music stylistic references to Fats Waller's slow left-hand stride work, George Clinton's funky rhythmic grooves, and Supertramp's rock quaverism. Seven continuous sections move through quasi-improvisatory nostalgia, to intricate rhythms, building to a climax point starting with the *Allegro vivace* at bar 127 and winding down towards the end.

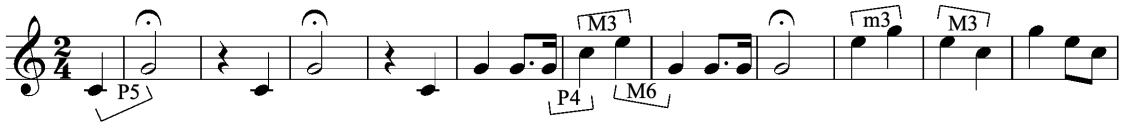
Sections 1, 2, 4, 5 and 7, from respective bars 1, 35, 77, 92 and 159, relate to the poem's five verses, while sections 3 and 6, from bars 59 and 103, are contrasting links, perhaps representing the protagonist's momentary distractions. Throughout *Montage* the 'Farewell' 12-tone series operates as a binding agent for melodic and harmonic pitch organisation. The series' first six tones were derived from *The Last Post's* first six intervals (Ex. 4.4). The transition from series invention, to *Farewell* first verse, to *Montage's* transposed, adapted canonic introduction is shown in (Exx. 4.5, 4.6, 4.7). After the piano's opening descending glissando across the piano strings with fingertips, the quiet muted cello solo with harmonics begins on the series' second note, omitting the first note and some rhythmic detail to create an austere effect. The violin enters a major 6th below at bar 6, followed by the piano a compound 6th below in low registral octaves in bar 11. Harmonies were derived as in *Song's Eternity*, verticalisations either from series (O) and its three variants (OR/OI/IR), or by combining adjacent notes into intervals, as in the piano's bell-like chords, bars 77 to 89, and the descending arpeggiated figure in bar 90.

The opening's structure and mood is a reference to Shostakovich's Piano Trio No. 2 in E minor, for violin, cello and piano, Op. 67 (1944), composed 'at one of the darkest periods of the Second World War and dedicated to the memory of Ivan Sollertinsky, a talented musicologist and close friend of the composer, who died in a Nazi

[65] Robert Nichols, 'Farewell' in *The Muse in Arms*, ed. by E. B. Osborn (London: John Murray, 1917), p. 7, in *Internet Archive* < https://archive.org> [Accessed 9 September 2019]. Copyright held by David Higham Associates. The poem is in the preface pages of my score for *Babel*.

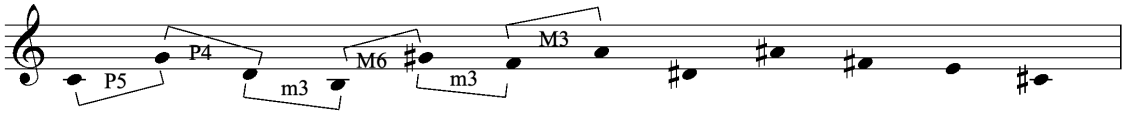
concentration camp during that year.'[66] The borrowing is refracted by my pitch organisation, and rhythmic distillation from Nichols' poem's speech rhythms, and intended to invoke a vague memory. The 3+3+2 *aksak* patterns found in the strings from bar 35, and the *Allegro vivace* section's time signature in bars 127-58 allude to Ligeti's Horn Trio's second section (1982). The 3+3+2 rhythm begins with violin pizzicato double stops, joined by the piano, moving to a rapid low piano ostinato in bar 136, including a brief cello solo from bar 140. But the *aksak* pattern could also be considered in a popular music context as for example in the introductory Wurlitzer electric piano repeated chordal opening to seventies rock group Supertramp's 'The Logical Song' (1979).[67]

The calm fourth section from bar 92 is intended to suggest a 1930s smoky jazz club's atmosphere. The pianist plays a slow ballad with lazy 'stride' left hand accompaniment, pointed by occasional jazz-bass styled pizzicato cello, accompanied by distant muted strings playing sustained unrelated harmonies, crossfading into the more upbeat moderato *funktastico* from bars 103 to 126. Funk rhythm is usually formed by layering short clippy, semiquaver 'riff' patterns alongside static, extended jazz harmony chords, over a strong 4/4 metre bass guitar and drums foundation, with superimposed electric guitar and keyboards. To create this effect, I built a tight four-part polyphonic - violin, cello, piano right and left hand - varied textural 'riff' pattern derived from various 'Farewell' series' permutations. Some hocketing occurs between the strings in bar 118, and the cello and piano left-hand share quasi bass guitar duties. The overall varied effect was enhanced by employing varied string techniques including normal and Bartok pizzicato. I now turn to a very different piece, the third and last piece in the portfolio's 'bee' trilogy, a choral work limited to four pitches and four letters as lyrics.

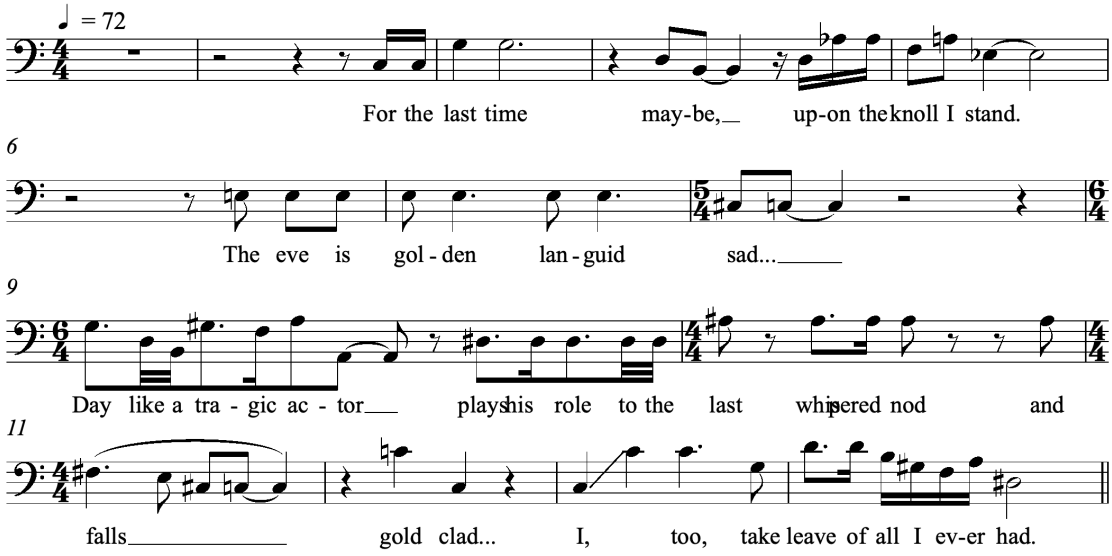


Ex. 4.4 ***The Last Post***

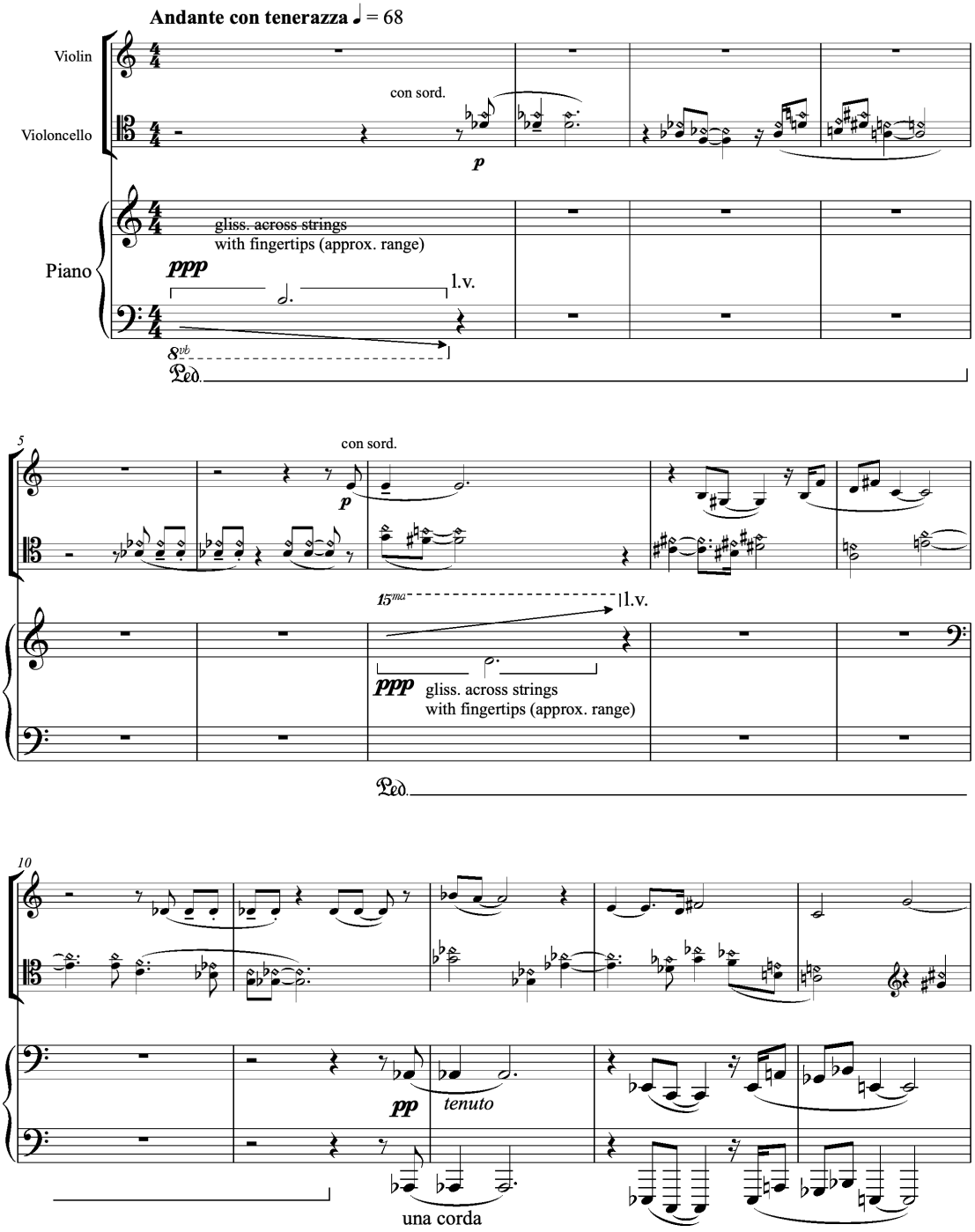
[66] Basil Smallman, *The Piano Trio: its history, technique, and repertoire* (Oxford: Clarendon, 1990), p. 184.
[67] Roger Hodgson, 'The Logical Song' on Supertramp, *Breakfast in America* (A&M Records, 1979).



Ex. 4.5 ***Farewell*** **series**



Ex. 4.6 ***Farewell*** **bars 1-14, baritone**



Ex. 4.7 ***Montage*** **bars 1-14**

Bumble

The idea to compose *Bumble* had emerged while reading biologist Mark Brown's article, 'Colour Patterns Do Not Diagnose Species: Quantitative Evaluation of a DNA Barcoded Cryptic Bumblebee Complex.'[68] The article underlines correct species identification's importance in bumblebee research, and proves colour pattern identification's inadequacy against DNA barcoding's reliability. The *Bombus Lucorum* complex has hitherto been assumed to be one species by colour pattern identification, while DNA barcoding shows it to be a complex of three: *Lucorum, Magnus* and *Cryptarum*. The scientific vocabulary prompted musical connections for example: 'bar-coding; 'morphology' – the study of the forms of things; 'colour-patterns'; 'continuous variation'; 'convergent'; 'cryptic', 'amplification and sequencing'; 'matrix'; 'Markov chain'.

Bumble, built in a two-stage process from *Bombus Cryptarum*'s 658-letter DNA sequence, alludes to the sixteenth-century antiphonal polychoral *cori spezzati* tradition. Stylised beat-boxing techniques employed earlier in *The Arrival of the Beat Box* were applied. DNA sequencing involves determining the DNA molecule's four nucleotides precise order, expressing adenine, guanine, cytosine and thymine (A, G, C, T) as a long letter sequence (Fig. 4.2). The DNA structure is represented as a double helix model, in which two strands intertwine in opposite directions and base pairs bond, guanine with cytosine, and adenine with thymine.

To translate this into music, I created a score for two SATB choirs and assigned the 658-four-letter sequence as notes G, A, B (for T), C into choir 1's alto part as a very long 'cantus firmus'.[69] Pitches would be limited to four, and harmonies would be created from the G-C and A-B base-bonding intervals. After settling on a fourteen-part structure, the next task was to create variety by distributing the cantus firmus between the voices and writing appropriate complementary parts throughout. I then reversed choir 1 to create the choir 2 parts as a musical palindrome, representing the two strands opposite direction DNA double helix. The four letters became 'lyrics' pronounced as specified in the performance notes, for example the letter 'G' as short percussive consonant as in get*,* or as extended vowel as in gee.

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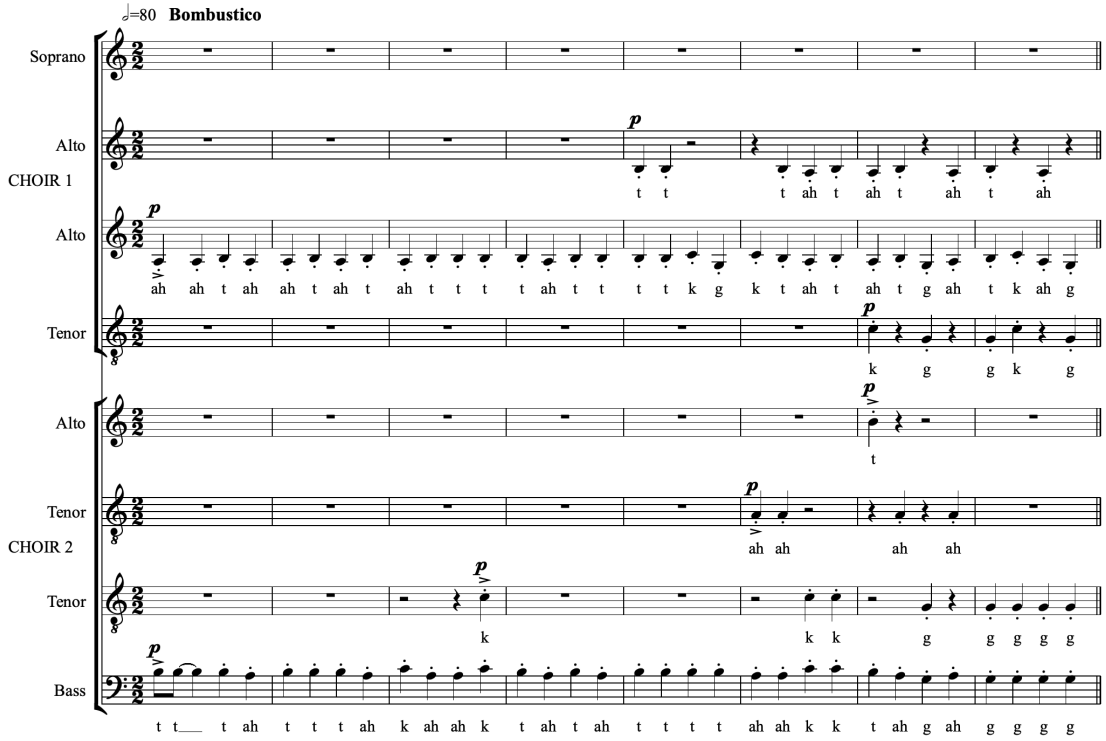
[68] Mark J. F. Brown (et al), 'Colour Patterns Do Not Diagnose Species: Quantitative Evaluation of a DNA Barcoded Cryptic Bumblebee Complex', PLOS One (2012), <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0029251> [Accessed 16 August 2017].

[69] The substitution of pitch B for letter T by using the *solfege doh-re-mi* scale.

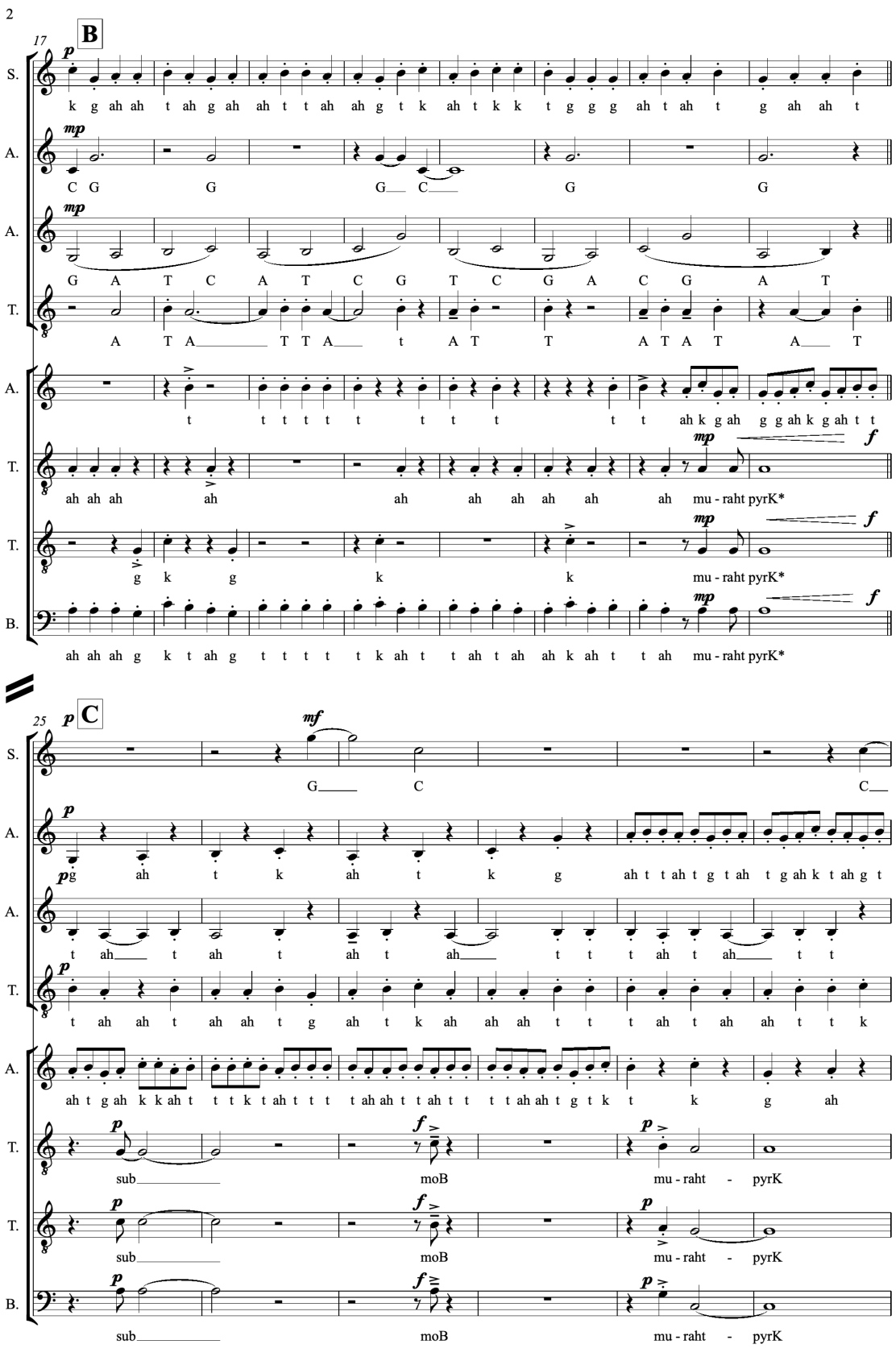
The material was then scored using a *cori spezzati* line-up: Choir 1 – Soprano, Alto 1, Alto 2, Tenor; and Choir 2 – Alto, Tenor 1, Tenor 2, Bass. Material was redistributed to enable more choral alternation to maximise the desired antiphonal effect (Exx. 4.8 and 4.9). Notation was also an issue and I settled on upper-case for extended vowels and lower-case for short percussive consonants. The only actual sung words are *Bombus Cryptarum* by choir 1 at bars 94 to 101 and earlier by choir 2, reversed as *muratpyrC submoB* at 23 to 35.

AATAATATATTTTATTTTCGCTATATGATCAGGAATAATTGGCTCATCTATAAGTTTATTAATTCGAA
TAGAATTAAGTCATCCTGGGATATGAATTAATAATGATCAAATTTATAATTCTTTAGTAACTAGACAT
GCATTTTTAATAATTTTTTTTATAGTAATACCATTTATAATTGGAGGATTTGGAAATTATTTAATTCCA
TTAATATTAGGATCCCCAGATATAGCTTTCCCTCGAATAAATAATATTAGATTTTGACTTTTACCTCC
ATCATTATTTATACTTTTACTAAGAAATATATTTACACCTAATGTAGGAACAGGATGAACTGTATATC
CTCCTTTATCTTCTTATTTGTTTCATTCATCGCCATCAATTGATATTGCAATTTTTTCTTTACATATATC
AGGAATTTCTTCTATTATTGGATCATTAAATTTTATTGTTACTATTTTAATAATAAAAAATTTTTCATT
AAATTATGACCAAATTAATTTATTTTCATGATCAGTATGTATTACTGTAATTTTATTAATTTTATCTTT
ACCAGTATTAGCAGGAGCAATTACAATATTACTTTTTGATCGAAATTTTAATACTTCATTTTTTGACC
CTATAGGAGGGGGAGATCCAATTTTATATCAACATTTATTT

Fig. 4.2 ***Bombus Cryptarum*****, 658-letter DNA sequence**



Ex. 4.8 ***Bumble*** **bars 1-8, reversed sequence letters to emulate double helix**



* muratpyrC submoB is Bombus Cryptarum backwards
so the 'y' should be pronounced as in crypt

Ex. 4.9 ***Bumble*****, bars 17-30, distribution for antiphonal effect**

In short, *Babel*, *Montage* and *Bumble* further illustrate my compositional practice's strategies, notably: using poetry and scientific text and ideas as strategy prompts; employing serial and rotation pitch organisation; borrowing existing music; and alluding to both historical and current popular music styles and techniques. *Babel*, inspired by a World War I poem, using a cipher and rotation technique based on the title, fuses an angular, rotationally conceived melody with an intuitively revised accompaniment. Piano improvisations are important to Louis Andriessen's compositional warm-up routine and creative process, but my accompaniment is more along the lines of John Adams' 'One Last Look at the Angel in your Eyes' from *I was Looking at the Ceiling and then I saw the Sky* (1998). *Montage,* a series of sonic images virtually underscoring another World War I poem, re-imagines my pre-existing vocal setting, with added Shostakovich and Ligeti borrowings, and references to jazz and funk, and hocketing and canon techniques. *Bumble*, inspired by a scientific article and DNA letter sequence, employed music technology reversal and stuttering sampling techniques and alluded to the 16th century polychoral *cori spezzati* tradition. I turn now to consider the relationship between these pieces and other works.

Musical cryptograms, turning letters into notes, has a long precedent perhaps Bach's own B-A-C-H being the best known, used later by Schumann, Liszt, Ives, Webern, Schnittke and others. Oliver Knussen used the commission-derived the cipher LSO-MTT in *Flourish with Fireworks* (1988) composed for Michael Tilson Thomas' first concert as Chief Conductor of the London Symphony Orchestra to generate the work's central five-note cell A-E♭-G-E♮-B. Louis Andriessen employs textural 'montage' discontinuities in his music including pillars, interruptions and shifts. For him, montage is 'shock-like' in its discontinuity.[70] For example, at rehearsal mark 6 in *Hadewich*, *De Materie Part II* (1984-88) a long quiet sustained string introduction is interrupted by three loud stuttering clarinet bars, and bass clarinet staccato triplet figures, followed by a G.P. bar, then returning to the quiet material. He also uses hocketing in *Hoketus* (1976), and canon techniques in *Hout* (1991), *Zilver* (1994) and *De Laatste Dag* (1996).

Cheryl Frances-Hoad's Plath-inspired piano trio *My Fleeting Angel* (2006) starts with the same Shostakovich trio allusion, where quiet cello harmonics two octaves unison above the violin introduce the work's main eight-note descending theme, culminating in a low piano-pedalled single E♭ (bars 1-13). This two-octave idea recurs later in the piano's mid to high register in Movement III's warped waltz, prior to winding down to

[70] Louis Andriessen, '*Tao*' in *The Art of Stealing Time*, ( ) p. 283

an inconclusive ending, recalling the opening's haunting sound. Her work's modernised chromatic harmonic approach is different to mine, although there are some similar gestural moments, for example the piano 'comments' comprising descending broken chords disrupted with a 5:4 tuplet in Movement I, bar 19, also occurring in bars 26, 29 and 31. Her interest in Plath's bizarre creations reminds me of my own. For her the stimulus was *The Wishing Box*, a short story about the interaction of the different respective dreams experienced by a married couple and the tragic consequences. She writes: 'It is the contrast between Harold's blissfully vivid imaginings and Agnes' descent into an empty, sleepless, sherry-fuelled existence (and her eventual fatal overdose) that inspires the three movements of the trio.'[71] The strange stimulus creates equally strange, yet compelling music.

Michael Zev Gordon's twenty-minute *Allele* (2010) for 40 voices is the result of DNA derived pitch organisation, Fibonacci Sequence and Golden Section influenced structures, and historical choral setting. Modelled on Tallis' *Spem in Alium* (c. 1570) it is scored for eight 5-part choirs – soprano, alto, tenor, baritone, bass – and 'arranged in a wide-sweeping shallow semi-circle formation.'[72] Ruth Padel's spiritually evocative five, four-lined verses served as the piece's text, while the DNA letters were only applied for musical purposes.[73] The musical materials were actually derived from each singer's DNA strands, so they were in effect singing their DNA.

Perhaps the most interesting section for me is the stuttering technique applied in the aleatoric unmetred section at letter R, bar 261, p. 36 in the score. The word 'Allele' is fragmented to form short 'A-lle-e-e-ele, a-a-a-llele__' 'mobiles'. The idea accumulates as each singer is added to the texture, moving to a massive crescendo ending in a sudden cut-off just before letter S at bar 262, p. 40. Actual technological stuttering sampling techniques are exemplified in Paul Hardcastle's distinctive and memorable anti-Vietnam war song *19* (1985), where the word 'nineteen' was fragmented into 'Ni-ni-ni 19, 19, ni-19'.[74] John Adams applied acoustic stuttering to Donne's 'Negative Love' in *Harmonium*'s (1980-81) introduction, where the choral 'n-n-n-n' starting in bar 1, gradually morphs into 'neh-neh-neh', eventually revealing the word 'never' for the first time in bar 128.

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[71] Cheryl Frances-Hoad, 'Composer note' in *My Fleeting Angel* [Score] (Cadenza Music Limited, 2018).
[72] Michael Zev Gordon, [Score] 'Performance note' in *Allele* (Composers Edition, 2011)
[73] Ruth Padel, 'Allele', and 'Genes to music: the composition of Allele', in *Music from the Genome.* <http://www.musicfromthegenome.org.uk/index.html> [Accessed 7 September 2018]
[74] Paul Hardcastle, William Coutourie, Jonas McCord, *19* (Chrysalis Records, 1985).

Bumble hasn't yet been performed live, however, like my earlier comments about *The Arrival of the Beat Box* and *Boojum*, a clear programme note and perhaps a pre-performance talk would help the audience to know and understand the piece's rationale and source materials. Most polyphonic vocal music is textually incomprehensible, so it almost doesn't seem to matter what the singers actually sing. For example, I can't actually appreciate Ruth Padel's *Allele* text just from listening, in the same way I can't follow the operatic narrative in foreign language performances without reading the libretto in advance. In *Bumble* I like to think of the listener as one involved in trying to make sense of some cryptic message, meaning what the listener thinks it means. I turn my attention now to what I consider to be this project's crowning achievement.

5. Exploring building as music: music as building

Finding a musical way to respond to the Shard at London Bridge preoccupied me from seeing Renzo Piano's original 'napkin' sketch (Fig. 5.1) to the first piece *shards of TiME* and throughout the project.[75] The new building's shape seemed to me like a gigantic underground cathedral steeple, dwarfing the nearby thousand-year-old Southwark Cathedral, sketched in my pre-compositional drawing (Fig. 5.2). My continued interest in connections made over the time-continuum sits at the core of the piece, as does an earlier composed prelude and fugue for piano, in which I worked out structural and pitch organisational ideas. I begin with some comments on the prototype, followed by explaining how it was co-opted into *The Shard* along with other new materials, concluding with contextualising the piece alongside other similarly conceptualised works.

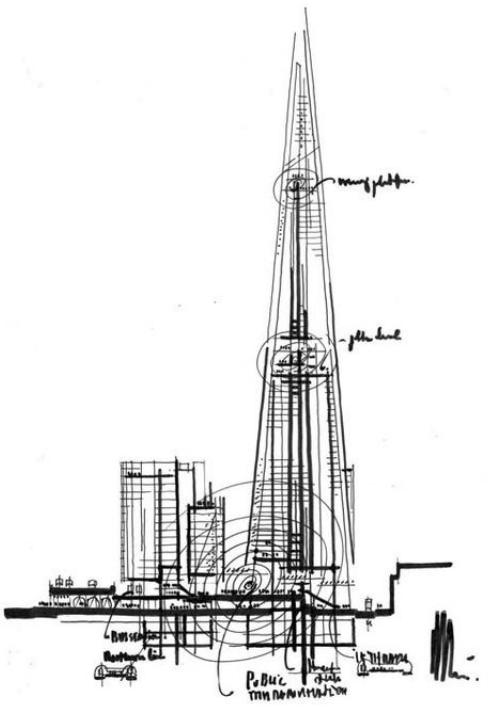


Fig. 5.1 Renzo Piano's original napkin sketch for the Shard at London Bridge

[75] <https://www.archdaily.com/66089/londons-tallest-tower-renzo-piano/11-53> [Accessed 7 September 2019]

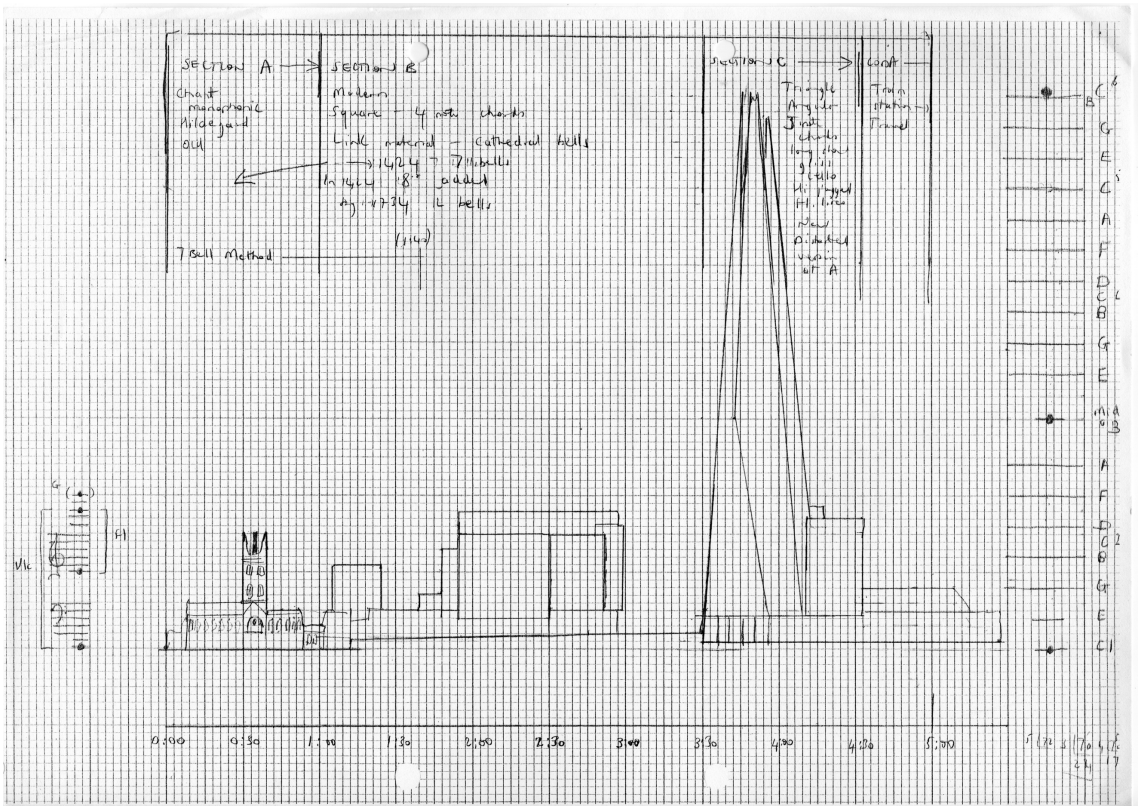
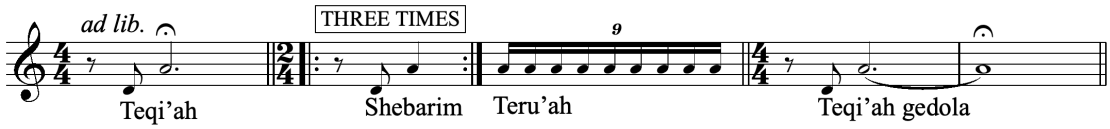


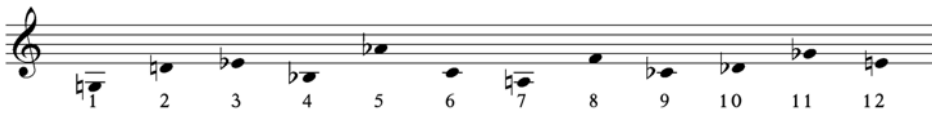
Fig. 5.2 My pre-compositional sketch of Southwark Cathedral alongside the Shard

The Shard

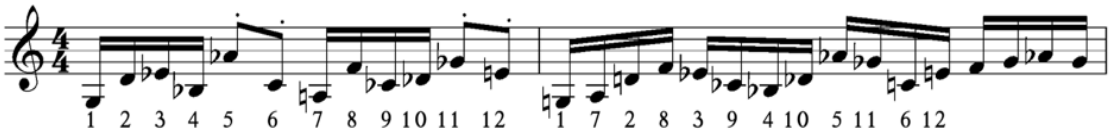
From Prelude and Fugue… The Prelude started out as a study piece following Ligeti's *Musica ricercata* (1951-53), his own eleven movement study for piano, the first using one pitch class (A) ending on a D. Each subsequent piece adds one more pitch class until all twelve semitones are used in the final eleventh piece, a fugue. My prelude starts out by gradually introducing each of the twelve semitones expanding texturally to three and four note chords with extreme dynamic contrasts, bound together by a repeated B, an idea inspired by the relentless B♭ in Berio's last work, the Sonata for Piano (2001) (Ex. 5.6). Some rhythmic material was derived from a shofar call (Exx. 5.1 and 5.7). The shofar, an ancient Jewish liturgical instrument made from a ram's horn, has an alarming nasal timbre, and I had been entranced by its sound when playing for a local synagogue's High Holy Days' services. The Fugue follows strict procedures, the subject derived from a 12-tone series (Exx. 5.2 and 5.3), introduced first in order from [1-12] followed by [1-7, 2-8] and so on. The countersubject is from 'Nun Danket Alle Gott' (Exx. 5.4 and 5.8) a 17th century tune attributed to Johann Crüger.



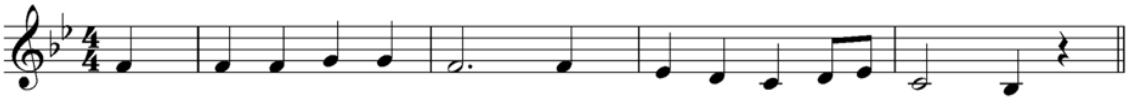
Ex. 5.1 The four types of shofar call



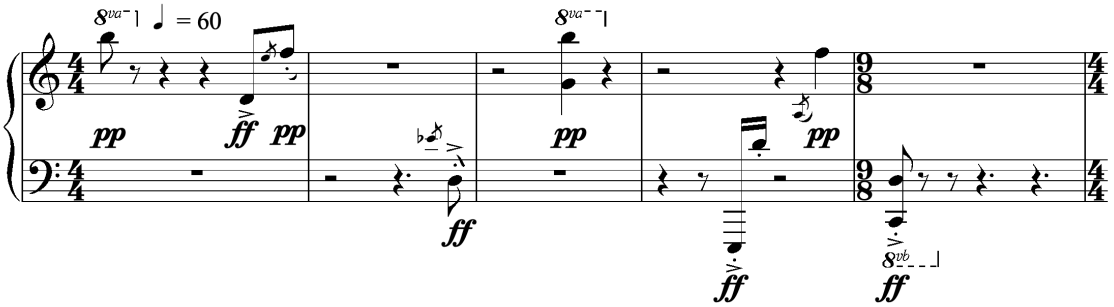
Ex. 5.2 Fugue, tone row



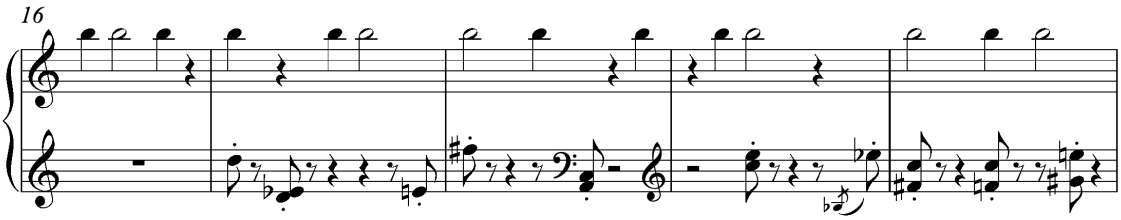
Ex. 5.3 Fugue, subject from tone row



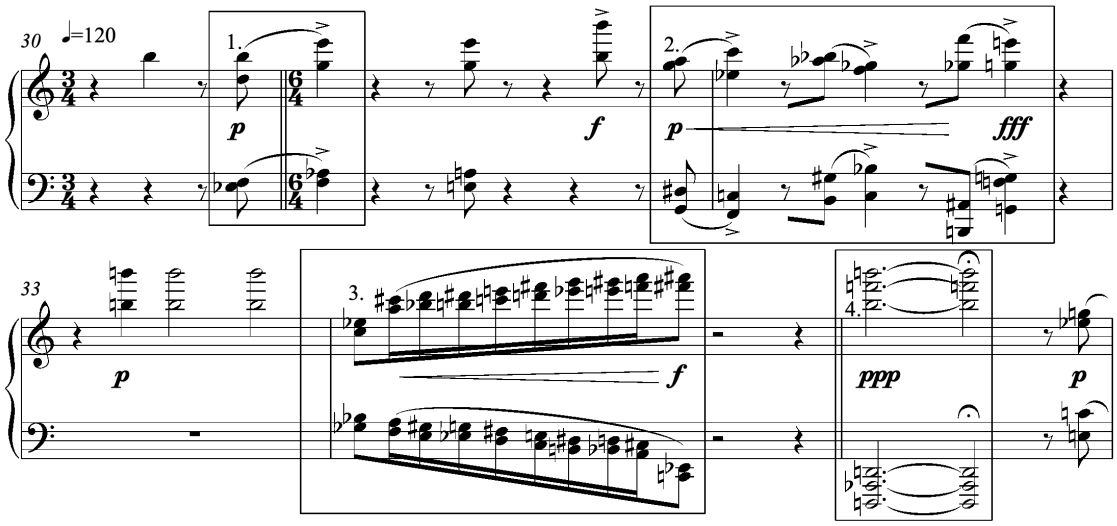
Ex. 5.4 'Nun Danket alle Gott', attrib. Johann Crüger (1647)



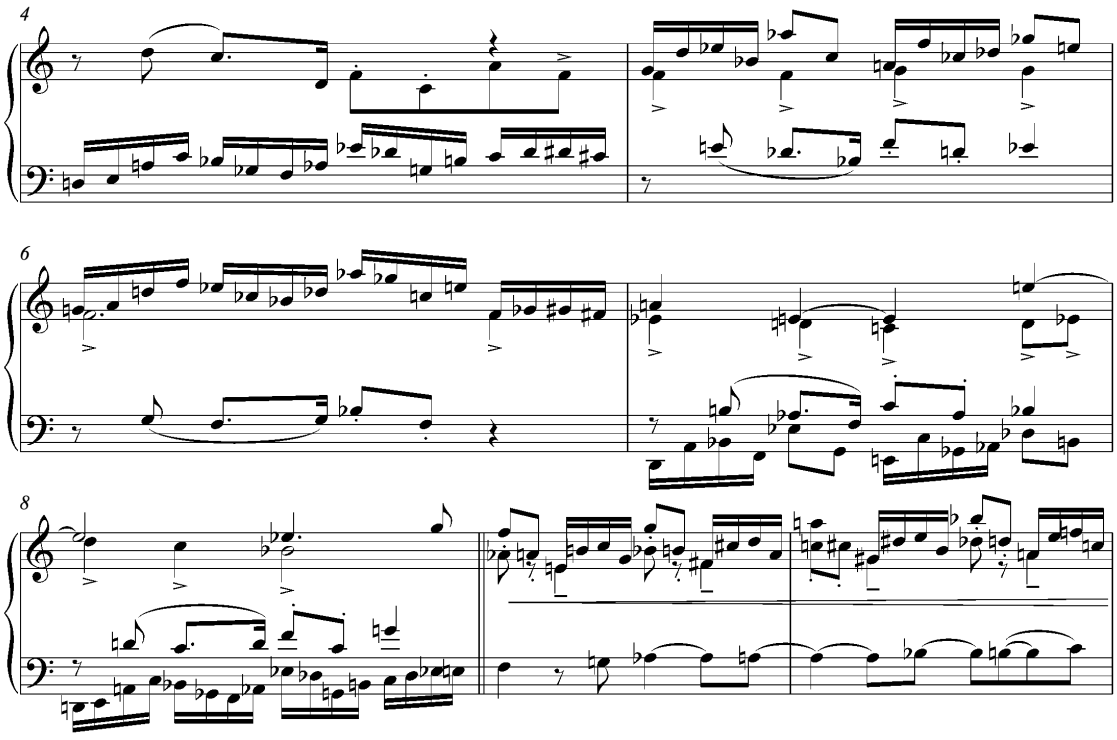
Ex. 5.5 Prelude, bars 1-5



Ex. 5.6 Prelude, bars 16-20



Ex. 5.7 Rhythmic allusion to the four shofar calls, Prelude, bars 26-37



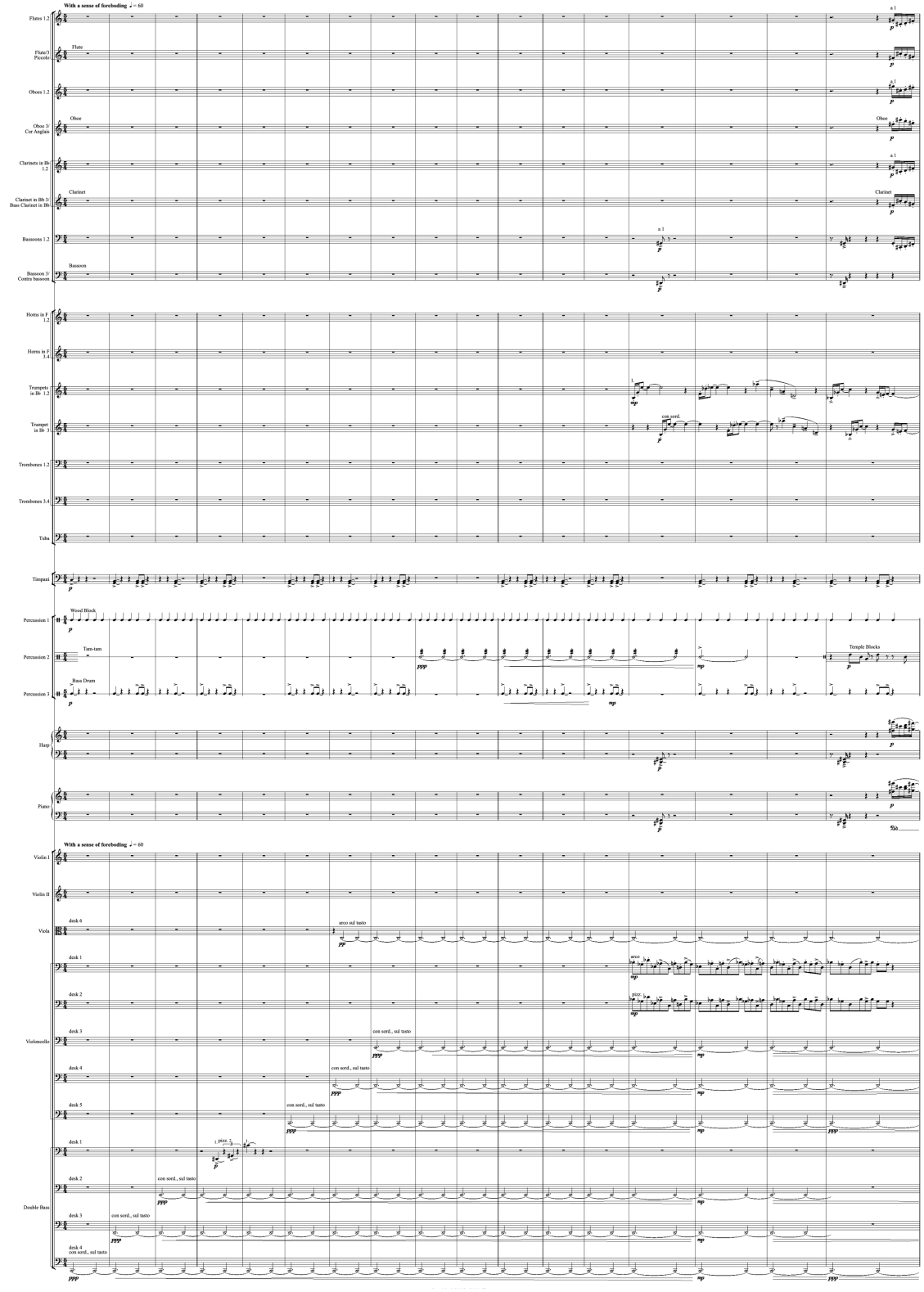
Ex. 5.8 'Nun danket' countersubject marked with accents, Fugue, bars 4-10

…to orchestral Shard. The Shard dominates the London skyline, its tetrahedron pyramid shape looking different depending on the viewer's geographical location and the inclement weather, and is overwhelming when standing close up. I wanted to incorporate these ideas into the piece while also suggesting its gradual increase in size during construction as a time-lapse effect, and also to evoke a sense of the building's localised background events. To suggest the different geographical and temporal views, I built a nine-section structure supported by four 'pillar' string section chords, each built on a different set of intervals, gradually unfolding and disappearing through long crescendos and diminuendos and instrumental addition and removal. To represent the localised background events, I superimposed alternating orchestrated Prelude and Fugue shards around the pillars (Table 5.1). The prelude becomes timbral/textural sonorities with stuttering interjections, compare Ex. 5.7 with Ex. 5.11 where the prelude's third shofar call can be clearly seen in bar 108; and Ex. 5.8 with Ex. 5.12 to see fugue fragment incorporation.

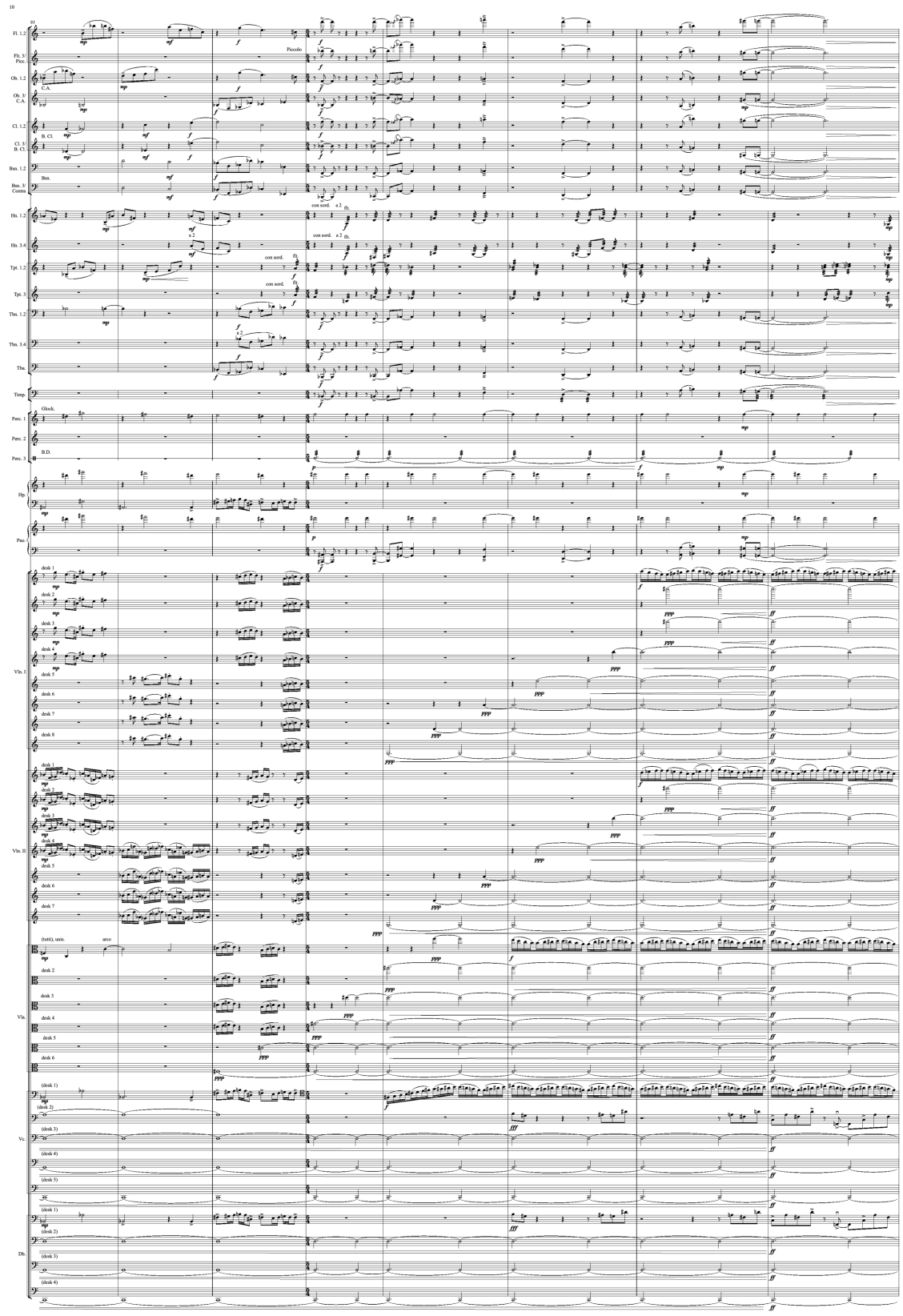
The opening fanfare from bar 14, is a re-pitched canonic borrowing from Copland's *Fanfare for the Common Man* (1942), chosen to comment on The Shard as a grand and expensive vanity project, and its effect on the local 'common' people (Ex. 5.13). The first pillar chord spanning the first section, bars 1-33, is a verticalised wholetone scale, building note by note, bar by bar, from a single *ppp* solo sustained double bass C^{1} to cello $A\sharp^{2}$ at bar 11, where the full *mp* chord is realised. The chord then reduces in reverse order from bars 23-33, to the section's end. The flow is punctuated by Copland timpani/bass drum rhythms and chords introduced at points calculated from a Fibonacci series. The second, third and fourth three pillar chords are built similarly from perfect fourths, perfect fifths and major thirds. The third chord swells to the piece's climax built from all available strings playing at maximum volume (Ex. 5.10). The final ninth section is the first section 1 reversed, as a musical palindrome. Aside from the growing pillar chords' sonic effect, an impressionistic view of the Shard's shape can be seen throughout the score. (Exx. 5.9, 5.10, 5.11).

Section no.	Fugue fragments	Pillar chords
Section 1 (bars 1-33)		Pillar chord 1 (bar 1-33) in major seconds double bass C[1] to cello A♯[3]
Section 2 (bars 34-54)	Fugue 1 – bar 41 (2 bars), trb, hn, tpt Fugue 2 – bar 48 (4 bars) vn2, vla	Pillar chord 2 (bar 58-86) in perfect 4ths Double bass C[1] to violin2 A♭[5]
Section 3 (bars 55-72)	Fugue 3 – bar 63 (6 bars) strgs, ww Fugue 4 – bar 77 (6 bars) strgs, ww	
Section 4 (bars 73-82)		
Section 5 (bars 83-90)		Pillar chord 3 (bar 88-113) in perfect 5ths double bass C[1] to violin1 F[7]
Section 6 (bars 91-102)	Fugue 5 – bar 91 (5 bars) strgs, ww-aug	
Section 7 (bars 103-126)	Fugue 6 – bar 112 (3 bars) strgs, ww	
Section 8 (bars 127-140)		
Section 9 (bars 141-173)		Pillar chord 4 (bar 141-173) in major thirds double bass C[1] to cello F♯[3]

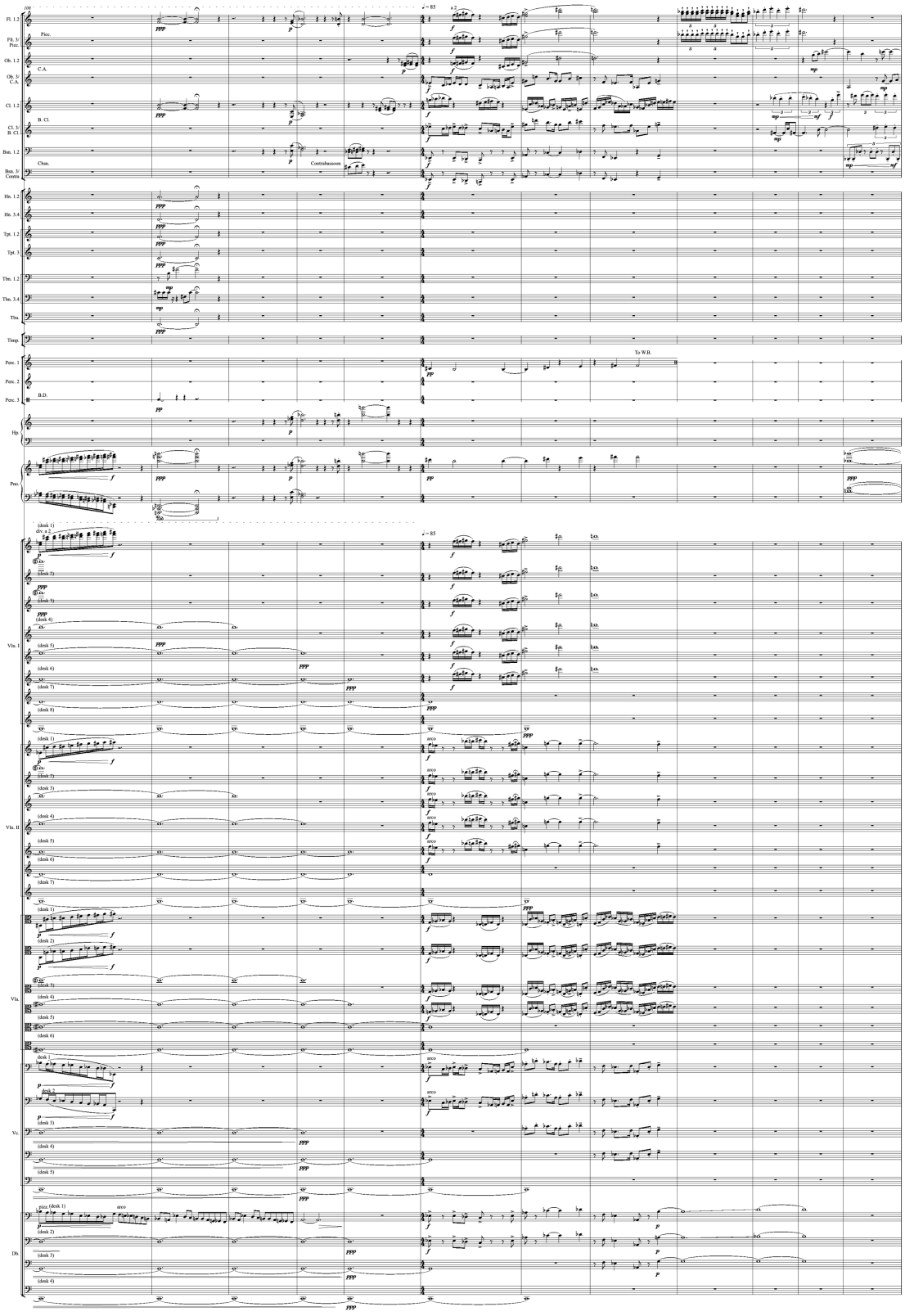
Table 5.1 ***The Shard,*** **structure**



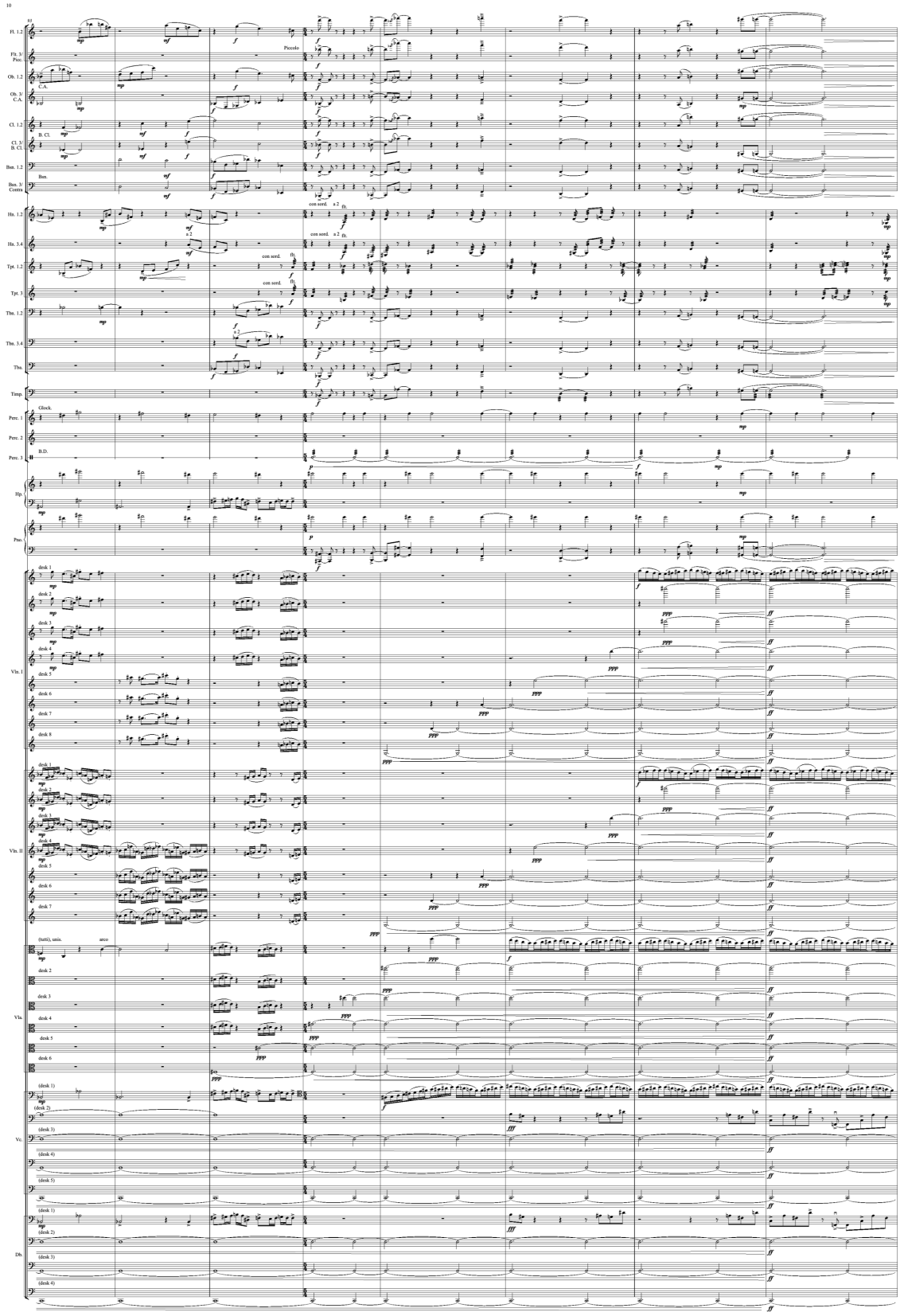
Ex. 5.9 *The Shard,* bars 1-17, visual effect of pillar chord 1



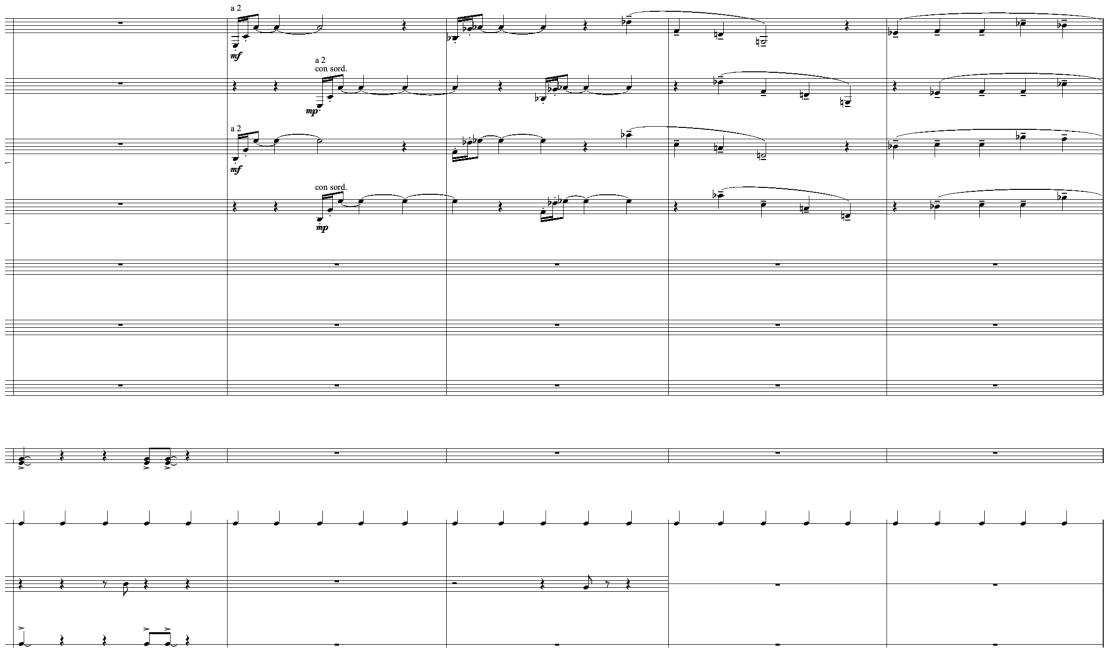
Ex. 5.10 ***The Shard,*** **bars 93-100, part of pillar chord 3**



Ex. 5.11 ***The Shard*** **, bars 108 to 119, shofar call fragment from Prelude**



Ex. 5.12 ***The Shard,*** **bars 93-100, fragments from Fugue**



Ex. 5.13 *The Shard,* bars 21-24, Copland reference

To summarise, *The Shard* amalgamates all my compositional strategies applied and developed throughout this project, all derived from making lateral connections outwards from the building itself, to an existing and extra-musical musical material web. Specifically: juxtaposing and integrating an existing piece – itself based on allusions to existing music and historical forms – alongside new material based on the Shard's increasing height during construction, different views from a distance, and overwhelming size; juxtaposing serial based and tonal pitch organisation; Fibonacci series; stuttering gestures; reversal. Although no intuitive improvisation was employed, there was a total preoccupation with an aesthetically pleasing sonic result rather than systemic adherence exploration. I now discuss correspondences with (and departures from) strategies employed in works by other composers.

Xenakis thought of the orchestra itself as a building when he wrote: 'The sonorities of the orchestra are building materials, like brick, stone and wood (…) The subtle structures of orchestral sound masses represent a reality that promises much'. At the time, he and others were searching for radical new approaches to composition, often demanding complete obliteration of past practices. His engineering training, command of mathematical concepts, work as an architect, and ferocious wide-reaching intellect, all contributed to his own well-documented approach. His summarised process, broadly relating to mine, diverges in respect of the mathematical vocabulary and thought:

Fundamental Phases of a Musical Work[76]
1. Initial conceptions (intuitions, provisional or definitive data);
2. Definition of the sonic entities and of their symbolism ...;
3. Definition of the transformations which these sonic entities must undergo ...;
4. Microcomposition . . . of the elements of (the sonic entities) ...;
5. Sequential programming of (the transformations and microcomposition) ...;
6. Implementation of calculations ...;
7. Final symbolic result . . . (setting out the music on paper in traditional notation, numerical expressions, graphs or other means
8. Sonic realization ... (performance, …electro-acoustic music)

Further broad relationships include: the ideas behind his pieces being as important as the pieces themselves 'when I'm lecturing I talk not about my music but about the ideas lying behind it'[77] ; the use of idiosyncratic serial and rotation techniques; and his lesser-known self-borrowing. The idea behind *Metastasis* (1953-54) the 'starting point of my life as a composer' was initially conceived extra-musically by 'the transformation of the regular, rhythmic noise of a hundred thousand people into some fantastic disorder' describing what he heard during Greece's Nazi occupation.[78] 'The concept of 'transformation' – in a strict mathematical sense the interrelations between musical structures (where structure is to be understood as a set of relationships between musical parameters) is central to Xenakis' thought.' [79] Just as duality of material competes for listening space in *The Shard* – the pillar chords' massive swells and subsidence overwhelming the other motivic material, Xenakis' *Metastasis* (1953-54) contains 'the continuous evolution of massive glissando structures on the one hand and the discontinuous transpositions and permutations of pitches on the other.' [80] Finally, while *Mosaïques* (1994) is perhaps Xenakis' only acknowledged instance of self-borrowing, combining excerpts from pieces written between 1987 and 1991, Benoît Gibson has revealed many more examples.[81]

The Imperial War Museum North as building and space inspired the compositional and audience parameters for Simon Bainbridge's *Music Space Reflection* (2006). He

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[76] Iannis Xenakis, *Formalized Music*, Revised Edition (New York: Pendragon, 1992), p. 22. In Sharon Kanach, 'The Writings of Iannis Xenakis', *Perspectives of New Music*, vol. 41, no. 1 (Winter, 2003) pp. 154-166, pp. 158-9.
[77] Kanach, Sharon, 'The Writings of Iannis Xenakis' *Perspectives of New Music*, vol. 41, no. 1 (2003), 154-166, pp. 158-9.
[78] Iannis Xenakis, in Bálint András Varga, 'Sixty-Five' in *Three Questions for Sixty-Five Composers* (New York: University of Rochester Press, 2011) p. 273.
[79] Hoffmann, Peter. "Xenakis, Iannis." Grove Music Online. 2001; Accessed 2 Mar. 2020. https://www.oxfordmusiconline.com/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000030654.
[80] Hoffmann, Xenakis in the essay 'Les Métastassis'
[81] See Benoît Gibson, *The Instrumental Music of IANNIS XENAKIS: Theory, Practice, Self-Borrowing* (New York: Pendragon, 2011).

explained his approach thus: 'In the compositional process I have translated this [mental snap-shots as one discovers a new building] sonically into a continuous unfolding of musical fragments, punctuated by silence, that extend in duration from 1 second to 34 seconds using the Fibonacci sequence: 1:2:3:5:8:13:21:34. The music is harmonically controlled throughout by a constant recurring cycle of eight twelve-note chords, out of which all the vertical materials are derived.'[82] The performance space is exploited by employing four identical ensembles comprising six players, with live electronics. The score looks a little like an instrumental version of Gordon's *Allele*.

Louis Andriessen and John Adams have also been inspired by architectural concerns and buildings. In relation to using frameworks to construct long pieces Andriessen says: 'an architect's work is similar: before beginning to construct a building he has to create its blueprints.'[83] The durational proportions of *Hadewijch* (De Materie Part II) (1988) follow the longitudinal dimensions of Rheims cathedral and loud chords mark the pillars' location. And a visit to *Notre-Dame* was a significant contribution to John Adams' conception of *On The Transmigration of Souls*. 'To be in that space itself is intensely moving, because you feel that you're in the midst of many, many souls – not just the people in the building, but all the souls that have been there before.'[84] He went on to evoke this effect by adding pre-recorded fragments of text and ambient street noise to the choral and orchestral instrumentation.

Tristan Murail's (b. 1947) immense *Gondwana* (1980), had a significant influence on *The Shard* in terms of solving the problem of articulating the building's overwhelming size. *Gondwana* ebbs and flows from consonance to dissonance, periodicity to aperiodicity, interspersed with immense anchoring chords sounding like gigantic bells as it evokes the subtle transformations occurring in early giant landmass break-ups to produce the continents as they are today. Murail, like Xenakis, was preoccupied with trying to forge new ways to do composition. He wanted to 'start from scratch, to begin with point zero' and found 'the example of Ligeti and Xenakis most helpful.'[85] 'It was a way to create a rupture, a strong break, with structuralist music'.[86] His new way was

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[82] Simon Bainbridge, 'Programme Note' (2007). <https://www.wisemusicclassical.com/work/35642/Music-Space-Reflection--Simon-Bainbridge/ > [Accessed 24.6.20]
[83] *The Music of Louis Andriessen* Maja Trochimczyk pp. 131-2.
[84] John Adams, 'John Adams Discusses *On the Transmigration of Souls*' in Thomas May, ed., *The John Adams Reader* (New Jersey: Amadeus Press, 2006), p. 200.
[85] Tristan Murail, in Bálint András Varga, 'Forty' in *Three Questions for Sixty-Five Composers* (New York: University of Rochester Press, 2011) p. 182.
[86] Tristan Murail, in 'An interview with Tristan Murail', Ronald Bruce Smith and Tristan Murail, in *Computer Music Journal*, Vol. 24, No. 1 (The MIT Press, Spring, 2000), pp. 11-19, p. 16.

spectral composition, mentioned earlier in connection with Saariaho's timbral preoccupation. Spectral composition techniques also draw from 'frequency modulation', the complex relationships between two generative frequency sets, referred to as carriers and modulators. The more consonant the relationship between the generating frequencies, the more consonant the harmonic result and vice versa. This is a microscopic relationship to the dualistic aspect of *The Shard's* conception.

Lastly, to mention some other borrowing links, the persistent woodblock idea accompanying the borrowed Copland fanfare came from John Adams' *Short Ride in a Fast Machine* (1986), and Oliver Knussen used Stravinsky's *Fireworks* (1908) as a structural template in *Flourish with Fireworks*. The shofar has been co-opted into twentieth and twenty-first century music since Elgar's inclusion in his 1903 oratorio *The Apostles*. Malcolm Miller has listed and categorised over sixty works for example, those based on traditional shofar motifs: Berio's *Shofar* (1995) for choir and orchestra; Bernstein's *Kaddish* Symphony no. 3 (1963); and those using shofar in the ensemble, including James McMillan's *Seven Angels* (2014) for mixed chorus, soloists and small instrumental ensemble (natural trumpets, shofars, percussion, harp, cello).[87] 'Nun Danket' has been borrowed frequently for example by: Bach in cantata BWV 192; Mendelssohn in Symphony No. 2, *Lobgesang*, movement 8; Reger and Karg-Elert in organ works; and recently arranged by John Rutter (b. 1945).[88] Dutilleux was also keen on his scores' artistic look, and their referential value to the stimulus. See for example the long slow ascent at the start of the second movement of *Timbres, espace, mouvement* (1978), from the cellos and basses up to the lower woodwind and then flutes.[89]

Conclusions Part II

The four pieces discussed in Part II continue to incorporate and develop strategies introduced in Part I. My creative process throughout continues to involve building a foundation of laterally connected concepts drawn from non-musical or existing musical sources during the contemplative pre-compositional period, serving as the basis for further exploration, problem solving and artistic and technical decisions. *Babel* was a

[87] Malcolm Miller, 'Ancient Symbols, Modern Meanings: The use of the Shofar in Twentieth and Twenty-First-Century Music' in *Qol Tamid: The Shofar in Ritual, History, and Culture* ed. by Jonathan L. Friedmann and Joel Gereboff (Claremont Press, 2017).
[88] John Rutter, *Now thank we all our God* for choir and brass (1974).
[89] Caroline Potter, 'Dutilleux and the Visual Arts', in *Henri Dutilleux: his life and works* (Aldershot: Ashgate, 1997), p. 129.

significant creative turning point as I incorporated improvised material for the first time. *Montage* continued this divergence from total system loyalty, allowing my ear to be more involved in the end product. *Bumble*, the last of the nested partly quirky 'bee' trilogy, explored making music from minimal pitch and textual resources out of bumblebee DNA. *The Shard,* a suitable end to this project's creative part, is a conceptual distillation of all the prior works. The discussions following sections four and five relate my pieces to those by other contemporary composers. Perhaps the most significant personal revelation during the project's second part, was finding a way to integrate rather than avoid the instinctive aspects developed during my popular music career. I will discuss this point and others in the following concluding thoughts.

Concluding Thoughts

Finding a musical way to express the Shard was an apt conclusion to this project's creative component. I still recall how the Shard poster provoked my curiosity as to what it was going to be, and wondering what music could be elicited from the architect's initial sketch back in 2010. The now distinct addition to the London skyline reminds me how my project developed alongside the tower's construction. The eight compositions to which this commentary refers together constitute some answers to the project's central research question, to uncover new stimuli to establish new ways of relating things to each other through music. While earlier extended discussions and interim conclusions have clarified relationships between my portfolio works and pieces by other living composers, it remains for me to conclude with some general thoughts.

I have described *The Shard* as this project's crowning achievement, but it owes a debt to the extensive contemplation behind all the previous works, especially the nested 'bee' trilogy. Central to this project's research achievement, the three pieces each relate things to each other through music, and between them they encapsulate my creative approach. Their collective unique contribution lies in the bee as compositional stimulus, showing new ways to express Plath's poetry through applying music technology sampling techniques in a unique ensemble, and making music from a bumblebee DNA sequence. *Song's Eternity* and *The Arrival of the Beat Box* show new ways to re-imagine one's own work, and the latter also contributes to the method for notating body-percussion and beat-boxing and to the rare if non-existent repertoire for soprano and speaking body-percussionist. I wrote about the collaborative aspect in these and further (non-submitted) related works in 'Two Bee', published in *Sound, Music and the Moving-Thinking Body*.[90] The 'bee' trilogy also provided material for my acclaimed collaborative chamber opera *The Silence of the Bees: A Science Opera* (2013), dedicated to raising bumblebee decline's public awareness. The opera attracted extensive media interest and therefore also contributed to the growing interdisciplinary art-science collaboration.[91]

Boojum's existing musical connections' network showed a new way to respond to

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[90] Kelvin Thomson, 'Two Bee' in Marilyn Wyers and Osvaldo Glieca, (eds), *Sound, Music and the Moving-Thinking Body* (Cambridge Scholars Publishing, 2013), pp. 95-108.

[91] Nicola Davis, *Art and Science combine to save our bees* (The Times, 16.3.2013). John Burnside, 'Telling the bees', *Nature*, vol. 521, no. 7550, 2015, p. 29+. Robert John Paxton, (principal investigator), *Impact and mitigation of emergent diseases on major UK insect pollinators* <https://gtr.ukri.org/project/082E37B0-A00A-4D4B-B7E8-E3908D295F1A?pn=2&fetchSize=10&selectedSortableField=firstAuthorName&selectedSortOrder=ASC> [Accessed 20 May 2020].

Carroll's poem, contributing to solo bassoon's repertoire. As an educational project in which young musicians were able to communicate with a composer on a new piece, it also contributed to raising contemporary classical music's profile. The government's document *The Importance of Music-A National Plan for Music Education* (Nov 2011) underlined music's importance to the development of young people, and contemporary classical music needs such initiatives to encourage deeper understanding and appreciation. *shards of TiME* showed a new way to respond to Eliot's poem by constructing a layered web of laterally-connected concepts including employing an idiosyncratic serial system. Allowing the system to speak for itself raises the question: Should a composer set off with 'no idea' what might come out? John Cage has written 'I don't hear the music I write. I write in order to hear the music I haven't yet heard.'[92] This is what happens if one hands over authorial responsibility to a system, however, from a research point of view it opens up new directions for exploration and avoids any pre-existing habits. And results will always be tempered by an inner voice, as I found later on in the project.

Perhaps the most significant research achievement was my personal discovery and reinvention in which I allowed myself to draw on musical elements from my popular music career rather than hiding them, or avoiding them. Jonny Greenwood similarly transitioned from lead guitarist with rock group Radiohead to orchestral composer with his Penderecki-inspired *Popcorn Superhet Receiver* (2006) for piano and orchestra. And drum and bass musician Goldie composed *Sine Tempore* (2009) for a Prom premiere by the BBC Concert Orchestra and London Philharmonic choir. However, I think my own cautious incorporation of popular music elements had more to do with the same need to 'wipe the slate clean' before progressing, as experienced by Xenakis, Ligeti and Murail.

Looking ahead, I hope to be involved in more art-science and educational projects to develop contemporary classical music's awareness and encourage deeper understanding of each discipline's reciprocal benefits. And in many this project's works, I feel I have only scratched the surface in the devised systems' potential, and would develop them further by searching for and revealing more hidden connections. To what extent can a new piece of music be 'new'? And to what extent can one measure the success of these

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[92] John Cage, *An Autobiographical Statement* (1990). <https://johncage.org/autobiographical_statement.html> [Accessed 5 September 2019] The following note appears after the document: 'Author's note: *An Autobiographical Statement* was written for the Inamori Foundation and delivered in Kyoto as a commemorative lecture in response to having received the Kyoto Prize in November 1989. It is a work in progress.'

'new ways'? I conclude that nothing can be new, just put together in a different way. Just as beauty is in the eye of the beholder – successful 'newness' can only be in the ear of the listener.

As Berio put it:

> Even the "completed" work is the ritual and the *commentary* of something which preceded it, of something which will follow it, as a question that does not provoke an answer but a *commentary*, and another question… [93]

[93] Luciano Berio <http://www.lucianoberio.org/node/1349?346997434=1> [accessed 10 June 2018] Italics are mine.

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